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IDENTIFICATION AND DETERMINATION OF THE PRIORITY OF KEY PERFORMANCE INDICATORS PERSPECTIVE OF CUSTOMERS ON COCOA PROCESSING INDUSTRY OF SMEs SCALE IN SOUTH SULAWESI

Lamatinulu[*1], Muhammad Dahlan [1], Ramlawati[2]

[*1]Department of Industrial Engineering, Faculty of Industrial Technology, Universitas Muslim Indonesia, Makassar, Jalan Urip Sumoharjo Km 05, Makassar 90231, Indonesia

[2]Department of Management, Faculty of Economic, Universitas Muslim Indonesia, Makassar, Jalan Urip Sumoharjo Km 05, Makassar 90231, Indonesia

ABSTRACT

This study aims to identify and determine the priority scale of Key Performance Indicators (KPIs) of customer perspectives on the SMEs cocoa processing industry. The method used in this research is descriptive statistic to identify the proposed KPIs, and Analytical Hierarchy Process (AHP) method to determine the weight of priority scale of KPIs on customer perspective. The result of this research is to find 12 description KPIs with 8 rank level. KPIs that became the key priority performance indicators were the percentage of increased customer satisfaction (KPIC1) and the increasing of market share (KPIC2) which was in the rank 1 position with the weight of 0.162. Priority weighting is the basis for analyzing the value of customer's performance level. The greater the weight of KPIs the greater their contribution to performance improvement.

KEYWORDS: Performance, SMEs, industry, cocoa, AHP, KPIs

I. INTRODUCTION

Cocoa is one of the plantation commodities in Indonesia that can be a driving factor for agro-industry development. Based on statistical data of world agriculture organization in 2013 Indonesia as world cocoa seed contributors 15.4%. Especially South Sulawesi is the largest producer of cocoa beans in Indonesia [1], but the added value of cocoa in the area is still low because the dominant cocoa beans are sold only in the form of seeds without going through the process of adding value. Based on these facts, it encourages several areas in South Sulawesi to establish cocoa processing industry of Small and Medium Enterprises (SMEs) scale.

Factors that become a major obstacle for the SME industry of cocoa processing are the marketing factor of the product so that the impact on the performance condition is not yet optimal. Associated with marketing issues then this is related to the customer factor of cocoa processing products. Although the production activities of the cocoa processing industry of SMEs run well in the cocoa producers' centers in South Sulawesi, there are marketing constraints that affect the low sales volume. This indicates that the level of performance associated with customers is still low. Based on this problem, there is a need for performance measurement instruments to be used in managing the industry. In designing performance measurement instruments, the Balanced Scorecard (BSC) approach reviews performance based on financial, customer, internal business, and growth and learning perspectives [2]. The reason for applying BSC's perspective approach can be applied to SMEs because it can facilitate the implementation of performance management [3].

Based on the main issues related to performance issues in customer-related marketing aspects, the focus of this research is to identify and assign key prioitas Key Performance Indicators (KPIs) to the customer's perspective. Customer is an important factor for the future performance of the SMEs cocoa processing industry, so customers are the most valuable and strategic long-term business partners [4]. Performance measurement indicators for customer perspective are needed to measure performance. The identification of performance indicators is an

important factor in performance management because KPIs are a measure to periodically review organizational progress toward their goals [5] and can be used to measure performance on an ongoing basis [6]

Based on the identification of KPIs, it is necessary to determine the weighting of performance indicators by using Analytical Hierarchy Process (AHP) method. The AHP approach can be used to determine the priority weight and rank of KPIs, this is supported by the research on the determination of the weighted value of KPIs of performance measurement [7]. The originality of this research is to examine specifically the identification and ranking of priority KPIs to measure the performance of customer aspects in the SME cocoa processing industry.

II. MATERIALS AND METHODS

This research was conducted in South Sulawesi with the object of cocoa processing industry of SMEs scale. While the sample in this study are some expert respondents who understand about the situation and condition of SMEs processing industry in South Sulawesi. The stages of the implementation of this study include:

- Field survey to obtain preliminary data related to the performance of SME cocoa processing industry
- Literature review for Key Performance Indicators (KPIs) needed to evaluate the level of industry performance with the Balanced Scorecard concept approach
- The validation and specification of KPIs by involving the assessment of expert respondents to the level of need of the proposed KPIs. The results of the assessment of the expert respondents through interviews and the use of questioner instruments. The questionnaire uses a Likert scale of 1 to 5 where a value of 1 = is highly unnecessary; 2 = not needed; 3 = less needed; 4 = required; and 5 = much needed.
- Determining the weighted value of priority scale KPIs performance measurement of customer aspects of SME cocoa processing industry. At this stage used the research instrument in the form of pairwise comparison questionnaire using the scale of assessment of importance level 1 - 9. This instrument is used to obtain expert respondents' assessment of the importance of KPIs weighted performance measurement on the customer aspect.

