

HOSPITAL'S PERFORMANCE MEASUREMENT WITH MALCOLM BALDRIGE METHOD IN EAST JAVA

Pengukuran Kinerja di Rumah Sakit dengan Metode Malcolm Baldrige di Jawa Timur

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ABSTRACT

Background: Muhammadiyah Gresik Hospital has a low BOR value from 2008 to 2011. Based on this problem, Malcolm Baldrige method was used to assess institutional performance. However, data obtained from the assessment are still visualized in the form of tables. This kind of visualization for rendering data is less interesting and makes readers difficult to interpret the data. **Purpose:** This study aims to measure hospital's performance through 7 criteria namely leadership, strategic planning, customer focus, measurement, analysis, and knowledge management, workforce focus, management process, and results. **Methods:** This study utilized Microsoft Excel 2007 software to create charts. The data used as an example for analysis was the performance assessment using Malcolm Baldrige method at Muhammadiyah Gresik Hospital in June 2012. **Results:** The results of this study reported that by using Malcolm Baldrige method, the data could be visualized in forms of bar charts, radar charts, and pie charts. **Conclusion:** Muhammadiyah Gresik Hospital got an overall score of 773.39 considered satisfying. Performance assessment can be visualized not only in tables but also charts and diagram that have a more visual presentation.

Keywords: Charts, performance, Malcolm Baldrige, visualization

ABSTRAK

Latar belakang: RS Muhammadiyah Gresik memiliki nilai BOR yang rendah pada tahun 2008 sampai tahun 2011. Berdasarkan masalah tersebut, metode Malcolm Baldrige digunakan untuk mengukur kinerja organisasi. Meski demikian, sebagian besar penyajian data dari hasil pengukuran kinerja masih berbentuk tabel. Penyajian data dalam bentuk tabel kurang menarik untuk dilihat serta menyulitkan pembaca untuk melakukan interpretasi data. **Tujuan:** Tujuan dari penelitian ini adalah mengukur kinerja rumah sakit melalui 7 kriteria, yaitu kepemimpinan, perencanaan strategis, fokus pelanggan, pengukuran, analisis, dan manajemen pengetahuan, fokus tenaga kerja, manajemen proses, dan hasil. **Metode:** Metode yang digunakan adalah pembuatan diagram menggunakan software Microsoft Excel 2007. Adapun data yang kami gunakan sebagai contoh untuk analisis adalah hasil pengukuran kinerja pada Rumah Sakit Muhammadiyah Gresik pada Bulan Juni 2012 dengan menggunakan metode Malcolm Baldrige. **Hasil:** Hasil dari penelitian ini adalah penyajian data hasil pengukuran Malcolm Baldrige dapat divisualisasikan dalam bentuk diagram batang, diagram radar, dan diagram pie. **Kesimpulan:** Muhammadiyah Gresik Hospital mendapat skor keseluruhan sebesar 773,39 yang termasuk dalam kategori memuaskan. Hasil pengukuran kinerja menggunakan metode Malcolm Baldrige hendaknya disajikan tidak dalam bentuk tabel saja, melainkan dengan tampilan yang lebih visual seperti diagram dan grafik untuk memudahkan interpretasi data.

Kata kunci: Diagram, kinerja, Malcolm Baldrige, visualisasi

INTRODUCTION

Organizational performance is an important factor to achieve the organizational goals. All industries, both goods and services industries must consider the level of organizational performance. Performance is an indicator for measuring how certain tasks are performed (Simanjuntak, 2011).

Each industry should measure their performance on the various activities they have carried out in the organization. A manager can use the performance assessment results as a tool for performance appraisal. This assessment includes the success or failure of an activity, program, or organization (Adinata, 2015). Each type of industries has a different indicator for measuring their performance.

Hospital is one of the service industries for patients. Like other industries, hospitals also need to measure their performance to ensure the optimal services to patients. Many healthcare organizations utilize various managerial strategies from various industries to improve the quality of health care (Baidoun, 2017). A hospital consists of various units, such as inpatient units, outpatient units, and emergency departments.

