

Performance Assessment Based on Malcolm Baldrige Model Criteria in The Automotive Industry: A Case Study

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Article Info

Abstract

Article history:

Received
29 October 2021

Accepted
18 November 2021

Keywords:

Malcolm Baldrige,
Performance Assessment,
Performance Excellence,
Improvement
Opportunities

The performance of a company is supported by the performance of workers from various departments and levels of work in the company. Performance measurement is needed to evaluate the condition of the company. Bakom Metal Industry is an automotive company that produces pistons. BMI is an OEM company that has become a supplier to several large companies such as Astra and Daihatsu. One of the departments that play an essential role in increasing the company's sales is the Production Department. Therefore, this study aims to assess the current performance of the production department and provide improvement strategies to achieve performance excellence and quality using the Malcolm Baldrige method. The assessment in this study uses two methods, qualitative and quantitative methods. The evaluation result based on the interview got a value of 618.5, and based on the questionnaire got a weight of 734.79. Based on the outcome of the two methods, it indicates that the production department has shown good performance, which is included in the excellent category as an industry leader. The assessment in the production department will provide the strengths and opportunities for evaluation to improve the performance and to be able to compete with competitors.

1. INTRODUCTION

Today's industrial era evolves very rapidly, where each company is required to do a better job and increase companies' performance to achieve the organization's goals and compete with other competitors. Performance measurement is needed so that the company knows its position so that improvements are made and give an impact on increasing the company's productivity (Hasyim, 2018). Whether, engaged in services or non-services, each company requires a strategy to put the company in the best position, compete, and continue to optimize all potential resources (Sitepu, 2005). The automotive sector has a big impact on the society and environment (Nazir & Shavarebi, 2019). It makes competition in the automotive sector becomes tighter. To satisfy consumer needs, the company has to make continuous improvements. Consumers have become more selective in choosing products that suit their needs.

To compete with other competitors and meet consumer expectations of the product, the companies need to do a performance assessment. Company performance is a result of a set of business

processes at the cost of various resources (Moerdiyanto, 2010). Production department is one of the most critical parts of the company to produce an excellent product. To measure the production department performance is believed that inspecting all the processes of the company that can increase the chances for success (Hwang et al, 2020).

The advantages of a performance assessment system include making better decisions, higher employee satisfaction and motivation, more substantial commitment to the company to make the company more effective (Steensma & Vesser, 2007). The production department must have the right strategies to be implemented following the condition of the company. The proper process leads the company to better performance and achieves performance excellence.

Bakom Metal Industry is an automotive company that produces pistons. BMI is an OEM company that has become a supplier to several large companies such as Astra and Daihatsu. This study focused on the Production department at Bakom Metal Industry. Production department at Bakom Metal Industry doesn't have a specific method for performance assessment. According to Key

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Performance Indicators (KPI) in the production department that consists of two indicators, production output, and defect rate, the data shows that the production department has not reached the company target. Therefore, it is necessary to improve and determine a suitable strategy for the current situation. Production department performance is still considered insufficient to compete with other competitors. This assessment aims to determine the recent version in the production department and evaluate the current level of performance. According to Sadikin (2009), the purpose of using *Baldrige Excellence Framework*, among others: (1) Educate the organization on the principles of performance excellence, as it can help improve communication by making joint assessments and language improvement, (2) Conducting organizational self-assessments to help identify advantages and opportunities for improvement and develop corrective action plans, and (3) Enter a national, local or regional award, where each applicant will receive a detailed feedback report based on the evaluation that carried out by a panel of trained and recognized expert.

Malcolm Baldrige Criteria for Performance Excellence (MBCfPE) is a state of mind guidance for companies to achieve performance excellence (Haris, 2005). It is part of the Malcolm Baldrige National Quality Award assessment criteria. The advantage of the Malcolm Baldrige method is using indicators that indicate the cause-and-effect relationship of each category. It can identify strengths and opportunities for improvement (Rahayu et al, 2019). Where focuses on performance excellence and other factors that become potential strategies to compete with competitors and become a capable company.

An appropriate model for managing performance in automotive industry should be flexible, adaptable and responsive to changes in the automotive industry. There is a need for strategic determinants to improve quality and performance was the crux of this paper. This paper expected to serve as a practical implementation of strategic determinants of quality in the automotive industry, and specifically improving the performance and to develop performance excellence strategies.

2. METHODOLOGY

2.1 Data Collection

The data used during the research are as follows:

- **Primary Data**
Original data collected for a specific research goal (Hox & Boeije, 2005). Data was obtained directly by researchers from the company itself. At this stage, visits and direct observations were made to PT. BMI and

discussion on performance appraisal that has been carried out by management. The primary data contained in this study are interview data and questionnaire results to several respondents in the production department. Based on the results of discussions and observations in the previous stage, a questionnaire consisting of 40 questions based on 7 categories of criteria and sub-criteria.

