

INTEGRATION OF SWOT-BALANCE SCORECARD TO FORMULATE STRATEGIC PLANNING IN THE TECHNOLOGY AND VOCATIONAL EDUCATION IN INDONESIA

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ABSTRACT

This paper describes the method of preparation of a comprehensive strategic planning model for technology and vocational education. For this purpose, the quantitative SWOT method has been utilized and incorporated with the Balanced Score Card. The steps taken during this study were: first, conducting a SWOT analysis quantitatively; second, using the Balanced Score Card to define the strategic issues and to decide the successful procedure. The object of this study was the Mechanical Engineering Education (MEE) Study Programme and Civil Engineering Education (CEE) of Sebelas Maret University in Indonesia. SWOT quantitative analysis was conducted on 124 respondents. Respondents embrace the design team study programs, university policymakers, alumni, and students. The result shows that SWOT methodology integrated with the Balanced Score Card are often used effectively to easier the precise strategic problems. Supported by these strategic challenges, the design team will quickly formulate the strategic development of every study programme.

Keywords: *strategic development, integrated swot-bsc, practical strategic*

1. INTRODUCTION

As an academic institution that manages numerous resources, the technology, and vocational education should have a good strategy to realize the objectives that have already been set (Zohrabi, 2011). One important dimension of technology and vocational education (TVE) is the corporate dimension. The corporate dimension implies that this vocational education in Indonesia ought to be perceived and managed effectively and with efficiency (Mahyar, 2004). It is inevitable that universities and corporate have several similarities, i.e. in having customers, process and generating products/services, and managing the human resources, finance, and customers (Indrajit, 2005). Primarily based on the similarities, universities ought to have a rigorous management system similar to that of a corporation.

Based on the review of several literatures, it is found that the standard SWOT technique has many drawbacks; one amongst them is that SWOT does not explicitly provide alternatives in developing the strategy so that the chosen strategy has a tendency to be subjective, and even political (bryson, 1999). Furthermore, the SWOT approach does no longer provide strategies to expand based on the priority scale. As a result, the selected strategies are not systematically designed and do not meet the targets set earlier (Kaplan, 1996). The Balance Score Card (BSC) is a useful device that has been utilized by many advanced industries all over the world in formulating their corporate strategy (Kaplan, 2006). BSC offers a means that enables it to be integrated with qualitative and quantitative SWOT (zohrabi, 2011). By leveling the score cards between the internal-external factors of SWOT analysis, it's assumed that TVE will formulate its ways effectively and with efficiency (Zohrabi, 2011).

2. THEORETICAL REVIEW

2.1 Strategy

The strategy may be a commitment to undertake a collection of actions that is better than the others (Oster, 1999). Hitt (2005) defines the strategy as a collection of coordinated and integrated action plans to take advantage of the present capabilities and to achieve competitive benefits. Abraham (2006) describes that strategy as how a company competes. This suggests that the approach shows how a company reputedly possesses the capacity to carry out its activities strategies related to what the organization is doing, how well the activities are executed in a plan. According Allio (1988), strategy is the artwork of deploying resources toward marketplace opportunities in a manner that distinguishes a business from its competitors. This implies that strategy is an art of distributing the resources to gain market opportunities by doing something different from the competitors.

Bryson (1988) suggests that strategy can be defined as a pattern of objectives, policies, programmes, actions, decisions, or the allocation of resources showing the identity of an organization, the things it does, and the reason for doing these things. Thus, the strategy is then an extension of the mission to bridge the organization and its environment. Strategies are made to respond to strategic issues, i.e. an outline of the organization's responses to the fundamental policy choice (Kaplan, 2004). The strategy is used to achieve the two approaches, namely the

purpose approach and the vision approach. For the purpose, approach strategy is formulated to reach the goals, and for the vision plan strategy is developed to achieve the vision.

2.2 SWOT Analysis

SWOT analysis is one of the management tools used to conduct environmental analysis in the technique of designing strategic making plans (Pearce and Robinson, 1997). *SWOT* stands for strengths, weaknesses, opportunities, and threats, usually formulated in a matrix (Wheelen & Hunger, 1996). *SWOT* matrix is used to investigate and deploy the internal strengths and weaknesses in addition to the external opportunities and threats to get a promising future strategy (Rauch, 2007). *SWOT* analysis is a systematic analysis to spot the key internal and external factors of an organization which will then be used as a basis for designing and formulating strategies and work programmes. So through the analogy of the different factors, *SWOT* analysis can present four types of techniques which include *SO*, *ST*, *WO*, and *WT* (Bandrowski, 1990).