Secondary data from Medical Record Section of the Muhammadiyah Gresik Hospital in 2008 – 2011 showed a problem in the inpatient unit of Muhammadiyah Gresik Hospital. Data showed the low value of BOR (Bed Occupancy Ratio) for 4 consecutive years and did not reaching the ideal limit value. BOR is the percentage of a bed usage in a certain unit of time. BOR is one of the hospital performance indicators that provides an overview of the high or low utilization of beds (inpatient units) in a hospital.

Muhammadiyah Gresik Hospital applied Barber Johnson indicators to assess the level of service efficiency. According to these indicators, the ideal limit value for BOR is 75% - 85%. The BOR value of Muhammadiyah Gresik Hospital was 54.78% in 2008, 55.35% in 2009, 55.63% in 2010, and 64.67% in 2011. Although it tends to increase, the BOR value never reaches the ideal value limit.

BOR calculation is done by comparing the number of beds used with the number of beds available. A low BOR value indicates a low level of hospital utilization, so it can indicate the lack of efficiency, performance, and management of

hospitals. Based on this problem, it is necessary to do further research about performance assessment in Muhammadiyah Gresik Hospital.

There are several methods to measure organizational performance, one of which is Malcolm Baldrige Criteria for Performance Excellent (MBCfPE). This method is used in the Malcolm Baldrige National Quality Award (MBNQA) program under the auspices of the National Institute of Standards and Technology (NIST). NIST is a governmental institution in the United States responsible for managing the MBNQA program. Companies that have obtained MBNQA will be recognized as world-class companies in the United States (Utomo, 2016).

Today, Malcolm Baldrige method has been widely used in measuring the performance of various institutions. However, most of the data from performance assessment are still in the form of tables. Data visualized in tables are less interesting and more difficult for readers in interpreting them.

Less visual data make users reluctant difficult to interpret them. If this problem is not resolved, it can cause some obstacles for decision-making. This is by the research conducted by Song (2018) who said that visualization allows people to analyze and interpret data so that they understand current phenomena and made a decision. The lack of effective visualization may lead to a significant decrease in the quality of accepted managerial decisions (Voronin, 2018).

Tables for visualizing data can be replaced by charts and diagrams. Prior studies in the graphical perception show visualization methods can change the data interpretation. While analysts must consider how to use sources when choosing a dataset, the visualizations for data analysis directly influence how people perceive the data (Song, 2018). Graphs can make readers more easily know and read the data without complicated narratives because the data are visualized in numbers contained in a worksheet (Mustain, 2015).

The purpose of this study was to provide recommendations for data visualization, such as charts and diagrams to facilitate data interpretation. The research will benefit readers in identifying types of data visualization and their weaknesses and strengths. Institutions can choose the most suitable data visualization with

the purpose of data analysis that they want to achieve.

METHOD

The data used in this study were the performance assessment using the Malcolm Baldrige method at the Muhammadiyah Gresik Hospital located in Gresik District, Gresik Regency, East Java. The study was conducted in October 2011 to July 2012. The population of the study was 145 employees of Muhammadiyah Gresik Hospital.

The samples of this study were all nurses and midwives in the inpatient unit of Muhammadiyah Gresik Hospital. There were 41 health workers as respondents consisting of 15 respondents in the delivery room, 11 respondents in the pediatric room, eight respondents in the neonatal room, and seven respondents working in the adult room.

Primary data were taken by using questionnaires disseminated to the respondents. The questionnaires consist of 99 questions regarding organizational profile, leadership, strategic planning, customer focus, measurement, analysis, and knowledge management, a focus of human resources, a focus of process management, and organizational performance. Respondents then filled out the questionnaires by giving a cross mark on a Likert scale worth from 1 to 10, starting from very strongly disagree (Scale 1) to

very strongly agree (Scale 10). Before the research was conducted, the validity and reliability of the questionnaires had been tested to 13 experimental respondents.

Secondary data were taken from inpatient performance indicator and Barber Johnson charts that illustrate the efficiency level of inpatient care from 2008 to 2011. Also, documents of hospital profile and employment data from Muhammadiyah Hospital in Gresik were reviewed. The data obtained were analyzed descriptively using frequency distribution and cross tabulation.

To visualize data, this study used Microsoft Office Excel 2007 software. This software was chosen because of its popularity among other data processing softwares, such as Statistical Product and Service Solutions (SPSS). Other advantages are that Microsoft Office Excel is user -friendly and comfortable for simple, neat, and arranged navigation.

