DATABASE ANALYSIS OF TELECOMMUNICATIONS CUSTOMER SERVICE IN INDONESIA AND THE ROLE OF TELECOMMUNICATIONS IN THE GLOBAL ERA

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Abstract— This research uses the Objective Matrix (OMAX) method. Initially, the performance criteria (ratios) that influence the performance measurement at the company are determined. Then, it is continued by calculating the actual performance criteria (ratio), calculating the company's standard performance value, determining the company's performance targets, filling the minimum performance, determining the weight of each score determination criteria, calculating the performance value of each period. Next, evaluation of performance criteria using the Traffic Light System is carried out. The research findings from the measurement results of productivity catalysts found that the overall productivity value for 12 periods in 3 years began from January 2015 to December 2017. Based on these findings, the corrective step that can be conducted is to improve the performance criteria that has the highest score below standard performance based on the results of Traffic Light System.

Keywords— Telecommunications, Service, Ratio, Objective Matrix (OMAX), Traffic Light System.

I. INTRODUCTION

Communication is a primary need for every social being. Communication is needed by all people, from the lower class to the upper class. The purpose of telecommunications is to provide or obtain information from a social group. The need for communication in every social class has increased. Thus, every human being needs communication media that can be used whenever and wherever they are. We cannot deny that communication has become a part of human life today which we can see from the vast distribution of cellular phones with various brands that have been launched into the market. In this case, communication has a major influence on the current development of cellular telephone technology. In Indonesia, the development of communication technology has been very mushrooming. Many cell phone operators offer very cheap promotional communications to their customers and other promotions provided by the owners of cell phone operators. Therefore, it attracts someone to be able to use the services of these operators.

The telecommunications companies and systems they use are very diverse. PT Kuning telecommunications company uses the services of PT IDM company to create a system in its company so that the system runs maximally in helping business processes and services for the community. The system created by PT IDM is a catalyst made in 2013. In addition, catalysts are also available to assist companies in facilitating business processes and services. Catalyst is a database system for all Kuning numbers, especially corporate, where all corporate numbers in Indonesia are in one database system, i.e. catalyst.

Catalyst is very important for the database system in the Kuning company. Catalyst presents a system developed by PT IDM. Until now, the system is still being developed so that it continues to run runs smooth and does not have problems in the process. However, catalyst still has weaknesses in which it can only be accessed using Kuning Port. In addition, the program has many obstacles that are caused by servers that cannot yet accommodate a number of Kuning numbers; so, the program still cannot be effective. Various problems that arise affect perfection in the course of the service process.

This research studies more about the analysis of system performance. The findings of this research can then be used as input to improve the system performance that the company expects. In addition, the findings of this research can be used to improve the system. For this research, the productivity measurement method that is considered appropriate is the Objective Matrix (OMAX) method. This method has many advantages compared to other productivity measurement methods which can identify various factors that have the most influence on productivity improvements. Besides knowing the performance achievement indicators, the results of performance measurement using the OMAX method can also find out the criteria for poor performance. The poor performance criteria can be overcome by planning repairs.

II. RESEARCH METHOD

Measurement of performance criteria using the OMAX model is carried out on an objective target performance matrix. The objective matrix consists of interconnected rows and columns. Thus, by using this matrix, the company manager will be able to measure and determine the level of achievement of each of these criteria. The OMAX model/ instrument and the filling of blocks in the matrix are sequential according to the numbers listed in Figure 1.
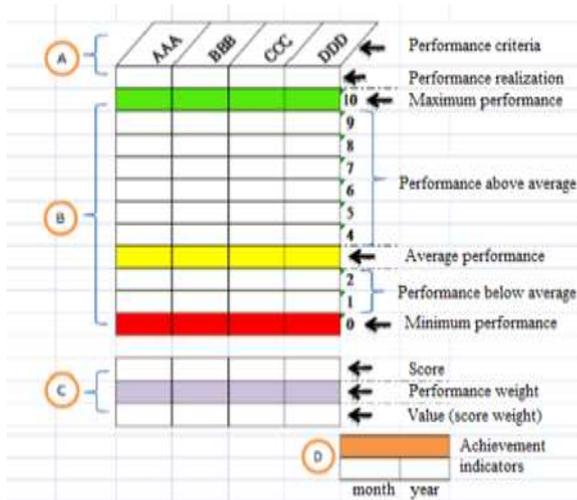
Figure 1. Work Objective Matrix

Explanations for the Objectives Matrix table above are as follows:

- Performance criteria can be part of the elements of efficiency, effectiveness, quality, and other elements.
- Performance realization is the actual value of the company's performance in a certain period.
- Scores from 0 - 10 function to normalize the actual value of the performance that has been obtained. Rounded numbers indicate the position of the actual performance value against the score in the Objectives Matrix table.
- Scores are lines where conversions from actual performance values to Matrix Objectives scores are placed.
- Performance weight is the weight value of the productivity criteria.
- Values are multiplications of score and weight values.
- Performance indicators are the sum of values for each productivity criterion.

