

# Level of Implementation Performance Measurement with Integrated Balanced Scorecard Method and Root Cause Analysis in Small and Medium Industry

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**Abstract---** The purpose of this study is to determine the level of application of performance measurement in small and medium industries. Research using a qualitative method based on the Balanced Scorecard concept approach and Root Cause Analysis (RCA). The balanced scorecard is a method used to measure the performance of an organization based on four perspectives, namely financial, consumer satisfaction, growth and learning and business processes. While RCA is a method used to determine the cause of the problem. The result of this research is that the level of application of the highest performance measurement is the resource variable on the attribute of knowledge about the customer service with the value of 3.46, while the implementation of the lowest performance measurement is on the innovation and learning variables on the organizational structure attributes and the system is updated based on the environmental change with the value of 2.64. Based on the results, it can be concluded that the implementation of performance measurement in the SMI at a reasonable level with an average of 2.94 and can be said as well. The contribution of this research is to give information and description about performance measurement in small and medium industries, especially in Sidoarjo regency.

**Keywords---** Balanced Scorecard, Performance Measurement, Root Cause Analysis, Small and Medium Industry

## I. Introduction

The contribution of Small and Medium Enterprises (SMEs) and the Small and Medium Industry (IKM) in Indonesia is very strong. It can be seen that the contribution to Gross Domestic Revenue (GDP) from 2015 to 2016 increased by 7.44%. Small Medium Enterprises (SMEs) in Indonesia has an important role for its great contribution to the Indonesian economy [1]. SME contribute greatly to the development of any nation and account for a large share of new jobs in countries which have demonstrated a strong employment record and are known as a primary driver for GDP [2]. So also with small and medium industries (SMI), that SMI is a strong foundation for the improvement of the economic sector in Indonesia. However, SMIs in Indonesia have not yet measured company performance, but some also measure the company's performance from the level of profit gained and the number of complaints from consumers. So one way to be able to retain consumers is to maintain quality. To know the quality level is done quality control. Quality control is a part of the production process that is very influential in improving product quality [3]. However, SMIs in Indonesia have not yet measured company performance, but some also measure the company's performance from the level of profit gained and the number of complaints from consumers. So one way to be able to retain consumers is to maintain quality. To know the quality level is done quality control. A performance measurement system plays a key role in evaluating the strategy of an organization, but many managers agree that their evaluation system does not adequately fulfill this function [4]. One method used to measure the performance of a company or organization is a balanced scorecard method. The balanced scorecard (BSC) measurement framework view of classifying and relating performance measures are based on four perspectives namely; financial perspectives, customer perspectives, internal process perspective and innovation and learning and growth perspective [5]. Performance management system energizes people through goals and objective evaluation [6]. Balanced Scorecard is a strategy management system that helps managers to translate organization strategy into operational objective and implement it [7]. The otherwise, that implementation of Balanced Scorecard

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ensure that strategy gets communicated to all the employees suitably to facilitate implementation by them [7]. Thus, the purpose of this study is to determine the level of SMI performance measurement by using the balanced scorecard method. Having obtained the lowest value that contributes to the level of company performance, it will look for the cause of the problem resulting in a low level of SMI performance. To find out the cause of the problem using cause analysis. For identify the problem using cause analysis (RCA) [1]. To find the cause of the highest negative gap value used cause analysis [8]. Based on the problem that SMI not yet measurement performance of their business, thus the research have an objective to determine the level of application of performance measurement in small and medium industries.

## II. Method

The method used is a qualitative method with integrated of the balanced scorecard (BSC) and Root Cause Analysis (RCA) approaches. The concept of BSC is presented as a management tool that aims to provide a comprehensive and integrated vision of organization performance under the financial perspective and aimed to measure the effectiveness of competitive factors in future performance [9]. The BSC approach addresses some of the weaknesses and vagueness of previous management approaches [10]. The BSC indicator system will enable continuous control over the meeting of strategic goals through fulfilling performance indicator[11]. Furthermore, the balanced scorecard is a framework consisting of a comprehensive set of performance measures [12]. The Balanced Scorecard concept requires the process of translating strategy into action and turning the company's strategic vision into clear and understandable objectives based on those perspectives [13]. The Balanced Scorecard is a performance measurement and strategic management system which appears suitable for use by all types and sizes of business [14]. With stabling an entrepreneurial mindset is important to sustain the competitiveness of economic organization and the socioeconomic lifestyle of the population through value and job creation [15]. There are several steps of this method, namely: (1). Data collected by spread of questionnaire to SMI, with random sampling in deriving a sample of 150 respondent from Small and Medium Industry in Sidoarjo Regency. In the questionnaire has a seven variable, and these are ability, resources, environment, strategy, process, measurement, and analysis, innovation and learning. In this questionnaire using likert scale from 1 until 4 point; (3). Validation and Reliability testing, the purposes that each indicators valid and reliability, so the data can used for the next analysis; (4). Measurement of the importance level and implementation level to known of performance of their business.