RESULT

Performance assessment using the Malcolm Baldrige at Muhammadiyah Gresik Hospital showed a final score of 773.39 considered satisfying. Each criterion consists of several aspects. To get the score of each criterion, scores from several aspects are added up. Table 1 shows the result of Performance Measurement using the Malcolm Baldrige Method.

Table 1. Performance Measurement using the Malcolm Baldrige Method at Muhammadiyah Gresik Hospital in June 2012

Criteria / grade	Percent		Max. Grade	Assessment Result
Leadership			120	89.57
Aspect 1	74.39%	70		52.07
Aspect 2	75.00%	50		37.50
Strategic planning			85	64.86
Aspect 1	74.70%	40		29.88
Aspect 2	77.74%	45		34.98
Costumer focus			85	67.48
Aspect 1	78.96%	45		35.53
Aspect 2	79.88%	40		31.95
Measurement, analysis Knowledge management			90	70.25
Aspect 1	79.88%	45		35.95
Aspect 2	76.22%	45		34.40
Workforce focus			85	64.66
Aspect 1	76.83%	40		30.73

Criteria / grade	Percent	Max. Grade	Assessment Result
Process management		85	65.76
Aspect 1	77.03%	45	34.66
Aspect 2	77.74%	40	31.10
Result		450	350.79
Aspect 1	78.66%	120	94.39
Aspect 2	81.10%	90	72.99
Aspect 3	73.78%	80	59.02
Aspect 4	78.66%	80	62.93
Aspect 5	76.83%	80	61.46
Total Grades		1000	773.39

There are 2 aspects in the leadership criteria, they are senior leadership and mastery and social responsibility. From the maximum grade of 120, Muhammadiyah Gresik Hospital got 89.57 as the score in leadership criteria. In the strategic planning criteria, there are 2 aspects which are strategy development and strategy implementation. From the maximum grade of 85, Muhammadiyah Gresik Hospital got 64.86 as the score in strategic planning criteria.

In the customer focus criteria, there are 2 aspects which are customer opinion and customer loyalty. From the maximum grade of 85, Muhammadiyah Gresik Hospital got 67.48 as the score in customer focus criteria. In the measurement, analysis, and knowledge management criteria, there are 2 aspects which are measurement, analysis, and improvement of organizational performance and management of information, knowledge and information technology. From the maximum grade of 90, Muhammadiyah Gresik Hospital got 70.25 as the score in measurement, analysis, and knowledge management criteria.

In the workforce focus criteria, there are 2 aspects which are environmental aspects of human resources and human resources loyalty. From the maximum grade of 85, Muhammadiyah Gresik Hospital got 64.66 as the score in

workforce focus criteria. In the process management criteria, there are 2 aspects which are work system and work process. From the maximum grade of 85, Muhammadiyah Gresik Hospital got 65.76 as the score in process management criteria.

In the result criteria, there are 5 aspects which are health service processes and outcomes, customer focus result, human resources focus result, leadership and mastery result, and market and financial results. From the maximum grade of 450, Muhammadiyah Gresik Hospital got 350.79 as the score in result criteria.

Bar Chart

The information presented in Table 1 is the performance scores of Muhammadiyah Gresik Hospital using the Malcolm Baldrige method. These results are useful to see how the gap between the performance score and the maximum score presumably obtained. To see this gap, the information should be visualized in a chart instead as shown in Chart 1.

The gap between units is 25 on the X-axis to facilitate data interpretation, and all maximal scores (450, 120, 90 and 85) can be divided by 25. This number is neither too small nor too large so that the gap between the assessment results and maximum scores can be read clearly.