- **Secondary Data**

Data originally collected for a different purpose and reused for another research question (Hox & Boeije, 2005). Data obtained from books, research journals, lecture material, and historical company data that support research. Secondary data used in this study consisted of Seven Criteria of Malcolm Baldrige, KPI production department, consumer feedback data, and sales data in the production department.

2.2 Malcolm Baldrige Criteria for Performance Excellence Methods

Excellence Methods

The steps in this research are as follows:

- Determine the criteria and sub-criteria following company conditions in determining of strategies and opportunities for improvement. The determination of the requirements is based on Malcolm Baldrige Criteria for Performance Excellence (NIST, 2019).

Table 1.
Criteria and Sub-Criteria Used

Criteria	Sub-Criteria	Max. Value
Leadership		120
	• Senior Leadership	70
	• Governance and Societal Contribution	50
Strategy Planning		85
	• Strategy Development	40
	• Strategy Implementation	45
Consumer and Market Focus		85
	• Consumer Expectation	45
	• Consumer Engagement	40
Measurement, Analysis, and Knowledge Management		90
	• Measurement, Analysis, and Improvement of Organizational	45
	• Performance Knowledge Management	45

Table 1.(Continued)
Criteria and Sub-Criteria Used

Criteria	Sub-Criteria	Max. Value
Workforce Focus		85
	• Workforce Environment	40
	• Workforce Engagement	45
Operations Focus		85
	• Work System Design	45
	• Work Process Management and Improvement	40
Result		450
	• Product and Process Result	120
	• Customer Result	90
	• Workforce Result	80
	• Leadership and Governance Results	80
	• Financial, Market, and Strategy Results	80

- Ensure the question that includes seven categories of Malcolm Baldrige is appropriate according to company condition, by conducting interviews with the manager in the production department.
- Conduct an assessment of the interview result based on the Malcolm Baldrige reference.
- The scoring is determined based on guidelines scoring for the process category (Approach, Deployment, Learning, and Integration) and the results (Level, Trends, Comparisons, and Integrations). The total score is calculated using the formula:

$$\text{Criteria Item Score} = \text{Weight of Item Criteria} \times \text{Points of Item Criteria} \quad (1)$$

$$\text{Criteria Score} = \sum \text{Criteria Item Score} \quad (2)$$

$$\text{Total Score} = \sum \text{Criteria Score} \quad (3)$$

- Validity tests and reliability tests using SPSS software and calculated data points from the questionnaire based on the Malcolm Baldrige Criteria.
- Calculated questionnaire assessment score, which consists of three steps using the formula:

$$\text{Question Item Value} = \frac{\sum ni wi}{N \times W} \dots \dots \dots (1)$$

$$\text{Score} = \frac{\sum ni wi}{N \times W} \times \text{Item Category Max. Score} \dots \dots \dots (2)$$

$$\text{Percentage Value} = \frac{\text{Total Score Sub-category (A+B)}}{\text{Max.Value Sub-category (A+B)}} \times 100\% \dots (3)$$

- Determination of strategy, improvement, and company classification based on the points obtained (IQAF, 2011).

3. RESULTS AND DISCUSSION

This study focuses on the production department of Bakom Metal Industri. KPI used in the production department consists of two indicators, which is shown in table 2.

Table 2.
KPI Production Department of PT. Bakom Metal Industri in 2018

KPI	Measurement	Target	Actual
Production Output	Pcs	73.831	66.308
Defect Rate	%	0.64	0.51

There are seven criteria and 18 sub-criteria which the production department of Bakom Metal Industri. The criteria and sub-criteria used can be seen in Table 1. The results of the interview assessment for each category can be seen in Table 3, and the questionnaire assessment is shown in Table 4.

The categories that have the lowest item value are a weakness that will be prioritized for improvement. Meanwhile, the highest value will be the excellence criteria for advancement. The score obtained can describe the weakness and strengths of the production department based on the requirements and overall to be considered in developing strategies in achieving company goals. The overall score of the performance assessment will be compared with scoring classification and Baldrige Assessment to find out where the position level of the production department performance. From the result of the questionnaire assessment in Table 4, the production department gets a total score of 734.79. From the questionnaire assessment, the production department score included an excellence classification with the company's global performance as an industry leader.

Total Score 1000 734.79

Both interview and the questionnaire assessment show that the production department of Bakom Metal Industry's global performance as an industry leader means it has already achieved good performance. But to become the leader of this industry, the production department must implement continuous improvement based on strength and opportunities for improvement

Based on the description of the facts through the performance results on each of the process and development criteria, it can be seen in table 5 that Strength and Opportunity for Improvement (OFI) for the production department.