The systematics of research begins with the literature studies and field observations to find out how the characteristics and situations of the company. It was then continued by formulating the problems to find out what problems would be raised and determine the objectives of the research from the formulation of the problems that had been made. The data used in this research are Input (data in), Output (data out), and Error (error data / failed data). From the data obtained then it is processed which starts from filling out the defining block that contains the performance criteria (ratio). After obtaining the data value, the performance index calculation is carried out. The values of the performance criteria that have been calculated using the Objective Matrix model are then created by using the Traffic Light System model, where the most dominant criteria and score below level 2 (below standard) will be corrected. In addition, the weighting of performance criteria and performance achievement targets is obtained from the results of brainstorming with the company.
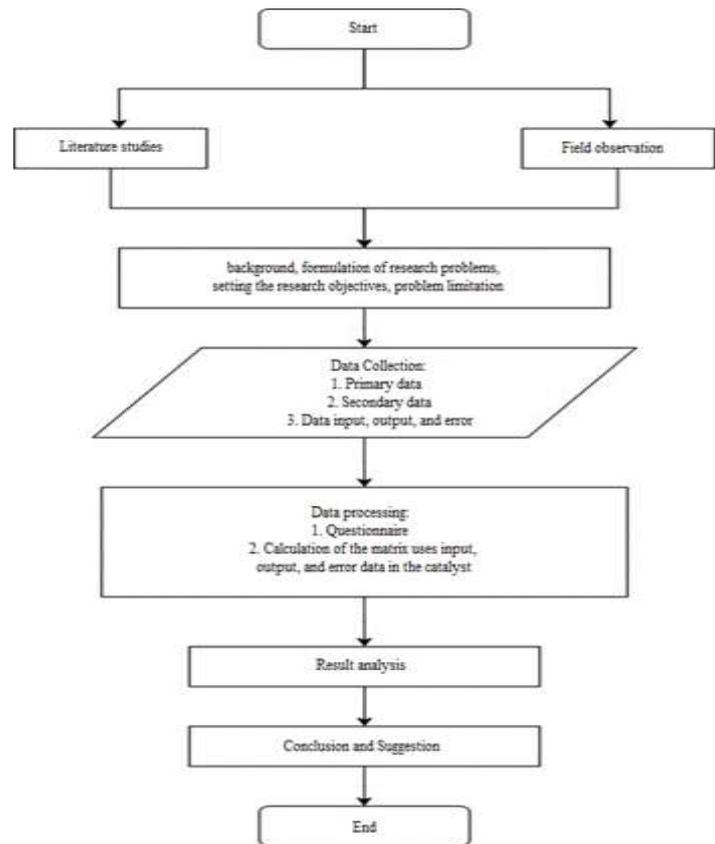

Figure 2. Troubleshooting Flow Chart

III. FINDINGS AND DISCUSSION

The aim of conducting catalyst productivity measurements at PT Kuning is to know the performance of the system catalyst by using reliability and availability, verifying, and validating the data in the catalyst where the data is processed into a definite unit of data and can be used in the catalyst. In addition, it is intended to determine the important role of catalysts at PT Kuning in carrying out business processes and impacts generated by catalysts for companies and customers. The results of these productivity measurements will be a useful tool for improving the process of system performance catalysts in parts that are still not good. The measurement results will show the causes of system performance catalyst problems and then can be used as a reference to take corrective action to improve the process of catalyst performance systems in the future. Measurement of productivity process system performance catalyst is carried out by using the aid of a measuring instrument. With the help of these measuring instruments, it will obtain catalyst productivity index value which then it will show whether or not the catalyst's performance process has been effective and efficient. The following are the performance criteria that will be used in performance measurement using the Matrix Objectives model.