Based on the results of the questionnaire assessment, then used the analytical instruments descriptive statistical methods and methods of Analytical Hierarchy Process / AHP [8]. The initial analysis step is to describe the sample data with descriptive data analysis [9]. Descriptive analysis by calculating the mean value through the sum of all subject values by the number of subjects (n). In the AHP analysis first establish a pairwise comparison matrix, then determine the eigen vector (the priority weight), specify the Consistency Index (CI) and Consistency Ratio (CR) values. The values of CI and CR became the basis for determining that priority weight assessment results may be accepted. If CR value < 0.1 then all sets of weights assessment analysis can be accepted [9]. Data analysis specifically discusses KPIs on customer perspectives on the SMEs scale cocoa industry which is one of the aspects contained in the Balanced Scorecard concept.

III. RESULTS AND DISCUSSION

The customer aspect is a very important factor in developing small-scale cocoa processing industry. The economic value of the products produced by the cocoa industry is largely determined by the customers, so that customers are the most strategic and valuable long-term business partners [4]. In the SMEs industry, cocoa processing requires performance in the customer's perspective to achieve success and profitability. To achieve a good level of performance it is necessary to perform Key Performance Indicators (KPIs) to be used as a measuring tool in assessing the achievement of targets**.** The results of literature review and data processing then formulated several important factors proposed to be KPIs of customer aspects (Table 1). Based on the results of expert respondents' assessment of the required KPIs (Figure 1) shows that there are 12 identified KPIs proposed to measure performance on the customer's perspective in the cocoa processing SMEs industry in South Sulawesi.

The result of validation assessment of the level of needs of KPIs from expert respondents then found the value of the required level of KPIs on the customer perspective as shown in Figure 1. Average assessment indicates that all KPIs have a weight value of the need level > 4. This indicates that the proposed KPIs are all meaningfully required so that they can be accepted as indicators of assessment and performance measurement.

Table 1. Proposed needs of KPIs on customer perspective

Number	KPIs proposed	Code
1	Level of customer satisfaction	$KPIC_1$
2	New customer increase percentage	$KPIC_2$
3	Percentage increase in market share	$KPIC_3$
4	The level of customer loyalty remains	$KPIC_4$
5	Increased sales volume	$KPIC_5$
6	Timeliness in meeting consumer demand	$KPIC_6$
7	Local, national and international customer growth rates	$KPIC_7$
8	Percentage of customer complaints	$KPIC_8$
9	Feedback of customers of processed cocoa products	$KPIC_9$
10	The rate of speed penetrates the market segment	$KPIC_{10}$
11	The suitability of cocoa processed products to customers' wishes	$KPIC_{11}$
12	Level of availability of online marketing media	$KPIC_{12}$

To design performance measurement instruments in the cocoa SMEs industry, a priority level weighting rating of KPIs is required. Based on the results of identification and validation of 12 KPIs on customer perspective, it is followed up with priority weighting of KPIs by using AHP method.
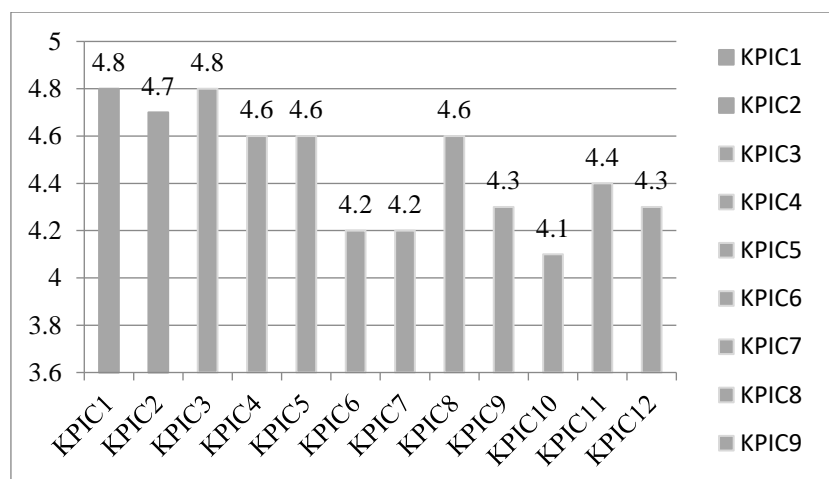
Figure 1: Results of the assessment of the level of need of the KPIs on the customer's perspective

Basically, all the KPIs identified in the customer's perspective are needed and important, but it is necessary to define the weight sequence to determine the priority scale in realizing the objectives and strategies to achieve the performance targets of the SME's cocoa processing industry. Based on the results of pairwise comparison questionnaire assessment then formed pairwise matrix that has the value of elements as in Table 2. The result of normalization of matrix elements of pairs of comparisons are used as the basis for determining the eigen vector or priority matrix. The eigenvector value of the vector is the priority value of KPIs. Evidence that the results of pairwise comparison analysis can be accepted as a result of consistent assessment then tested with the value of CI and RI. The results showed that the maximum value of eigen value (λmax) obtained was 12,252. Based on eigen value, the value of Consistency Index (CI) is 0,023. The determination of Consistency Ratio (CR) is obtained based on CI value comparison with Random Index (RI).