Table 3.
The Result of the Interview Assessment

Criteria	Sub-Criteria	Max. Value	Percentage Value	Score
Leadership		120		
	Senior Leadership	70	65%	5.5
	Governance and Societal Contribution	50	65%	32.5
Strategy Planning		85		
	Strategy Development	40	60%	24
	Strategy Implementation	45	50%	22.5
Consumer and Market Focus		85		
	Consumer Expectation	45	75%	33.75
	Consumer Engagement	40	55%	22
Measurement, Analysis, and Knowledge Management		90		
	Measurement, Analysis, and Improvement of Organizational Performance Knowledge Management	45	75%	33.75
Workforce Focus		85		
	Workforce Environment	40	80%	32
	Workforce Engagement	45	60%	27
Operations Focus		85		
	Work System Design	45	70%	31.5
	Work Process Management and Improvement	40	70%	28
Result		450	75%	90
	Product and Process Result	120		
	Customer Result	90	75%	67.5
	Workforce Result	80	75%	60
	Leadership and Governance Results	80	70%	56
	Financial, Market and Strategy Results	80	55%	44
Total Score		1000		681.5

Table 4.
The Result of the Questionnaire Assessment

Criteria	Sub-Criteria	Max. Value	Percentage Value	Score
Leadership		120		
	Senior Leadership	70	74.13%	53.29
	Governance and Societal Contribution	50		35.67
Strategy Planning		85		
	Strategy Development	40	72.86%	27.73
	Strategy Implementation	45		34.20
Consumer and Market Focus		85		
	Consumer Expectation	45	67.14%	32.4
	Consumer Engagement	40		24.67
Measurement, Analysis, and Knowledge Management		90		
	Measurement, Analysis, and Improvement of Organizational Performance Knowledge Management	45	70.50%	32.4
		45		31.05
Workforce Focus		85		
	Workforce Environment	40	78.37%	31.07
	Workforce Engagement	45		35.55
Operations Focus		85		
	Work System Design	45	72.12%	33.3
	Work Process Management and Improvement	40		28
Result		450		
	Product and Process Result	120	74.55%	88.4
	Customer Result	90		68.4
	Workforce Result	80		61.3
	Leadership and Governance Results	80		66.1
	Financial, Market and Strategy Results	80		51.2
Total Score		1000		734.79

Table 5.
Strength and Opportunities for Improvement

Criteria	Strength	Opportunities for Improvement
Leadership	Have a clear vision, mission and values so each work unit knows the direction and goals of the company. Good communication between leaders and employees has been established effectively.	The production department needs to provide training on the application of the vision/mission so that it can be fully known and understood by employees.
Strategy Planning	There is a budget plan for each year and already has an activity plan management.	Provide input on new product innovations to the research and development department. Strategic planning has not been fully implemented systematically.
Consumer and Market Focus	Has identified customers feedback as an input to improve the performance. Develop intensive communication with consumers.	Need to have the consumer satisfaction data of production department for each year. Need to improve the quality of production to compete with other competitors.
Measurement, Analysis, and Knowledge Management	Already using the SAP information system in managing organizational data and information. Using ISO in quality management, worker safety and health as a reference in setting policies.	Performance assessment of production department should not only be based on the financial and sales factors but consider other factors. An evaluation already exists, but its implementation is not effective enough.
Workforce Focus	Have good resource development through training, promotion, and reward.	Job analysis and effectiveness of human resources have not been carried out consistent and integrated.
Operations Focus	The work system of is structured and clear. Each work process is carried out in accordance with the applicable SOP.	The work process effectiveness system has not been running well, so that improvement need to be made in order to reduce production costs.
Result	The results of customer feedback indicate that they quite satisfied with the company's performances.	The company's financial results are not given so that cannot conduct an analysis of financial performance. The production target has not been achieved.

4. CONCLUSION

In general, the production department's performance is reasonably good, where interview assessment scores 681.5 and questionnaire assessment gets a total score of 734.79. The total score of all categories when compared to the Baldrige Assessment, the production department is at the Industry Leader level where overall organizational performance begins to enter the initial type of excellent. The approach and deployment factors are systematic, responsive to multiple criteria requirements, organizational learning including innovation and sharing of best practices is a management tool and an integrated approach to the needs of production department needs of the future.

Based on the research results, it shows that each category has strengths and opportunities for improvement following the current condition of the production department. The opportunities for improvement can be evaluated to achieve the right strategy to compete with other competitors. One of the opportunities for improvement that the production department can make to develop the sales is expanding the product distribution area and to maintain products quality, must use quality raw material.

The performance for the result category is considered insufficient, where the production department needs to reduce production costs so it doesn't exceed the company's budget. The strategy obtained in this study is expected to help the production department face the current industrial competition to achieve performance excellence.

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