## Data Collected

Before spreading the questionnaire, first, develop an instrument consisting of several indicators and variables. There are 7 (seven) variables and 38 (thirty-eight) indicators. Respondents are small and medium industry actors located in Sidoarjo regency.

Table 1. Indicators each variable.

No	Variable	Indicator	
1	Ability	X1.1	Effective Human Resources and Resource Management
		X1.2	Flexible in adapting to new industries and market trends
		X1.3	Managerial system in improving adaptability to resources and environmental change
2	Resources	X2.1	Leadership experience in managing the company
		X2.2	Knowledge of product/service development
		X2.3	Knowledge of marketing
		X2.4	Knowledge of customer service
		X2.5	Knowledge in managing the company
3	Environment	X3.1	Consumer groups and market segments are identified
		X3.2	Understanding and learning about consumers, anticipating consumer needs and developing business processes
		X3.3	Measuring customer satisfaction periodically and the results are used for improvement
		X3.4	The company knows its competitors and cares about its position in the market
		X3.5	The company collects competitor information
4	Strategy	X4.1	The company has a strategy
		X4.2	Strategies are developed, reviewed and updated periodically based on information

			from consumer, environment and performance measurement
5	Process	X5.1	The design, production, and delivery processes are well coordinated to ensure no problems and time are required
		X5.2	Production and delivery processes are continuously evaluated and upgraded to achieve the best performance
		X5.3	Supporting production and delivery processes (for example finance and accounting departments, IT, legality, risk management, etc.) support well.
		X5.4	The supplier's relationship with the company in the production process is well managed to ensure the achievement of the objectives.
6	Measurement and analysis	X6.1	Key financial and nonfinancial information and data are well managed and used to support the achievement of corporate objectives
		X6.2	Information on competitors, environments, and technologies, etc., is collected and analyzed to improve performance and all activities
		X6.3	Employees and departments know how to measure their performance. The results can be used to guide the activities and improve performance.
		X6.3	Employees know the duties and goals and their contribution to achieving company goals and running strategy.
7	Innovation and Learning	X7.1	Investment in new product development
		X7.2	Efficiency of a new product development process
		X7.3	The company provides training

### Validation and Reliability Testing

After the questionnaire is spread to the respondent, the next step is to input the data. The result of data input then tested validation and reliability. Based on validation and reliability testing for importance level an implementing level, all indicators are valid and reliable. So, the data using the next analysis. The result of validation and reliability testing shown in Table 1 these are validation testing for importance level, table 2 these are for implementation level, and table 3 these are reliability testing result both of importance level and implementation level.

Table 1 Validation Testing for Importance Level

Variable	Indicators	Corrected Item-Total Correlation	Minimum Value	Valid/Not Valid
Ability	X1.1	.721	.3	Valid
	X1.2	.517	.3	Valid
	X1.3	.667	.3	Valid
	X1.4	.631	.3	Valid
Resources	X2.1	.428	.3	Valid
	X2.2	.653	.3	Valid
	X2.3	.640	.3	Valid
	X2.4	.652	.3	Valid
	X2.5	.588	.3	Valid
	X2.6	.711	.3	Valid
	X2.7	.681	.3	Valid
	X2.8	.502	.3	Valid
	X2.9	.515	.3	Valid
Environment	X3.1	.681	.3	Valid
	X3.2	.637	.3	Valid
	X3.3	.592	.3	Valid
	X3.4	.541	.3	Valid
	X3.5	.490	.3	Valid
Strategy	X4.1	.762	.3	Valid
	X4.2	.688	.3	Valid

	X4.3	.530	.3	Valid
	X4.4	.605	.3	Valid
	X4.5	.681	.3	Valid
	X4.6	.748	.3	Valid
Process	X5.1	.606	.3	Valid
	X5.2	.624	.3	Valid
	X5.3	.751	.3	Valid
	X5.4	.572	.3	Valid
	X5.5	.662	.3	Valid
Measurement	X6.1	.673	.3	Valid
	X6.2	.736	.3	Valid
	X6.3	.581	.3	Valid
	X6.4	.632	.3	Valid
Innovation and Learning	X7.1	.468	.3	Valid
	X7.2	.730	.3	Valid
	X7.3	.512	.3	Valid
	X7.4	.596	.3	Valid
	X7.5	.553	.3	Valid