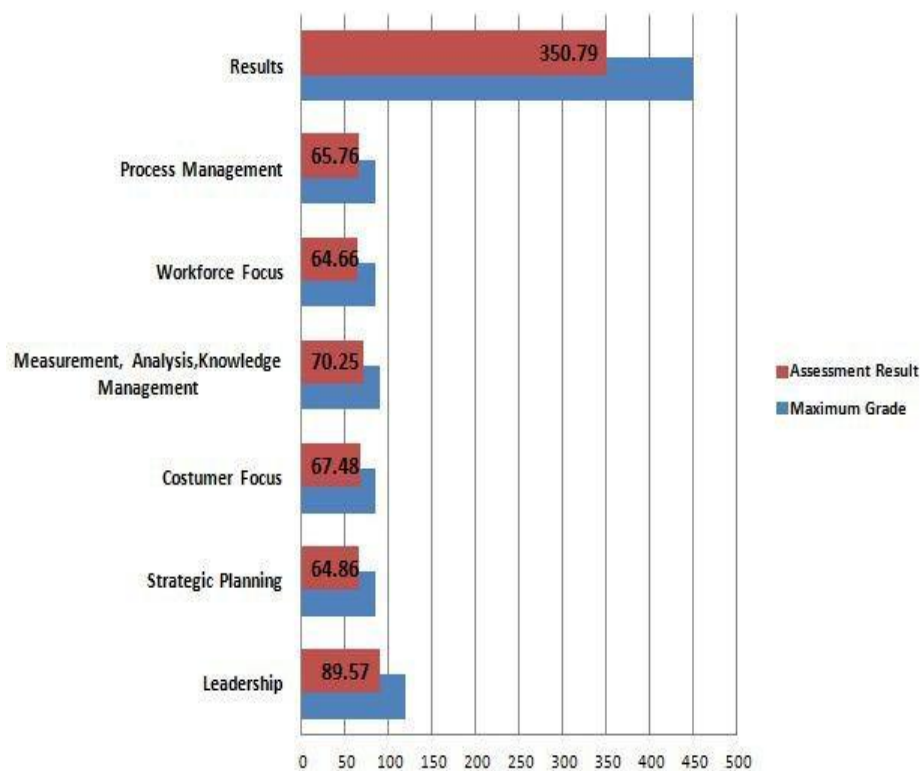


Chart 1. Bar Chart for Malcolm Baldrige Performance Measurement Result at Muhammadiyah Gresik Hospital in June 2012

Based on Chart 1, the largest difference between the two lines is in the results. The maximum score for the results criteria is 450 while the performance assessment shows a score of 350.79. The difference between the assessment score and the maximum score is 99.21. Therefore, the results need to be the focus of the Muhammadiyah Gresik Hospital for immediate improvement.

The second largest difference belongs to leadership criteria. The maximum score for the leadership criteria is 120, but the assessment shows a score of 89.57. The difference between the assessment score and the maximum value is 30.43. Therefore, the leadership criteria should be a concern for Muhammadiyah Gresik Hospital.

Meanwhile, the difference between the assessment score and the maximum score among other criteria are almost the same. The difference between the management process criteria is 19.24. The difference for the workforce criteria is 20.34. The difference between the measurement, analysis, and knowledge management criteria is 19.75. On the other hand, the difference between the strategic planning criteria is 20.14. All aspects of these criteria have the same results so

that the performance needs to be maintained and developed simultaneously and continuously.

The smallest difference in Chart 1 can be found in the customer focus criteria. The maximum score for this criterion is 85 while the assessment shows a score of 67.48. The difference between the assessment score and the maximum value is 17.52. Overall, the customer focus criteria is the best performance. It is said that Muhammadiyah Gresik Hospital can foster good relations with customers, identify potential customers and market segments, gather information on customer satisfaction levels, and respond to customer complaints. Therefore, Muhammadiyah Gresik Hospital needs to maintain and improve their performance in terms of customer focus.

Identifying this gap is useful to encourage Muhammadiyah Gresik Hospital to improve its performance at their finest. In addition, Muhammadiyah Gresik Hospital can observe the highest and lowest gaps between the assessment results and the maximum scores for several criteria to identify strengths and weakness.

Radar Chart

Not only can Table 1 be visualized in a bar chart, but also it can be presented in a radar chart. A radar chart has several other names,

such as spider chart, web chart, polar chart or star plots. The main characteristic of a radar chart is that its shape resembles a spider nest.

