

An Application of Balanced Scorecard System in Strengthening Agricultural Firm

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Abstract - Balanced Scorecard is a management system that enables organizations to clarify their vision and strategy and translate them into action. Nowadays, Balanced Scorecard has been widely used in many companies and organizations for its simplicity and applicability. Meanwhile, agricultural firms are businesses that are rarely managed with sufficient management skills. This paper provides a study whether Balanced Scorecard is applicable to these firms. The study results that Balanced Scorecard, with enough understanding to agricultural processes, is completely applicable for agricultural firms.

Keywords : The Balanced Scorecard, Agricultural Firm

I. INTRODUCTION

In many countries, agricultural industries have been known in a long time as traditional ones. In Indonesia, most agricultural businesses are carried out in rural by unskilled farmers or small firms called “Kelompok Tani” (farming groups). The absence of sufficient management skill caused most farmers and farming groups unable to create prosperity for themselves.

A three-month study was then performed to evaluate whether modern management tools can be used for traditional agricultural firms. The Balanced Scorecard was chosen as the model for its simplicity and wide using. A farming group named “Karya Mandiri” producing organic vegetables was also selected as the case study object.

The study included supervisions, visual observations, interviews and literature reviewing, both for the Balanced Scorecard model and the agricultural firm. The study resulted an integrated strategic plan for the firm using the Balanced Scorecard model.

II. THE BALANCED SCORECARD MODEL

Balanced Scorecard is a management system that enables organizations to clarify their vision and strategy and translate them into action [1]. It provides feedback around both the internal business processes and external outcomes in order to continuously improve strategic performance and results. When fully deployed, Balanced Scorecard transforms strategic planning from academic exercise into the nerve center of an enterprise. If companies are to survive and prosper in a competitive environment, they must use measurement and

management systems derived from their strategies and capabilities [2].

Besides, the Balanced Scorecard is a concept that can be implemented in many ways. One prerequisite is that it must be adapted, or changed to fit a specific organization. A good Scorecard reflects the strategic plan of the organization, provides a framework that helps shape work behavior, allows each person to measure his/her individual performance and gives data to make changes immediately so that performance is enhanced [3, 4].

III. BALANCED SCORECARD FOR THE FIRM

A. Initial Problems

Karya Mandiri is an agricultural firm of ten farmers located in Bandung, Indonesia. Its products are low-pesticide leafy vegetables such as spinach, mustard and lettuce. Karya Mandiri has a production target as 1,000 kg of leafy vegetables per week to meet demand. The vegetables seedlings are grown on the prepared area for about two weeks. When the seeds have grown their leaves, they are moved to other area where they will be grown to their mature size and ready to harvest.

However, Karya Mandiri seemed to meet some troubles in its business, they are:

- The target of producing 1,000 kg of leafy vegetables per week is still hard to meet. In the last some weeks, Karya Mandiri produced only 500 to 700 kg of vegetables.
- The number of plants failed to grow seemed to be high and caused loss to the firm.
- After delivery, the vegetables still also been 20 to 25 percents rejected as the quality does not meet standards: too small, too big, too much holes in the leaves (eaten by bugs), withered or not fresh, and so on.
- In the financial aspect, the firm is still burdened by various unnecessary costs, like breakdown of some facilities, urgent-but-unnecessary labor costs, and so on.

To increase the performance of Karya Mandiri, below is described the four-perspective balanced scorecard for the corporate.

B. Mission, Vision, Values

Karya Mandiri's mission statement:

Karya Mandiri is committed to provide vegetables for people with the best quality they can get as well as to create prosperity for the communities where our farms located. Its mission consists of three interrelated parts:

1. **Product.** To cultivate, harvest, package and deliver high quality green fresh vegetables to our customer in domestic and international market.
2. **Technology.** To search, develop and apply new methods in growing fresh, healthy, and well-tasted vegetables continually.
3. **Social.** To develop, empower and create prosperity to the communities where our farms located.