There are two types of approaches to the *SWOT* analysis, i.e. the qualitative and the quantitative *SWOT* matrix (Rangkuti, 1997). A qualitative approach *SWOT* matrix displays eight boxes; the top two are external factors box while the two boxes to the left are the internal factors. The other four boxes are the boxes of strategic issues emerging as a result of a meeting point between each of the internal and external factors.

2.3 Balanced Score Card

Balance Score Card (*BSC*) is a management tool used to determine the potential balance owned by an organization, both the internal and external potentials (Lee, 2000). It is referred as a scorecard, providing the measurement of a phenomenon will be less demanding to do when utilizing scores. Demonstrating different figures are speaking to specific accomplishments (Warzynski, 2001). It is called balance, because there are some balances in the measurement, i.e., a balance between the financial perspective and non-financial perspective, a balance between the performance from within and the performance to outside parties, and a balance between the ability and performance in the past and the potential capacity and performance for the future which is about to come (Rangkuty, 2013).

3. RESEARCH METHOD

The method used in this research is *SWOT* quantitative analysis where there are the 15 components selected for the survey for its influence on vocational education and technology. Our objective is to integrate the *SWOT* - Balance Scorecard to understand the problem leading to a strategic solution. The objects of this research are two study programmes from the *Sebelas Maret University in Indonesia*: *MEE* (Mechanical Engineering Education) and *CEE* (Civil Engineering Education). From these two study programmes, a sample of 124 faculty members and students were used to conduct the surveys by using purposive sampling technique. Validation of the instrument was then tested using a product moment.

The action mechanisms were carried out as follows: The SWOT study covered general and specific positions within the organization; the matrix has the strategic matters for each SWOT. There are strategic issues of each SWOT: ST, SO, WO, WT. By balancing the internal and external factors of each component, the strategic strategies can be developed.

4. RESULTS AND DISCUSSION

4.1. Strenght Score of Vision and Mision

Table 1 shows the example score's strength for its mission and vision based on SWOT's analysis using questionnaire instrument. The scores are calculated by multiplying the respondents average scores weights and items factors.

Table 1. Calculating Score of Strength of Vision and Mission

No.	Factors and indicators	Weight factor (a)	Weight indicator (b)	Rating (c)	Value d = axbxc	Total
1.	Vision and Mission	0.06				
	Clarity formulation of Vision, Mission and goals	0.06	0.2	4	0.045	
	Socialize vision, mission and goals	0.06	0.2	4	0.042	
	Understanding of the Vision, Mission and goals	0.06	0.15	3	0.028	
	Implementing the vision, mission and goals	0.06	0.3	3	0.059	
	Vision and mission according to world of work	0.06	0.15	4	0.035	
Total 1						0.210

4.2. Quantitive SWOT

Scores from MEE are illstrated in Table 2, while scores for CEE are shown in Table 3. For the MEE, scores of overall internal factor is S = 3,186 (Strength) and W = 3,155 (Weakness), while that of external factors is O = 3,690 (Opportunities) and T = 3,438 (Threats). The method of determining these positioning scores is by calculating the difference between internal factors (S-W) and external factors (O-T) either general or partially (Rauch, 2007). Points are yielded on the X-axis by the difference between S and W, while points are yielded on the Y-axis by O and T. With similar methods, CEE position point can be calculated. Scores of overall internal factor is S = 3.252 (Strength) and W = 3.193 (Weakness), while that of external factors is O = 3.635 (Opportunities) and T = 3.591 (Threats). The X and Y axes are 0.059 and 0.043, respectively.

The scores from those tables are used to find an organization. The strategy will be different once the scores that will be explained in next part of quadrant analysis.