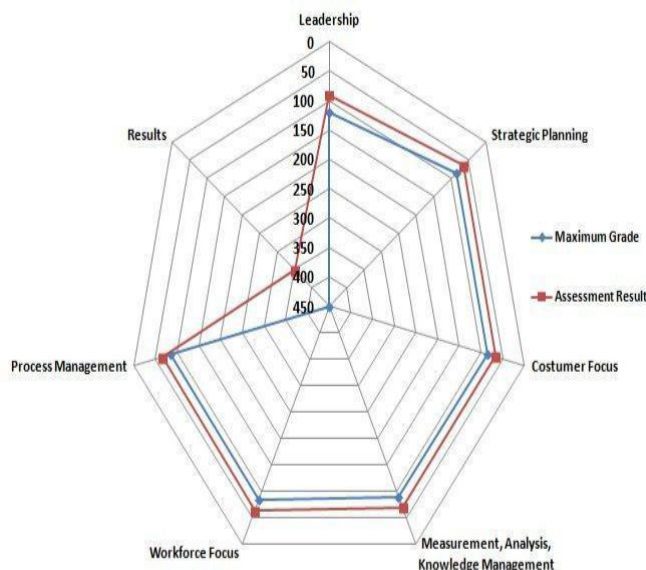


Chart 2. Radar Chart for Malcolm Baldrige Performance Measurement Result at Muhammadiyah Gresik Hospital in June 2012

A radar chart is appropriate to present multivariate ratio data. The radar chart will form a square with several angles according to the number of criteria. Chart 2 shows a radar chart forms a heptagon because the data measured with the Malcolm Baldrige method involve seven criteria. The space between the center and the vertex of the radar chart illustrates the value of each criterion.

process management, workforce focus, measurement, analysis, and knowledge management, and strategic planning criteria is not too far, and the space looks almost the same.

The gap between units is 50 is chosen as a scale between layers of the radar chart for easier observation and interpretation. The maximum value is set at 450 because it is the highest maximum value (on result) compared to all other criteria.

Pie Chart

In Chart 2, the largest space between two vertices in the red and blue heptagon is the vertices of the results. This fact shows that the results have not met expectations. Therefore, it is necessary to improve various aspects of the results, so that the next assessments can reach the maximum value.

The performance assessment in the inpatient unit of Muhammadiyah Gresik Hospital was done to 41 respondents who worked in the delivery room, pediatric room, neonatal room, and adult room. The performance assessment is in ordinal data scale with a range of choices, such as "unsatisfied," "slightly satisfied," "satisfied," and "very satisfied." Details of the assessment are shown in Table 2.

The second largest space between two vertices can be found in the leadership criteria. The smallest space between two vertices belongs to the customer focus criteria since the vertices of the red and blue lines almost coincide. Meanwhile, the space among the vertices of the

Pie and donut charts are prevalent in communicating data especially when they are used as part of information graphics (Skau, 2016) . The performance assessment results in Table 2 can be visualized in a pie chart as shown in Chart 3.

One visual signal that a graphic designer can use to communicate the intended message is the slice of a pie chart (Burns, 2016). In Chart 3, the same color spectrum shows the assessment results from the same room. Whereas, the grey spectrum is for the adult room, and the blue spectrum is for the pediatric room. Red spectrum is for the delivery room, and the purple spectrum is for the neonatal room. The color gradations (dark colors and light colors) show different

levels of results. The color spectrum provides an understandable visualization for the performance in each room and the comparison of the assessment levels.

Table 2. Results Criteria in Malcolm Baldrige Performance Measurement at Inpatient Unit Muhammadiyah Gresik Hospital in June 2012

Unit	Assessment Result				Total
	UnSatis Fied	Slightly Satis fied	Satisfied	Very Satis fied	
Adult Room	0	0	5	2	7
Pediatric Room	0	1	10	0	11
Delivery Room	0	0	14	1	15
Neonatal Room	0	0	3	5	8

Specifically for the results criteria, the blue section of the pie chart suggests the lowest performance score that belongs to the pediatric room. This fact indicates that there are still a small number of respondents who gave slightly satisfying ratings (3% of the total respondents) and no respondents who gave very satisfying ratings. Therefore, it is necessary to identify why a large number of workers in the pediatric room are still not satisfied with aspects of the results. Thus, conducting an interview or FGD (Focus Group Discussion) is important to gain more information about it, and any suggestions from the workers in the pediatric room are needed to improve the aspects of the results .

In the delivery room, almost all respondents gave satisfying ratings (34% of all respondents), and a small number of respondents gave very satisfying ratings (3% of all respondents). The results are better than those given by the respondents in the pediatric room. However, it is necessary to improve the performance assessment from satisfying category to a very satisfying category.