The value of RI is determined according to the number order of matrix pairwise analyzed that is n = 12. The value in the table generating random numbers if n = 12 then the value RI = 1.48 [8]. Based on the value of CI and RI, then obtained the value of CR of 0.0155. CR value <0.1 indicates that the result of priority weighting analysis by AHP method is acceptable [8].

In order to design the performance aspect appraisal instrument in the cocoa processing industry of SMEs scale, it is determined the weight value and the priority ranking of KPIs. Priority weights form the basis for determining the level of achievement achieved based on the achievement of targets set in performance measurement

Table 2. Values of elements pairwise comparison matrix

	$KPIC_1$	$KPIC_2$	$KPIC_3$	$KPIC_4$	$KPIC_5$	$KPIC_6$	$KPIC_7$	$KPIC_8$	$KPIC_9$	$KPIC_{10}$	$KPIC_{11}$	$KPIC_{12}$
$KPIC_1$	1	2	1	2	2	4	4	2	3	4	2	3
$KPIC_2$	0,5	1	0,5	2	2	3	3	2	2	3	2	2
$KPIC_3$	1	2	1	2	2	4	4	2	3	4	2	3
$KPIC_4$	0,5	0,5	0,5	1	1	2	2	1	2	3	2	2
$KPIC_5$	0,5	0,5	0,5	1	1	2	2	1	2	3	2	2
$KPIC_6$	0,25	0,333	0,25	0,5	0,5	1	1	0,333	0,5	1	0,5	0,5
$KPIC_7$	0,25	0,333	0,25	0,5	0,5	1	1	0,333	0,5	1	0,5	0,5
$KPIC_8$	0,5	0,5	0,5	1	1	3	3	1	2	3	2	2
$KPIC_9$	0,333	0,5	0,333	0,5	0,5	2	2	0,5	1	2	0,5	1
$KPIC_{10}$	0,25	0,333	0,25	0,333	0,333	1	1	0,333	0,5	1	0,5	0,5
$KPIC_{11}$	0,5	0,5	0,5	0,5	0,5	2	2	0,5	2	2	1	2
$KPIC_{12}$	0,333	0,5	0,333	0,5	0,5	2	2	0,5	1	2	0,5	1

The role of the KPIs weighting value in determining the level of performance on the customer perspective as shown in Figure 2. The AHP analysis yields the weighting value and priority ranking of the KPIs in the customer perspective as shown in Table 3.

The results in Table 3 show that the performance indicators of customer satisfaction and market share increase are the KPIs that are the top priority to improve performance on the customer's perspective. Customer satisfaction is the decisive factor for maintaining sales volume of cocoa industry SMEs scale products. Customer satisfaction positively impacts customer loyalty and retention [10].
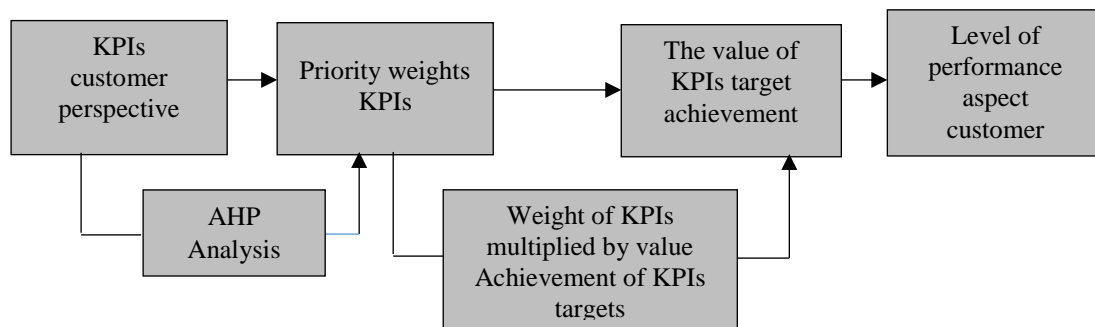
Figure 2. The role of priority weight value KPIs of customer perspective

The position of KPIs of customer satisfaction at the top priority weights can serve as the driving factor for creating a quality product, product innovation based on customer desires. Enterprises to provide satisfaction to customers can affect performance improvement of cocoa industry SMEs. This is supported by research findings that customer satisfaction impact on performance peruasahaan [11]. Indicator of increasing market share (KPIC3) is also a ranking KPIs 1 which means that market share factor is the determinant of success and performance of cocoa processing industry SMEs scale. This is closely linked to the reality experienced by the SMEs industry which is getting a lot of obstacles in the expansion of market share. The SMEs scale industry of cocoa processing requires a strategy to increase market share so that it needs a marketing system by adopting modern technology [12]. Efforts to increase market share can improve the performance of the cocoa processing industry in the customer aspect. Market share can have an impact on the increase in profitability because the

greater the market share the higher profitability gained [13,14]. To increase market share requires innovation, product quality and customer service.