Table 2. Summary of SWOT in MEE

No	Factors	S	W	O	T
1.	Vision and mission	0.210	0.180	0.240	0.200
2.	College student	0.262	0.240	0.296	0.296
3.	Curriculum	0.278	0.240	0.296	0.192
4.	Lecturer	0.288	0.236	0.320	0.272
5.	Infrastructure	0.239	0.262	0.272	0.308
6.	Finance	0.231	0.259	0.252	0.126
7.	Learning process	0.295	0.292	0.333	0.306
8.	Management	0.196	0.244	0.336	0.332
9.	Role of Business and Industry	0.150	0.150	0.174	0.200
10.	Information and Communication Technology (ICT)	0.150	0.150	0.139	0.100
11.	Production unit	0.088	0.138	0.130	0.152
12.	Cooperation	0.118	0.120	0.190	0.138
13.	Role of Government	0.272	0.272	0.288	0.320
14.	Technician / laboratory	0.101	0.132	0.120	0.160
15.	Research & Dedication	0.308	0.240	0.304	0.336
Total		3.186	3.155	3.690	3.438
		0.031		0.252	

Table 3. Summary of SWOT in CEE

No	Factors	S	W	O	T
1.	Vision and mission	0.201	0.216	0.240	0.192
2.	College student	0.260	0.256	0.256	0.248
3.	Curriculum	0.256	0.240	0.272	0.192
4.	Lecturer	0.320	0.224	0.288	0.344
5.	Infrastructure	0.264	0.260	0.264	0.316
6.	Finance	0.266	0.105	0.235	0.147
7.	Learning process	0.297	0.270	0.315	0.360
8.	Management	0.196	0.320	0.348	0.348
9.	Role of Business and Industry	0.150	0.180	0.165	0.200
10.	Information and Communication Technology (ICT)	0.150	0.150	0.120	0.190
11.	Production Unit	0.108	0.120	0.120	0.160

Table 3. Summary of SWOT in CEE (Continued)

No	Factors	S	W	O	T
12.	Cooperation	0.108	0.160	0.200	0.130
13.	Role of Government	0.272	0.288	0.280	0.296
14.	Technician / Laboratory	0.108	0.164	0.140	0.148
15.	Research & Dedication	0.296	0.240	0.392	0.320
Total		3.252	3.193	3.635	3.591
		0.059		0.043	

4.3. Quadrant Analysis

It can be seen that both CEE and MEE study programmes are in the first quadrant (positive, positive), as shown in Fig 1. This means that both study programmes consists of a strong organization and has a good chance for future development. The strategy recommended given here is 'Progressive', which implies that the organization is in solid and prime condition. These organization also has the high probability to expand and attain maximum growth progress.

If we make deep analysis, both study programmes are in quadrant I. Therefore it has different point position that reflects different quality. Therefore future strategy in development is different. The MEE study programme has smaller power (S), compared with CEE. However, it has bigger opportunities (O). The MEE should improve its internal performance to overcome its weaknesses. This strategy will increase the opportunities. Meanwhile, the strategy for CEE must make a breakthrough with new innovations to increase its chances.

MEE programme study also has an opportunities score of 0.252. This means it has a strong opportunity. This opportunity is greatly affected by external factors, which makes it indeed very important for the organization. Since of this, the market opportunity for student graduated has been expanded. This condition is really promising for MEE. However, the study programme needs to make several innovations in achieving a maximum of opportunities and grow in strength, since of their current Strength score of only 0.031.

In the analysis of CEE study programme, it shows that there are several things that need to be considered by the policy makers from their organization. The CEE strength score is only 0.059 out of 4.0, which is very low. However, in general, compared to its weakness, the strength of CEE is still superior. The area that really needs more attention is the high score of opportunities which is only 0.043. From the figure, it can be seen that CEE Study Programme has quite small chances. Opportunities are determined usually by the external market than internal factors, which make it necessary for it to be anticipated carefully. For CEE Study Programme to create more opportunities they have to work hard in managing its strength. To expand the analysis of organization strategy, next part will focus on the position of each programme study in quadrant by employing 15 factor.