In the adult room, most respondents gave satisfying ratings (12% of the total respondents), and the rest felt very satisfied (5% of the total respondents). Like the assessment results in the delivery room, it is necessary to be improved.

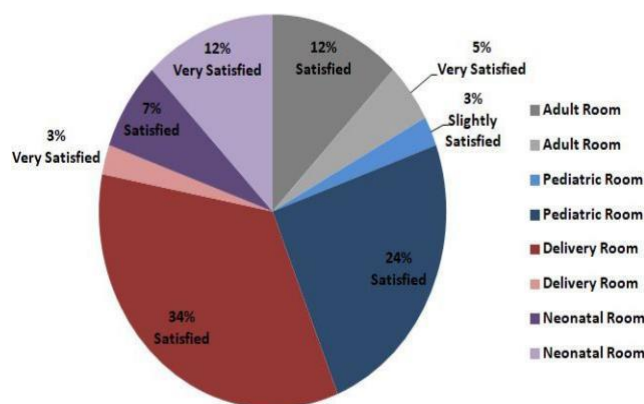


Chart 3. Pie Chart for Results Criteria in Malcolm Baldrige Performance Measurement at Inpatient Unit Muhammadiyah Gresik Hospital in June 2012

The best assessment belongs to the neonatal room, where most respondents gave very satisfying ratings (12% of the total respondents), and the rest gave satisfying ratings (7% of the total respondents). The unit should maintain this performance.

The overall assessment (in all rooms) can be seen in Chart 3. The majority of respondents gave felt satisfied (77% of the total respondents), and only 20% of the total respondents gave a very satisfying rating. 3% of all respondents felt slightly satisfied.

DISCUSSION

Malcolm Baldrige measurement consists of several criteria, including leadership, strategic planning, customer focus, measurement, analysis, and knowledge management, workforce focus, management process, and results.

Each criterion consists of several aspects to be measured for performance assessment. These aspects include senior leadership, mastery, and social responsibility for leadership criteria, strategy development and strategy implementation for strategic planning criteria, customer opinion and loyalty for customer focus criteria. Meanwhile, management of information, knowledge and information technology is a part of the measurement, analysis, and knowledge management criteria. Besides, human resources and loyalty are for workforce focus criteria, and work system and process are included in process management criteria. For the result, there are health service outcomes and processes, customer focus, human resources, leadership and mastery, and market and financial.

Malcolm Baldrige criteria are different from other measurement criteria, such as ISO which emphasizes the organizational and managerial process. Malcolm Baldrige criteria assess both process and organizational performance. The Malcolm Baldrige assessment will show a small value if the organizational performance is not good through the process in the organization runs very well (Hidayat, 2015).

The Malcolm Baldrige criteria aim to improve organizational practices and performance to be managing tools and planning guideline for understanding and managing performance.. The assessment results can also be used as learning and sharing tools among organizations regarding the best organizational practices.

Malcolm Baldrige method was used because it had several advantages. For example, it can define the organizational and operational processes so that the performance can be clearly measured. In addition to that, the method can look at the requirements for achieving the excellence of organizational performance. For instance, the application of procedures, tools, or techniques can be applied to a large or small organization in a national or international scale (Gasperz, 2011).

The performance assessment using Malcolm Baldrige was conducted in each unit, and the researcher calculated the overall score from all units. Every criterion in each unit is in a percentage multiplied by the maximum value for overall criteria. Furthermore, the results of the multiplication are added to get the final score. This score can be compared with the maximum score of Malcolm Baldrige amounted to 1000.

Visualizing the data in tables as shown in table makes readers difficult to directly capture the information. To understand the content of the table, readers must put attention on the entire contents carefully. Furthermore, readers sometimes cannot imagine the data in numbers unless the data are visualized. This is in line with the research conducted by Voronin (2018) who stated that a data visualization is a powerful tool for enhancing human perception in information analysis.

There are four types of data scales, namely data nominal, ordinal, interval, and ratio. Each of the data scales is visualized differently. For nominal and ordinal data scales, the most commonly used chart is a pie chart. For interval data scale, a line chart is commonly used since it is mainly related to time. For a ratio data scale, bar charts and radar charts are utilized.