The mission explains the objective of the firm. It is committed to continuously provide high quality vegetables with competitive prices to the customers. The firm has defined its customers in domestic and international market. The firm is also committed to enrich agricultural technology by continuously developing new methods in increasing the quality of vegetable products. Not only creating profit, the firm is also committed to develop and to give prosperity to the community where the firm's farming exist.

Karya Mandiri's values:

1. Quality
2. Assurance
3. Togetherness

The first value of the firm, quality, describes the commitment of all components of the firm to provide the customers high quality products in all aspects: physical appearance, taste, texture and nutrition of the vegetables. The second value, assurance, describes the commitment of the firm to give the customers maximum safety assurance in consuming the products, applied in hygienic production, packaging and delivery processes. It also includes the assurance for the low pesticide content as the company states in its slogan. The third value, togetherness, describes efforts of the firm to create prosperity to the communities where the firm located, as well as creating profit to the firm. These values guide the firm to perform its business.

Karya Mandiri's vision:

Karya Mandiri has targeted its future to become Indonesia's biggest agricultural firm producing low pesticide and organic vegetables in the next five years. It will be the leader in low pesticide and organic crops market, as well as pioneering healthy agricultural cultivation as a trend in Indonesia. Skilled and credible staffs will be employed to continuously improve the cultivation quality. It will be a model in increasing the firm's profit fast as well as empowering people around the firm's location.

C. The Strategy Map

The financial perspective of Karya Mandiri's scorecard describes the financial targets of the firm and how it is related to the vision and mission.

Karya Mandiri has identified 23 strategic objectives across the four-perspectives of its corporate strategy map.

Financial Perspective

F1 – Increase long term shareholder. The ultimate financial goal of Karya Mandiri is to increase the value of investors' invested funds. This needs the other strategic objectives in the financial perspective to be achieved.

F2 – Increase sales value. Karya Mandiri should increase sales value from the selling of vegetables to the customers. This requires Karya Mandiri to expand its market share and to increase number of products it sells.

F3 – Reduce operational costs. Karya Mandiri's operational costs consist of production costs and overhead costs. These cost types should be simultaneously reduced in order to create business efficiency.

F4 – Increase asset utilization. Karya Mandiri should increase the utilization of its asset, especially land, by improving the amount of money produced by each unit area of land.

F5 – Expand revenue opportunities. Continuous and expansive networking, both to local and international markets would be performed by Karya Mandiri, as well as searching for market niche that available for its expansion.

Customer Perspective

C1 – Increase customer value proposition. Karya Mandiri would perform any efforts needed to increase customer value proposition as much as possible.

C2 – Find an optimal pricing strategy. Karya Mandiri should find pricing strategy that maximize the company's profit and competitive to the competitors' product.

C3 – Produce high quality vegetables. Karya Mandiri is committed to produce high quality vegetables in all aspects: physical appearance, taste, texture and nutrition.

C4 – Ensure product availability. Karya Mandiri should manage the agricultural system so that products are available at required amount and time.

C5 – Improve product delivery. Delivering products to the customer's door is an additional service to create maximum satisfaction.

C6 – Increase networks to customers. The most important way to increase total customers is increasing the quantity and quality of networks to the customers. Karya Mandiri will perform this with maximum power it has.

C7 – Create strong brand and reputation. Karya Mandiri will find effective methods to create a strong brand to increase customer's recognition to its products.

Internal Perspective

Operation management processes.

I1 – Perform high quality soil processing and fertilizing. This is Karya Mandiri's main success factor in producing high quality vegetables because good plants can only grow in good soil.

I2 – Perform high quality plant cultivation. This objective is the key of Karya Mandiri's whole business, so this achievement must be tightly controlled.

Customer management processes.

I3 – Provide products at the time and amount required. Karya Mandiri should manage its cultivation system in such a manner so that no customer’s orders or demands are rejected or not fulfilled.