Period (Month)	Ratio 1	Ratio 2	Ratio 3	Ratio 4	Ratio 5
January	-26.75%	8.43	14.29%	16.67%	0.77%
February	-21.61%	8.41	19.44%	24.12%	0.44%
March	-25.35%	7.65	7.04%	7.57%	0.41%
April	-16.08%	6.84	7.74%	8.40%	0.75%
May	-9.52%	6.33	7.11%	7.65%	0.31%
June	-16.10%	6.69	5.10%	5.38%	0.09%
July	-24.86%	7.26	2.29%	2.34%	0.08%
Augustus	-20.98%	6.96	3.23%	3.33%	0.26%
September	-24.73%	7.35	3.99%	4.16%	0.46%
October	-15.52%	6.65	5.42%	5.73%	0.44%
November	-23.65%	7.24	4.42%	4.63%	0.93%
December	-24.44%	7.41	4.79%	5.04%	0.03%

Figure 3. 2015 Ratio

Period (Month)	Ratio 1	Ratio 2	Ratio 3	Ratio 4	Ratio 5
January	-13.32%	6.26	2.12%	3.85%	0.43%
February	-27.92%	7.66	3.71%	5.01%	0.25%
March	0.09%	5.58	4.77%	6.52%	0.21%
April	-18.43%	6.94	6.12%	3.02%	0.34%
May	-5.13%	5.79	2.93%	3.40%	0.05%
June	-12.58%	6.31	3.28%	4.94%	0.03%
July	-14.97%	6.58	4.71%	6.07%	0.09%
Augustus	-18.01%	6.88	5.72%	6.16%	0.34%
September	-10.11%	6.30	5.80%	3.26%	0.05%
October	0.60%	5.47	3.16%	2.82%	0.05%
November	-0.78%	5.52	2.74%	1.36%	0.08%
December	10.80%	4.87	1.34%	4.05%	0.11%

Figure 4. 2016 Ratio

Period (Month)	Ratio 1	Ratio 2	Ratio 3	Ratio 4	Ratio 5
January	0.03%	5.54	4.21%	1.65%	0.53%
February	-31.13%	7.86	1.62%	2.17%	0.19%
March	-41.02%	9.20	2.12%	5.08%	0.37%
April	-37.18%	8.91	4.84%	5.34%	0.15%
May	0.58%	5.58	5.07%	11.28%	0.04%
June	-26.13%	8.03	10.13%	9.73%	0.05%
July	-27.61%	8.08	8.87%	11.31%	0.08%
Augustus	-38.15%	9.58	10.16%	22.22%	0.23%
September	-17.70%	7.90	18.18%	10.98%	0.25%
October	-18.07%	7.22	9.89%	7.45%	0.05%
November	-34.95%	8.80	6.93%	6.11%	0.08%
December	-31.31%	8.24	5.76%	8.14%	0.05%

Figure 5. 2017 Ratio

Description:

Based on the above table, the calculation of the ratio from 2015-2017 is as follows,

Ratio 1: Working Time Efficiency in Completing Case

Ratio 2: HR Efficiency

Ratio 3: Effectiveness of Delayed Workmanship Based on Total Workmanship received

Ratio 4: Effectiveness of Delayed Workmanship Based on Total Workmanship closed

Ratio of 5: Downtime

The basis of the matrix is the calculation of performance indicators. The results of the comparison of the ongoing operations are placed at the top of the matrix body. Then, it is adjusted to the level on the matrix body and then recorded in the value row after being changed according to the existing value. If there are comparison results located between 2 levels, the worst possibility will be chosen. Numbers on the weight line indicate the degree of importance of each criterion to the

level of productivity measured. The weight is multiplied by the above value (score) and then recorded in the value row. The sum of these values is a performance indicator from a certain period. Scale division consists of three levels are:

Level 0: the lowest level recorded in that period

Level 3: results achieved under normal conditions during the measurement process

Level 10: best results for that period

Ratio 1	Ratio 2	Ratio 3	Ratio 4	Ratio 5	Productivity Criteria
-26.75%	8.43	14.29%	16.67%	0.77%	Performance
-26.75%	8.43	2.29%	2.34%	0.03%	10
-24.86%	8.43	3.99%	4.63%	0.03%	9
-24.73%	8.43	4.42%	5.04%	0.03%	8
-24.44%	8.41	4.79%	5.38%	0.08%	7
-23.65%	7.65	5.10%	5.73%	0.09%	6
-21.61%	7.41	5.42%	7.57%	0.26%	5
-20.98%	7.35	7.04%	7.65%	0.31%	4
-20.80%	7.27	7.07%	7.92%	0.41%	3
-16.08%	6.65	7.74%	8.40%	0.46%	2
-15.52%	6.33	14.29%	16.67%	0.75%	1
-9.52%	6.33	19.44%	24.12%	0.93%	0

Figure 6. Realization of Performance, Score, Weight, Value, and Achievement Indicator in 2015