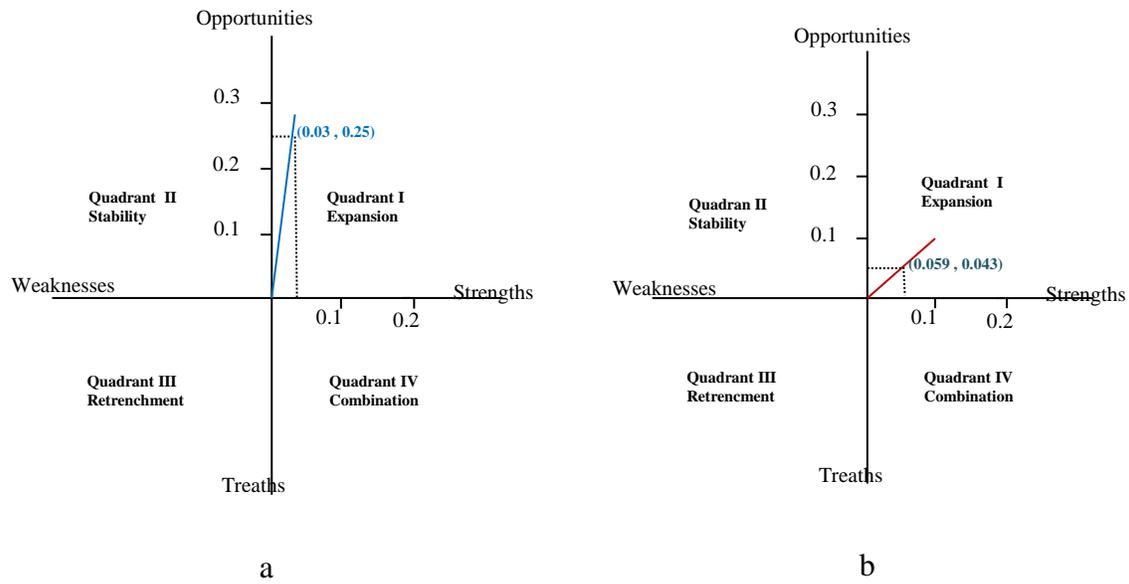


Figure 1. The quadrant position after quantitative SWOT analysis for a) MEE and b) CEE study programme

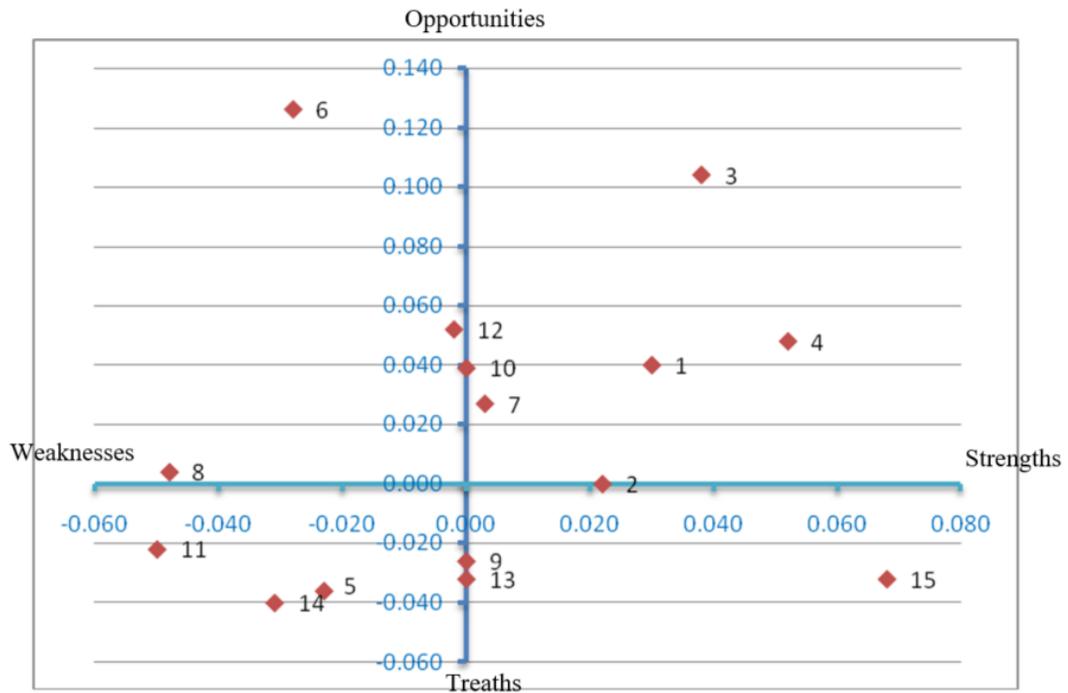


Figure 2. The organizational position of each variable for MEE study programme

4.4. Organizational Position in SWOT Analysis

The explanation of the organization's position is generally just descriptions. Mathematically, when the angles are different, the numbers are different, notwithstanding the fact that they are in the same quadrant. In addition, it poses a consequence that determining the position of the quadrant into the strategies will be different. The strategy issues can be developed into strategies, as shown in the description of these generalizations into qualitative partitions (Fig 2).