I4 – Communicate well with the customers. Karya Mandiri should develop good communication with the customers to ensure their satisfactory and loyalty to its products and services.

Innovation processes.

I5 – Update cultivation techniques. An agricultural firm like Karya Mandiri should progressively search for better cultivation techniques from other agricultural firms or learn new methods that have been scientifically proven. Other way, Karya Mandiri can also try new techniques in its farms, and if it works, so the new technique would be set as a new process standard.

I6 – Find new commodities to produce. There are various products in vegetable classification, so Karya Mandiri should add new products having large demands and suitable with its existing farms.

I7 – Create new selling methods. New selling methods would be tried by Karya Mandiri to increase its total customers.

Social processes.

I8 – Create interdependency between the firm and the community. Karya Mandiri would create a mutual relationship with the communities where its farms exist. The firm would take advantage from the labors, supporting environment, and security, whereas the community would take advantage from the economical and social empowerment.

Learning and Growth Perspective

LG1 – Develop good skilled labors. Karya Mandiri would create programs to develop labors able to find, apply and share its competencies in agricultural field.

LG2 – Create organization with strong and constructive culture. Karya Mandiri would develop an organization with leadership, culture and teamwork that simultaneously move to the firm’s goals.

LG3 – Utilize information technology. Karya Mandiri would take advantage from information technology by utilizing it to expand market share, improve communication with the customers and strengthen the agricultural technology applied in the firm.

The Strategy Map

Based on the strategic objectives above, the strategy map for Karya Mandiri then can be shown in Figure 1.

D. Measures, Targets and Initiatives

Karya Mandiri has determined 48 measures, corresponding to 24 strategic objectives as described above. Each measure is codified with first letter M, which means ‘measure’. The measures are shown in Table 1.

Table 2 describes the initial value for each measure (baseline) and what is the target for the next three years.

To achieve the strategic objectives above and its targets, Karya Mandiri has selected priority programs or activities as its initiatives. The initiatives are shown in Table 3.