Table 2 Validation Testing for Implementation Level

Variable	Indicators	Corrected Item-Total Correlation	Minimum Value	Valid/Not Valid
Ability	X1.1	.703	.3	Valid
	X1.2	.511	.3	Valid
	X1.3	.645	.3	Valid
	X1.4	.656	.3	Valid
Resources	X2.1	.616	.3	Valid
	X2.2	.405	.3	Valid
	X2.3	.501	.3	Valid
	X2.4	.335	.3	Valid
	X2.5	.341	.3	Valid
	X2.6	.596	.3	Valid
	X2.7	.586	.3	Valid
	X2.8	.493	.3	Valid
	X2.9	.560	.3	Valid
Environment	X3.1	.460	.3	Valid
	X3.2	.609	.3	Valid
	X3.3	.548	.3	Valid
	X3.4	.493	.3	Valid
	X3.5	.656	.3	Valid
Strategy	X4.1	.689	.3	Valid
	X4.2	.658	.3	Valid
	X4.3	.335	.3	Valid
	X4.4	.734	.3	Valid
	X4.5	.424	.3	Valid
	X4.6	.524	.3	Valid
Process	X5.1	.679	.3	Valid
	X5.2	.493	.3	Valid
	X5.3	.702	.3	Valid
	X5.4	.354	.3	Valid

	X5.5	.636	.3	Valid
Measurement	X6.1	.551	.3	Valid
	X6.2	.618	.3	Valid
	X6.3	.526	.3	Valid
	X6.4	.617	.3	Valid
	X7.1	.690	.3	Valid
Innovation and Learning	X7.2	.349	.3	Valid
	X7.3	.354	.3	Valid
	X7.4	.565	.3	Valid
	X7.5	.647	.3	Valid

Table 3. Reliability Testing for Importance and Implementation Level

Variable	Cronbach' Alpha	Minimum Value	Reliable/Not Reliable
Importance Level	.962	.6	Reliable
Implementation Level	.947	.6	Reliable

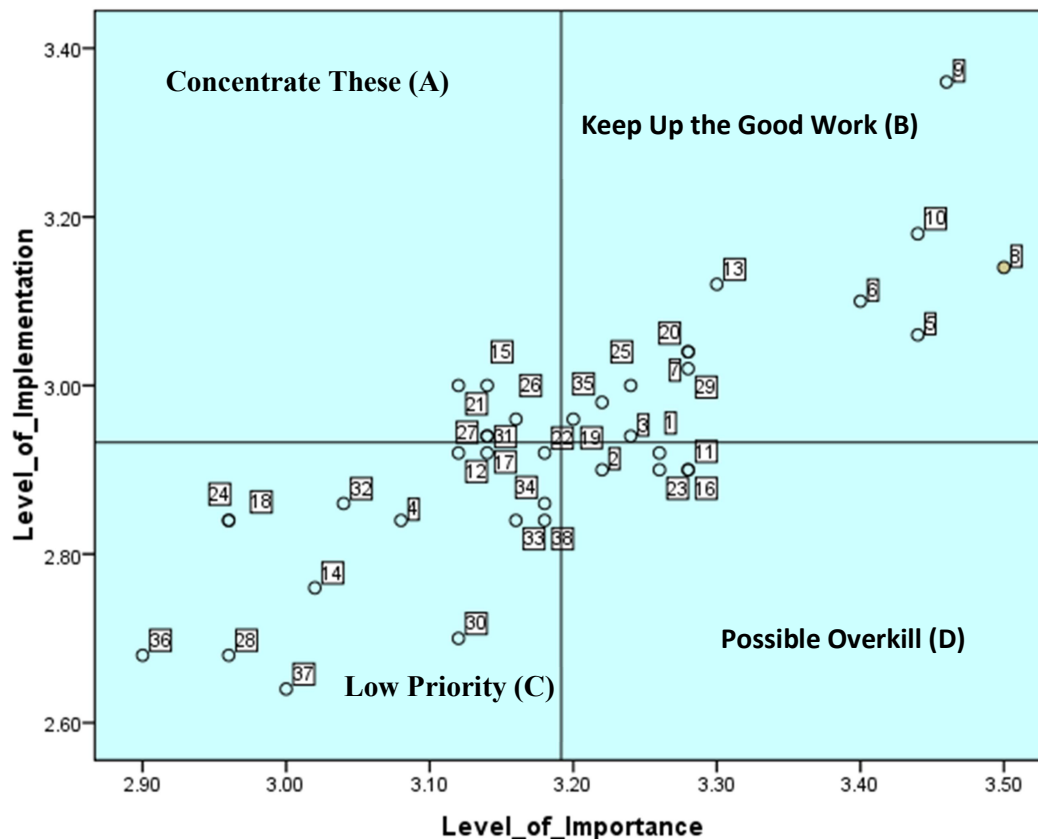
Data valid if corrected item correlation value higher than the minimum value, and data reliable if Cronbach's alpha value higher than the minimum value. Thus, after all the data is valid and reliable, then the data can be used for further analysis