A chart is used to communicate a particular set of quantities that can be visually compared (Diaz, 2018). In this article, the data are visualized in a bar chart, radar chart, and pie chart. Various charts are used as tools for visualizing data in numbers so that it lets readers to easily capture information at once. People use types of charts because they are simple and usable (Dai, 2018).

Charts contain structured information, such as chart titles, legends and axis labels (Dai, 2018). The title of the bar chart in Chart 1 explains the information. Also, the Y-axis provides information on the criteria of Malcolm Baldrige, and the X-axis renders the assessment results.

Bar Chart

A bar chart is chosen because the results of the Malcolm Baldrige assessment have ratio data scale, indicated by absolute zero. If designing bar charts, the various effects will be a part of the design influence the judgment of the bars' values (Diaz, 2018).

Another reason for using a bar chart is easy-making. A bar chart also provides clear and simple data interpretation since it is a common visual communication tool (Diaz, 2018). Bar charts can be made by using various software, such as Microsoft Office Excel and Statistical Product and Service Solutions (SPSS). Steps for creating a bar chart are done by inputting data, clicking on insert menu, clicking on chart menu, and clicking on bar chart menu on the Microsoft Office Excel menu. Whereas, in the SPSS software, a bar chart can be created by inputting data, clicking on menu graph, clicking on chart builder menu, and selecting an appropriate type of chart.

In bar chart, the blue line at the bottom and the red line at the top are overlapping. In the right side of the chart, the blue line shows the maximum score while the red line shows the assessment scores. The chart can be explained by comparing the last point on the red line and the blue line. The greater the difference is, the greater the gap is between the assessment scores and the maximum score in particular categories.

Radar Chart

Unlike the bar chart that displays the individual assessment of each criterion, the radar chart can show the assessment of seven criteria holistically, interconnected with each other. The radar chart presents multidimensional metrics in a practical format for analysis whereas most comparative data are currently communicated in the form of tabular data or other graphical formats, such as box and whisker plots (Thaker, 2016). The data visualization in Table 1 uses a radar chart like in Chart 2.

The radar chart can be arranged normally (the value 0 is in the center point, and it gets higher when approaching the vertex and finally reaching the maximum score in the outermost layer of the radar chart). It also can be arranged "reversely" (the maximum value is in the center point whereas the value 0 is in the outermost layer of the radar chart). In Chart 2, a "reversed" radar chart is presented because it looks clearer than a normal radar chart. The selection of a radar chart can be adjusted to the data

composition. A radar chart can be an alternative for data visualization because it is easy to make and understand for data interpretation. A radar chart can be created in Microsoft Office Excel software by inputting data, clicking on insert menu, clicking on chart menu, clicking on other charts menu, and clicking radar menu.

The radar chart consists of lines that connect one criterion to another. In radar chart, there are two lines; the blue line and the red line. In the right side of the chart, the blue line shows the maximum value while the red line shows the assessment results. Both the blue line and the red line form a heptagon in the radar chart. The organizational performance will be better if the red heptagon increasingly coincides with the blue heptagon. In the other words, the more coinciding each vertex on the red heptagon with that on the blue heptagon is, the better the performance is.

If a radar chart is in a normal shape, the red and blue lines will still appear. The difference is that the red line (the assessment results) is inside the blue line (maximum value). This chart pattern can be explained similarly to the inverse radar chart. The more coinciding the red heptagon with the blue heptagon is, the better the performance assessment is.

Pie Chart

In assessing performance with the Malcolm Baldrige method, researchers sometimes need to collect the performance assessment in various work units of an organization.

The performance assessment from each unit gives valuable information for a manager to develop the organizational performance. Having such information, a manager can find out the workforce opinions and satisfaction based on a variety of criteria measured. Furthermore, institutions can carry out various interventions to improve some aspects that seem bad.

Unlike the assessment and the maximum values in the previous discussion, the performance assessment data from each room provide an ordinal data scale. They will be not suitable if they are visualized in a bar chart and radar chart. For an ordinal data scale, a pie chart can be used. The difference between a bar chart and a pie chart is that a bar chart is used for quantitative analysis while a pie graph is for qualitative analysis (Stewart, 2018).