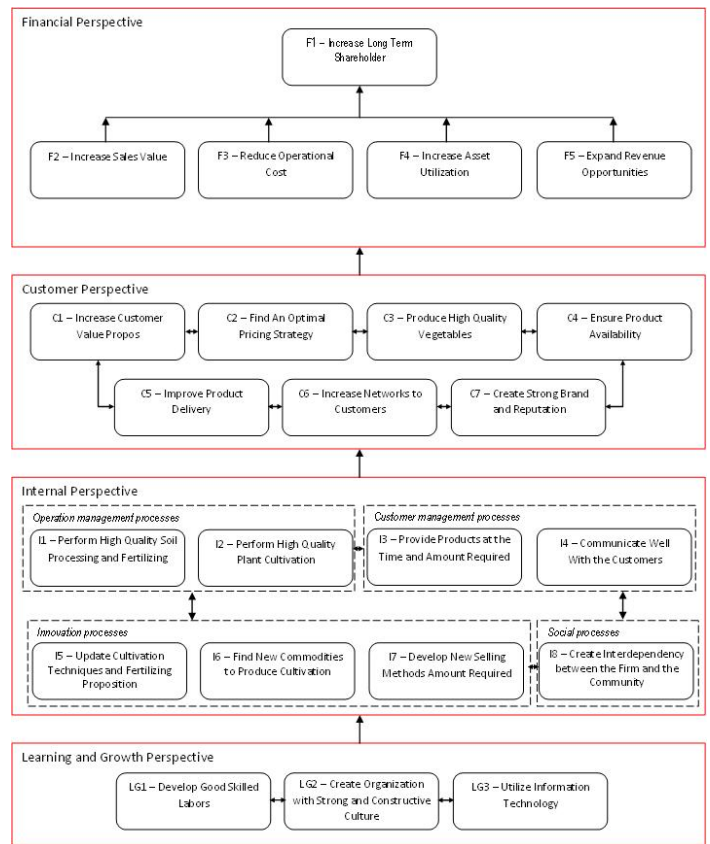


Fig. 1 Strategy Map for Karya Mandiri

TABLE 1
MEASURES FOR KARYA MANDIRI

Strategic Objectives	Measures	Unit in Charge*
F1 – Increase long term shareholder	M1 – Return on equity	F
	M2 – Share price	F
F2 – Increase sales value	M3 – Total revenue	M
	M4 – Revenue per employee	P,M
F3 – Reduce operational costs	M5 – Gross margin	P,M
	M6 – Net margin	P,M,F
	M7 – Profit per employee	P,M
F4 – Increase asset utilization	M8 – Revenue/assets	M,F
	M9 – Return on net assets	P,M,F
F5 – Expand revenue opportunities	M10 – Revenue growth rate	P,M
C1 – Increase customer value proposition	M11 – Market share (national)	M
	M12 – Average monthly sales per customer	M
	M13 – Customer lost to total customers	M
C2 – Find an optimal pricing strategy	M14 – Price relative to competitors	P,F
	M15 – Customer loyalty	M
C3 – Produce high quality vegetables	M16 – Total rejected products to total revenue	P
	M17 – Customer complaints to total customers	M
C4 – Ensure product	M18 – Unfulfilled demand to total	P,M

Strategic Objectives	Measures	Unit in Charge*
availability	demands	
C5 – Improve product delivery	M19 – Delivery time average	M
	M20 – Proportion of on time delivery	M
C6 – Increase networks to customers	M21 – Number of sales proposals made per month	M,F
	M22 – Customer growth rate	M
C7 – Create strong brand and reputation	M23 – Brand recognition	M,F
	M24 – Customer satisfaction	M,F
I1 – Perform high quality soil processing and fertilizing	M25 – Proportion of seedlings failure	P
	M26 – Proportion of outgrowing failure	P
I2 – Perform high quality plant cultivation	M27 – Rejected products to total production	P
	M28 – Average qualified production per square meter	P
I3 – Provide products at the time and amount required	M29 – Demand planning accuracy	P,F
	M30 – Proportion of deteriorated overripe products	P,M
I4 – Communicate well with the customers	M31 – Total offerings per customer per year	M
	M32 – Total calls to customer care per year	M,F
I5 – Update cultivation techniques	M33 – Number of new cultivation techniques per year	P
	M34 – Percentage of seedlings failure reduction	P
I6 – Find new commodities to produce	M35 – Number of new products per year	P,M
	M36 – Sales from new products to total sales	M
I7 – Develop new selling methods	M37 – Number of new selling methods per year	M,F
	M38 – Sales from new selling methods to total sales	M
I8 – Create interdependency between the firm and the community	M39 – Community involvement index	P,F
	M40 – Number of conflicts between the firm and the community	P,F
LG1 – Develop good skilled labors	M41 – Employee productivity	P
	M42 – Number of technology benchmarking per year	P,F
LG2 – Create organization with strong and constructive culture	M43 – Employee satisfaction	P,F
	M44 – Number of conflicts between employees	P,F
LG3 – Utilize information technology	M45 – New customers from internet to total customers	M
	M46 – New cultivation methods from internet applied	P

* P: Production Division; M: Marketing Division; F: Finance and Administration Division

TABLE 2
MEASURES FOR KARYA MANDIRI

Measures	Unit	Baseline	Target		
			Year 1	Year 2	Year 3
M1 – Return on equity	%	156.1	160.0	170.0	175.0
M2 – Share price	IDR	10,000	11,500	12,500	13,500
M3 – Total revenue	million	192.5	275.0	330.0	415.0