Ratio 1	Ratio 2	Ratio 3	Ratio 4	Ratio 5	Productivity Criteria
-13.32%	6.26	2.12%	3.85%	0.43%	Performance
-27.92%	7.66	1.34%	1.36%	0.03%	10
-18.43%	6.94	2.12%	2.82%	0.05%	9
-18.01%	6.88	2.74%	3.02%	0.05%	8
-14.97%	6.58	2.93%	3.26%	0.05%	7
-13.32%	6.31	3.16%	3.40%	0.08%	6
-12.58%	6.30	3.28%	3.85%	0.09%	5
-10.11%	6.26	3.71%	4.05%	0.11%	4
-9.15%	6.18	3.87%	4.20%	0.17%	3
0.09%	5.79	5.72%	6.07%	0.25%	2
0.60%	5.58	5.80%	6.16%	0.34%	1
10.80%	4.87	6.12%	6.52%	0.43%	0

Figure 7. Realization of Performance, Score, Weight, Value, and Achievement Indicator in 2016

Ratio 1	Ratio 2	Ratio 3	Ratio 4	Ratio 5	Productivity Criteria
0.03%	5.54	4.21%	1.65%	0.53%	Performance
-41.02%	9.58	1.62%	1.65%	0.04%	10
-37.18%	9.20	2.12%	2.17%	0.05%	9
-34.95%	8.91	4.21%	5.08%	0.05%	8
-31.31%	8.80	4.84%	5.34%	0.05%	7
-31.13%	8.24	5.07%	6.11%	0.08%	6
-27.61%	8.08	5.76%	7.45%	0.08%	5
-26.13%	8.03	6.93%	8.14%	0.15%	4
-25.22%	7.91	7.32%	8.46%	0.17%	3
-17.70%	7.22	9.89%	10.98%	0.25%	2
0.03%	5.58	10.13%	11.28%	0.37%	1
0.58%	5.54	18.18%	22.22%	0.53%	0

Figure 8. Realization of Performance, Score, Weight, Value, and Achievement Indicator in 2017

After obtaining the performance criteria, then the values from each level from level 0 to level 10 are determined. The next step is to fill the performance realization. After that, it is continued by filling in the weight set by the company. Scores are obtained by looking at the performance realization of each

performance criterion; the ratio is close to the number at level 0 - level 10. After the scores are filled completely, the value of each productivity is searched by multiplying the score with the weight. After all is done, we just need to fill in the achievement indicators by adding all the productivity values so that the performance target matrix of the PT Kuning OMAX model can be found out. The next step is to analyze and identify performance criteria (ratios) each period using the Traffic Light System method. Description:

Green color (with a threshold level 7 to level 10) indicates that the performance has reached the target.

Yellow color (with a threshold level 3 to level 6) indicates that the performance has not reached the target but has approached the target to be achieved.

Red color (with a smaller threshold than level 3) indicates that the performance is really below the target even below the standard.

Period (Month)	Ratio 1	Ratio 2	Ratio 3	Ratio 4	Ratio 5
January	-26.75%	8.43	14.29%	16.67%	0.77%
February	-21.61%	8.41	19.44%	24.12%	0.44%
March	-25.35%	7.65	7.04%	7.57%	0.41%
April	-16.08%	6.84	7.74%	8.40%	0.75%
May	-9.52%	6.33	7.11%	7.65%	0.31%
June	-16.10%	6.69	5.10%	5.38%	0.09%
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September	-24.73%	7.35	3.99%	4.16%	0.46%
October	-15.52%	6.65	5.42%	5.73%	0.44%
November	-23.65%	7.24	4.42%	4.63%	0.93%
December	-24.44%	7.41	4.79%	5.04%	0.03%

Figure 9. Performance Criteria Based on Traffic Light System in 2015

Period (Month)	Ratio 1	Ratio 2	Ratio 3	Ratio 4	Ratio 5
January	-13.32%	6.26	2.12%	3.85%	0.43%
February	-27.92%	7.66	3.71%	5.01%	0.25%
March	0.09%	5.58	4.77%	6.52%	0.21%
April	-18.43%	6.94	6.12%	3.02%	0.34%
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June	-12.58%	6.31	3.28%	4.94%	0.03%
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Augustus	-18.01%	6.88	5.72%	6.16%	0.34%
September	-10.11%	6.30	5.80%	3.26%	0.05%
October	0.60%	5.47	3.16%	2.82%	0.05%
November	-0.78%	5.52	2.74%	1.36%	0.08%
December	10.80%	4.87	1.34%	4.05%	0.11%