The second priority is the new customer enhancement KPIs. This indicator is very important because the increase in new customers has the potential to increase sales volume and profit. Increased attractiveness through product innovation resulting in the presence of measures to increase customer satisfaction has the potential to increase the number of new customers. KPIs that are ranked first and second priority are all related because new customer increases can certainly increase market share. Market share can be maintained and enlarged if the SMEs cocoa industry is able to realize customer satisfaction.

KPIs	Priority weights	Ranking
$KPIC_1$	0,162	1
$KPIC_2$	0,121	2
$KPIC_3$	0,162	1
$KPIC_4$	0,089	4
$KPIC_5$	0,089	4
$KPIC_6$	0,036	7
$KPIC_7$	0,036	7
$KPIC_8$	0,095	3
$KPIC_9$	0,054	6
$KPIC_{10}$	0,033	8
$KPIC_{11}$	0,070	5
$KPIC_{12}$	0,054	6

Table 3. Weight values and priority ranking of KPIs

The indicator in rank 3 is the percentage of customer complaints ($KPIC_8$). Customer complaints can affect the performance of customer aspects of an industry, because complaints are a negative expression of customers due to the gap between expectations and reality. Complaints can affect customer loyalty and satisfaction, because handling complaints will either increase trust, loy alty and customer satisfaction [15]. Customer handling indicators to support performance improvements are quick and accurate handling of complaints [16].

The 4th rank indicator is consistency of customer loyalty level (KPIC4) and sales volume increase (KPIC5). Customer loyalty is a form of strong commitment to re-purchase and subscribe to an adventurous and difficult to switch product [17]. Customer loyalty is very influential for the industry to get new customers. Through loyal customers can provide positive word of mouth information to potential new customers that impact on increasing the number of customers. To maintain customer loyalty requires a foundation of trust in building synergy because trust is an important factor of customer loyalty [18]. Maintaining customer loyalty is a form of business to maintain and increase the sales volume of cocoa processing products. All forms of business and strategy to increase the number of customers associated with increased market share and sales volume. Customer satisfaction, customer loyalty, increased market share is a form of strategy that can increase sales volume [19]. Increased sales volume in the cocoa processing industry SMEs scale is one of the benchmarks of performance improvement on the customer's perspective.

KPIs in the 5th rank position are indicators related to the suitability of cocoa processed products to the customer's wishes. Prior to innovation and product diversification, the cocoa industry first collected consumer perception because it had a very strong impact on the development of new products that consumers wanted [20]. The SMEs industry of cocoa processing should focus on understanding the customers to develop products that suit the consumers' wishes which may impact on the increase of sales volume and income. To achieve the desired product, it is necessary to adjust some attributes related to quality standards, taste, aroma, nutritional composition, materials, labels and packaging [21].

In sequential KPIs that can be used to measure and design performance evaluation systems on customer perspectives include feedback indicators ($KPIC_9$), availability of online marketing media ($KPIC_{12}$) at rank 6, timeliness in meeting consumer demand ($KPIC_6$), local customer growth rates , national and international

(KPIC$_7$) at rank 7 and speed in penetrating market segment (KPIC$_{10}$) in rank 8. The ranking order of priority of KPIs in customer aspect can be a reference to set performance indicators which become priority scale because the bigger weight value KPIs the greater its contribution to performance improvement.

IV. CONCLUSION

Based on the results of data processing it can be concluded that the key performance indicators in the measurement and improvement of performance on the customer perspective is the level of customer satisfaction (KPIC$_1$) and increase market share (KPIC$_3$) with a weight value of 0.162 priority. The level of customer satisfaction has an impact on increasing customer loyalty and retention so as to maintain and expand market share. The effort of achieving customer satisfaction is the driving force for SMEs cocoa processing industry to innovate and develop quality products according to customer's wishes. Increased customer satisfaction can be a driving force in increasing market share and sales volume, resulting in increased profitability and performance of SME cocoa processing industry. The magnitude of the order of priority weight of KPIs in the customer's perspective will determine the amount of contribution to the achievement of the level of performance.

V. ACKNOWLEDGEMENTS

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