Measures	Unit	Baseline	Target		
			Year 1	Year 2	Year 3
	IDR				
M4 – Revenue per employee	million IDR	12.03	15.0	16.5	17.5
M5 – Gross margin	%	55.2	62.5	70.0	75.0
M6 – Net margin	%	36.5	41.0	45.0	49.0
M7 – Profit per employee	million IDR	4.39	6.15	7.42	8.57
M8 – Revenue/assets	%	320.8	366.7	388.2	425.0
M9 – Return on net assets	%	117.1	150.3	174.7	208.2
M10 – Revenue growth rate	% per year	-	42.8	20.0	25.8
M11 – Market share (national)	%	5.0	7.5	9.0	11.5
M12 – Average monthly sales per customer	IDR	32,550	36,000	40,500	45,000
M13 – Customer lost to total customers	%	8.3	5.0	3.0	2.0
M14 – Price relative to competitors	%	80.0	75.0	75.0	75.0
M15 – Customer loyalty	index	Good	Excellent	Excellent	Excellent
M16 – Total rejected products to total revenue	%	25.0	20.0	15.0	10.0
M17 – Customer complaints to total customers	%	16.7	12.5	9.0	5.0
M18 – Unfulfilled demand to total demands	%	33.3	22.0	14.0	6.0
M19 – Delivery time average	minutes	45	40	35	30
M20 – Proportion of on time delivery	%	53.5	65.0	75.0	90.0
M21 – Number of sales proposals made per month	units	8	9	10	12
M22 – Customer growth rate	% per year	-	40.0	30.0	35.0
M23 – Brand recognition	%	3.0	5.0	7.5	10.0
M24 – Customer satisfaction	index	Medium	Good	Good	Good
M25 – Proportion of seedlings failure	%	20	15	12	10
M26 – Proportion of outgrowing failure	%	30	25	20	15
M27 – Rejected products to total production	%	25	22	20	18
M28 – Average qualified production per square meter	kg per m ²	0.8	1.0	1.2	1.4
M29 – Demand planning accuracy	%	60	70	75	80
M30 – Proportion of deteriorated overripe products	%	20	15	12	10

Measures	Unit	Baseline	Target		
			Year 1	Year 2	Year 3
M31 – Total offerings per customer per year	units	-	2	4	6
M32 – Total calls to customer care per year	units	-	250	300	350
M33 – Number of new cultivation techniques per year	units	-	2	3	3
M34 – Percentage of seedlings failure reduction	%	-	25	20	16.7
M35 – Number of new products per year	units	3	3	3	3
M36 – Sales from new products to total sales	%	12.0	15.0	17.5	20.0
M37 – Number of new selling methods per year	units	1	1	1	1
M38 – Sales from new selling methods to total sales	%	30.0	30.0	25.0	30.0
M39 – Community involvement index	index	Medium	High	High	High
M40 – Number of conflicts between the firm and the community	incidents	0	0	0	0
M41 – Employee productivity	index	High	High	High	High
M42 – Number of technology benchmarking per year	activities	1	2	3	3
M43 – Employee satisfaction	index	Medium	High	High	High
M44 – Number of conflicts between employees	incidents	0	0	0	0
M45 – New customers from internet to total customers	%	0.0	2.0	3.0	5.0
M46 – New cultivation methods from internet applied	units	0	1	2	2

TABLE 3
INITIATIVES FOR KARYA MANDIRI

Strategic Objectives	Initiatives
F1 – Increase long term shareholder	Develop an effective communication with the shareholders
F2 – Increase sales value	Create effective promotion programs to increase sales Train sales agents to sell as many as possible
F3 – Reduce operational costs	Develop a control system for dispensing production costs Develop a bonus system for employees creating cost reduce Implement mechanization for high cost manual tasks
F4 – Increase asset utilization	Create new selling program to utilize idle assets