Figure 10. Performance Criteria Based on Traffic Light System in 2016

Period (Month)	Ratio 1	Ratio 2	Ratio 3	Ratio 4	Ratio 5
January	0.03%	5.54	4.21%	1.65%	0.53%
February	-31.13%	7.86	1.62%	2.17%	0.19%
March	-41.02%	9.20	2.12%	5.08%	0.37%
April	-37.18%	8.91	4.84%	5.34%	0.15%
May	0.58%	5.58	5.07%	11.28%	0.04%
June	-26.13%	8.03	10.13%	9.73%	0.05%
July	-27.61%	8.08	8.87%	11.31%	0.08%
Augustus	-38.15%	9.58	10.16%	22.22%	0.23%
September	-17.70%	7.90	18.18%	10.98%	0.25%
October	-18.07%	7.22	9.89%	7.45%	0.05%

Figure 11. Performance Criteria Based on Traffic Light System in 2017

Based on the above table, the one to five ratios in January to December has a variety of colors. This color determines the

level of poor performance of the system. We can find that the ratio above has three colors. The red color shows the worst performance which shows that the performance is really below the target even below the standard.

The second color is yellow which indicates the expected average score. It shows that it has not reached the target but has approached the target to be achieved.

The third color is green which shows the best score which means that it has reached the target.

Criteria	Total		
	2015	2016	2017
Ratio 1	4	5	4
Ratio 2	6	5	5
Ratio 3	4	5	5
Ratio 4	3	5	5
Ratio 5	6	4	5

Figure 12. Performance Criteria Under the Standard for 2015-2017

Based on the above Figure 12, for ratio 1 in 2015-2017, there is a rise and fall. In 2017, it decreased from 5 to 4 so that it was better than the previous year because ratio 1 has the meaning that the company can process the system performance efficiently and has the ideal company conditions.

For ratio 2 in 2015-2017, it has decreased from 6 to 5 months which is below the standard. This ratio 2 discusses the total number of cases received each month which is compared to the number of working hours each month. If it is analyzed further, there are 5 months that are below the company's target because in that month the case received by the system increases and the HR (Human Resources) that completes the case is relatively decreasing.

For ratio 3 in 2015-2017, it has increased from 4 to 5 months which is below the company's standard target. This ratio 3 discusses the effectiveness or efficiency in the company's case settlement process and ideal conditions for the company. If analyzed further, about the increase from 4 months to 5 months below the target, it was caused by many cases in that months that led to pending cases within the system. In addition, the cases had caused the server full. If the server is full, all input processes will experience pending/ queuing in the system. Sometimes, the queue on the system has an error caused by too many cases being received so that the server does not accommodate the input. It finally resulted in slower performance in case settlement.

For ratio 4 in 2015-2017, it experienced a decrease in performance; from 3 to 5 months below the company's standard target. This ratio 4 discusses the comparison of the total case pending and closing in the system. If further analyzed, about the increase in 2015-2017, the months below the target have decreased performance due to the increasing percentage of pending cases each month.

For ratio 5 in 2015-2017, it experienced an ups and downs. It shows that there was a decrease in performance in 2017 regarding downtime; i.e. the time it has in completing existing cases. After being analyzed, it experienced an increase and decrease in downtime compared to 2015-2017. This has an impact on the value of ratio 5 which has increased and

decreased in value below the standard because in that year there was a large total downtime. Thus, the company's time performance in case settlement is slower.

IV. CONCLUSIONS

This research discusses about the analysis of GSM number database of telecommunications companies in Indonesia and the role of telecommunications in the global era (Telecommunications Services). This research also discusses the system used in conducting service processes. This service influences or plays an important role in analysis. It uses catalyst analysis where the system is a reference for determining how big the role of catalyst is for telecommunications company of PT Kuning.

Based on the results of the analysis, there are still some very diverse problems. The analysis is classified into 5 ratios consisting of: working time efficiency in completing case, HR efficiency, effectiveness of delayed workmanship based on total workmanship received, effectiveness of delayed workmanship based on total workmanship closed, and downtime.

Based on the research that has been conducted, since this catalyst is a vital system for PT Kuning, it would be better to delete unnecessary data or old data that is not needed so that opening the catalyst will be much faster. In addition, it is necessary to add data storage so that the input process runs better, User login on the catalyst has no effect on the system and there is no pending every month. It aims to make sure that future service processes will be even better.

Based on the calculation of the values of the five ratios, it is recommended to: pay attention to the total available working hours with the total standard time given by the company so that case resolution time can be faster and optimal, streamline existing HR to resolve existing cases, minimize pending/ delayed cases, and minimize downtime which will hinder the completion of the pending cases.

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