According to Figure 2, there are 15 different factors positioned on different quadrants. Q-1 has the mission and vision, which is a robust and stable point. Therefore, Q-1 is used to seize opportunities. We can see another example on Q-3, where there were identified some factors tampering research. The recommendation is to change the study programmes in line with a new strategy to overcome these issues. More information about how to set such plans to the overall strategy are shown in Table 3, where you will see the SWOT integrated to the Balanced Scorecard. It was found that Q-I shows a solid mission and vision within the organization. They can serve as pillars for new objectives. Research goes to Q-IV because it is not as good. It needs a new strategy to improve the outcome. You can refer to table 3 to further analyze the SWOT-Balance Scorecard.

4.5. Integration of SWOT-BSC Matric

We will address three strategic objectives, i.e., to find the strategic problems, to develop a strategy, and to find alternate strategies to current problems. The SWOT - Balance Scorecard is used to integrate all the three strategic questions in Table 3. The matrix is formed from the list of the Strength, Weakness, Opportunity and Threat identified during the research. From the eight resulting spaces, four are used to write the findings of the study, while the other four are used to formulate a strategy, combining the Strengths and Weaknesses with Opportunities and Threats.

There is a balance coming from the SWOT analysis and the identified strategies. It is always good to have alternative strategies. The alternative strategies are obtained from the balanced scorecard combined with the original four strategies of SWOT. This results on four more strategies as follows:

- BSC-SO
- BSC-ST
- BSC-WO
- BSC-WT

Depending on where is each statement on the quadrant of figure 2, we can set a different and better strategy. The mission and vision play a significant role for the BSC-SO alternative. For the other factors, a similar association was developed.

Table 4. SWOT-Balance Scorecard Matrix

EXTERNAL	OPPORTUNITIES	THREATS
	Government policy to enhance vocational education	competitors can formulate a vision and mission well
INTERNAL	The attention of the business community to education The positive trend of vocational education to support the achievement of the vision	vision and mission easily forgotten by the citizens of the campus
STRENGTHS	(BSC-SO)	(BSC-ST)
Clarity of vision, mission and goals in study programme	Enhancement of building capacity (1,2+A,B,C)	Internalisation of vision and mission (1,2+AC)
Vision and mission statement of study programme has been properly socialized	Develop quality relationships with partner institutions (1,3+B,C)	An increase in publications and communications (1,3 + A)
The vision and mission in accordance with the needs of the market		
WEAKNESSES	(BSC-WO)	(BSC-WT)
Vision, mission not yet fully used as a guide for programing	Conduct an evaluation of the achievement of the vision and mission of the study programme (2+B)	Increase research-based study programme evaluation to determine the achievement of the vision and mission of the study programme (1,2+AC)
The vision and mission are not yet fully understood by the academic community	Increased procurement of workshop to preparation of vision and mission instrument (2+BC)	

5.0 CONCLUSION

The SWOT analysis leads to the identification of the organization internally and externally. A positive position was achieved by CEE and MEE programmes (positioned in Q-I). That is a strength that can be further exploded by policy creators to optimize resources. In consequence, market opportunities can be sized. Regardless the fact that both programmes are located in the same quadrant, the focus is set on different direction due to their various strategies for expansion.

MEE has better chances improving HR. That would give them a competitive advantage. On the other hand, CEE can take more from innovation. There is an opportunity to create new opportunities not yet exploded on the market. The SWOT - Balance Scorecard is a useful tool for policy creators when they are working on strategic planning. The integration of both (SWOT and BSC) was very helpful to write an effective strategy.

TVE has a strategic part in every country to help on the steady economic progress and ultimate growth to create national competitive professionals. With this in mind, the TVE has to be aligned to the national objectives. It is important to measure and monitor the relevance and quality of education adequately. The evaluation will serve as an input for future strategic planning. The SWOT - Balance Scorecard used in this study was found useful to set a strategy. However, there is still further work to do on setting priorities. Priorities are important because you cannot attack everything at once with limited resources. On further studies, we will include a priority scale.

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