A pie chart can be an alternative to data visualization because it is easy to create and provide understandable data interpretation. A

radar chart can be created in Microsoft Office Excel software by inputting data, clicking on the insert menu, then on chart menu, and the pie chart menu. A pie chart also can be created in SPSS software by inputting data, clicking on menu graph and chart builder, then select an appropriate type of chart.

For data visualization in the form of a pie chart, it is necessary to draw a pie chart for each criterion measured. That is how all moderately good aspects of the organization can be evaluated from each pie chart. Organizational performance is an important thing to consider in achieving organizational goals. Every institution providing products or services must carry out performance assessment for the evaluation of organization activities. One of the health care industries which often carries out performance assessment is a hospital because it is very important to maintain the quality of services, for example ensuring patient safety.

CONCLUSION

There are various methods of performance assessment, one of which is the Malcolm Baldrige method. This method assesses an organization's performance through seven criteria, such as leadership, strategic planning, customer focus, measurement, analysis, and knowledge management, workforce focus, process management, and results.

Performance Measurement using the Malcolm Baldrige Method at Muhammadiyah Gresik Hospital in June 2012 showed the value of 89.57 as the score in leadership criteria, 64.86 as the score in strategic planning criteria, 67.48 as the score in customer focus criteria, 70.25 as the score in measurement, analysis, and knowledge management criteria, 64.66 as the score in workforce focus criteria, 65.76 as the score in process management criteria, and 350.79 as the score in result criteria. This assessment showed an overall score of 773.39 considered satisfying.

Nowadays, the Malcolm Baldrige method has been widely used for assessing the performance of various institutions. However, the results of the assessment are usually presented as "raw data" in the table. This presentation will make readers hard to capture information at one point. Therefore, the visualization of information in tables can be converted into charts or diagrams to make readers understand and interpret information easily.

There are various charts that can be used according to the data scale. For example, the comparison between the scores of performance assessment and the maximum score of the Malcolm Baldrige method can be presented in bar charts and radar charts. Both charts are appropriate to visualize ratio data.

Bar charts can provide visualization on the comparison between the performance assessment and the maximum value of the Malcolm Baldrige method on each criterion, but a radar chart can present and integrate holistic information among criteria.

From the Malcolm Baldrige method, ordinal data scales, such as the level of performance in each unit are evaluated. For an ordinal data scale, a pie chart is a proper type of chart to use. This chart provides a visualization of performance levels in each unit through color differences.

It is expected that this study gives information about visualizing the data from Malcolm Baldrige method by using various charts to improve an organization's performance.

RECOMMENDATION

Based on the performance assessment, the largest gap between the maximum score and the assessment score is in the results criteria. The difference between the assessment score and the maximum score is 99.21. Therefore, Muhammadiyah Gresik Hospital should pay attention to the results achieved, not only to the processes. Results that need to be noticed include health service processes and outcomes, customer focus results, human resources focus, leadership and mastery results, and market and financial results. Muhammadiyah Gresik Hospital needs to conduct a review of employee satisfaction, customer satisfaction, hospital branding, financial benefits, and think about various efforts to improve these results.

The second largest gap belongs to leadership criteria. The difference between the assessment score and the maximum value is 30.43. Leadership aspect have a big influence to the organization, for example on decision making. It also can influence employee satisfaction. Therefore, Muhammadiyah Gresik Hospital needs to pay attention to leadership aspect in the organization. Two efforts that can be done is holding leadership training and holding regular meetings between leaders to equalize perceptions.

Meanwhile, the difference between the assessment score and the maximum score among other criteria are almost the same. Therefore, Muhammadiyah Gresik Hospital needs to maintain or even improve its performance on these aspects.

The smallest gap can be found in the customer focus criteria. The difference between the assessment score and the maximum value is 17.52. Overall, the customer focus criteria is the best performance. It is proven that Muhammadiyah Gresik Hospital can foster good relations with customers, identify potential customers and market segments, gather information on customer satisfaction levels, and respond to customer complaints. Therefore, Muhammadiyah Gresik Hospital needs to maintain and improve their performance in terms of customer focus.

Health care facilities which use the Malcolm Baldrige criteria to assess institutional performance should not only present data in table form, but in more visually method through charts. This study still requires further research in the form of other types of graphics that might be used, as well as the effectiveness of each type of graph for data interpretation.

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