#### Measurement of the importance level and implementation level

After calculated validation and reliability, the next step is the calculation of importance level and Based on the calculation of the average; it is known that the important variables according to a company in measuring the performance of its business are:

- The important indicators for performance measurement are the ability variable with managerial the system in improving adaptability to resources and environmental change with value 3.54.
- The not important indicators for performance measurement is the environment variable with the company collects competitor information with value 2.66.
- The result of this research is that the level of application of the highest performance measurement is the resource variable on the attribute of knowledge about the customer service with the value of 3.46.
- The application of the lowest performance measurement is on the innovation and learning variables on the organizational structure attributes and the system is updated based on the environmental change with the value of 2.64.
- Based on the results, it can be concluded that the implementation of performance measurement in the SMI at a good level with an average of 2.94 and can be said as well.

Based on picture 1, the relationship between the level of implementation and essential shown that several attribute spread in four quadrants. Quadrant A is concentrated these, quadrant B keeps up the good works, and quadrant C is the low priority. Also, quadrant D is possible overkill.



Picture 1. The relationship between level of implementation and importance.

Based on in picture 1, the attribute can categories based on quadrant. These categories are:

- Quadrant A (concentrate these) : Attribute 15, 26 and 27
- Quadrant B (Keep Up the Good) : Attribute 9, 10 and 8.
- Quadrant C (Low Priority) : Attribute 37, 36 and 28.
- Quadrant D (Possible overkill) : Attribute 23, 16 and 11.

### III. Result and Discussion

Attribute that is in quadrant A, meaning that this attribute is essential for the company, but in implementation still not optimal. So the incoming variables in this quadrant should be increased. Then quadrant B, meaning that this attribute is essential and the application level is also reasonable. The quadrant C has the meaning that the attribute performance measurement is not crucial for the company. Quadrant D means that this attribute is essential, but its implementation is excellent.

Based on this picture, it was known that three attributes sound the lowest value, i.e., attribute 37 on organizational structure and system updated based on change. In general, the organizational structure in small and medium industries is the owner of the business, so to make such structural changes are rarely done even to add professionals worker for change and to adapt to the trend are still many who do not do. As for the attribute 36 of the company providing training, most of the workforce working in small and medium-sized industries are ready-to-work, without any specialized training, but in the first month the business owner will explain and check the workforce directly. Thus, with the ability and skills of work that does not meet the standard of work affect the quality of the product. Inability management in managing human resources also influence product quality and customer satisfaction. For attribute 11 that access minimizes production and operational costs. The happening because of the lack of financial

management skills and skills of a small and medium industry. Based on the results of interviews openly. That the measure of business success is with the profit, but in the management of most small and medium industry does not perform by the existing theory, there are still many business people who mix between business money and family money, so in determining the financial needs for business development has not done well.

Based on the data and results obtained, shows that the small and medium business actors know that by measuring the performance of the company can improve the quality and productivity of its business, but many do not do. Because due to lack of skills and knowledge of management and business owners, so in assessing the performance of his company is still using a simple way that is with the existence of profit and complaints from consumers. This study is by research conducted by Kirsten et al. under the title "Performance measurement in small and medium enterprises: South African Accountants' view. The result of the study shows that the importance of survival [12]. The contribution of this research is to give information and description about performance measurement in small and medium industries, especially in Sidoarjo regency. For further research is to use a more targeted method, for example, to measure financial performance to provide training on simple financial accounting, so that small and medium business actors can implement in their business and separate the business and family finances. Meanwhile, to measure non-financial performance can be measured by using service quality to measure customer satisfaction.

#### **IV. Conclusion**

Based on the result of the research, it can conclude that performance measurement in small and medium industries is still based on profit and complain from consumers. Has not applied a particular method in analysis, it is due to lack of knowledge and skills in using performance measurement tools using specific tools. It can see from the attribute that has the lowest value in applying the performance measurement is attribute 37 of the organizational structure, and the system was updated following the change with the value of 2, 64. But for the average attribute that describes the performance measurement in small and medium industries with a value of 2.92 which means that the measurement is at a good level although the measurements are not yet used on a particular method.

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