Strategic Objectives	Initiatives
F5 – Expand revenue opportunities	Create a bonus system to motivate marketing staffs
C1 – Increase customer value proposition	Perform program distributing free trial products to competitor's buyer Measure customer satisfaction periodically
C2 – Find an optimal pricing strategy	Check competitor's price regularly Evaluate price relative to competitor periodically
C3 – Produce high quality vegetables	Develop and standardize technique for sorting vegetables
C4 – Ensure product availability	Find and implement an effective forecasting method
C5 – Improve product delivery	Reduce the average delivery time
C6 – Increase networks to customers	Develop a networking system utilizing employee's, and the customer's relations
C7 – Create strong brand and reputation	Develop and implement an effective quality control Measure the firm's brand equity periodically
I1 – Perform high quality soil processing and fertilizing	Develop a system for controlling soil processing activities
I2 – Perform high quality plant cultivation	Find and implement an effective forecasting method Develop a system for controlling plant cultivation activities
I3 – Provide products at the time and amount required	Develop a selling database Utilize selling database to forecast demand accurately
I4 – Communicate well with the customers	Develop and operate a free-call customer care Send the selling agents to communication training
I5 – Update cultivation techniques	Learn new cultivation techniques from internet and other sources Implement the new techniques and measure the result
I6 – Find new commodities to produce	Perform a market research and implement the result
I7 – Develop new selling methods	Search and implement new improved selling methods
I8 – Create interdependency between the firm and the community	Conduct effective communication with the community
LG1 – Develop good skilled labors	Send employees to agricultural trainings Periodically search and visit other bigger and more advance farms
LG2 – Create organization with strong and constructive culture	Periodically organize team gathering for consolidation Send team leaders to leadership training
LG3 – Utilize information technology	Develop a strong and effective website Perform marketing expansion utilizing website and internet

E. Cascading the Scorecard

After the firm's scorecard is established, then it is necessary to cascade it to the first-level unit. Since Karya

Mandiri has three divisions, then three scorecards will be developed for each division. Each scorecard consists of similar components with the firm's scorecard, they are strategic objectives, measures, targets and strategic initiatives.

IV. ANALYSIS

Based on the results obtained, we can analyze some points as follows.

- Karya Mandiri's mission has stated the basic function of its existence. By explicitly stating it, Karya Mandiri has clearly explained its identity both to the employees and the community.
- Karya Mandiri's vision has clearly declared where and what its future is. The vision is very ambitious, but realistic to achieve. Also, the vision will give the firm's elements more spirit to develop their future.
- Karya Mandiri's 23 strategic objectives are the statements of what it does. The four-layer strategic objectives are the targets to achieve and they have represented all tasks of the firm.
- The strategic map shows the relationship between Karya Mandiri's strategic objectives. To ensure that the financial objectives are achieved, Karya Mandiri should ensure that the lower layer objectives are achieved.
- The measures are the indicators of the strategic objectives. There are 46 measures to indicate the achievement of the 23 strategic maps. The measures determine when the strategic objectives are achieved or not. For each measure, the unit in charge is then determined. Some measures are managed by one unit, some others by two units, and the rest are managed by all three units.
- For all the 46 measures, target values for the next three years are then determined based on the baseline value. Most of the targets can be determined quantitatively, while some others can only be determined qualitatively.
- Finally, to ensure that all targets are achieved, strategic initiatives are created. Strategic initiatives can be viewed as non-regular and non-routine programs to break through the initial condition and to achieve the targets. Strategic initiatives are determined from the strategic objectives, where one strategic objective is related to at least one strategic initiative. In this study, 36 strategic initiatives was derived from 24 strategic objectives.

V. CONCLUSIONS

Balanced Scorecard is completely applicable for agricultural firms. The application of Balanced Scorecard will strengthen agricultural firms since most of them consist of people with lack of management skills. The application of Balanced Scorecard in agricultural firms needs a deep understanding about the production processes in agricultural cultivation. The scorecard developed in this paper can be applied to other agricultural firms, with necessary modifications.

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