

A Proposed Model for Strategic Planning in Technology and Vocational Education

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Abstract: This paper describes the methods of strategic planning for Technology and Vocational Education (TVE). For this purpose, the SWOT method has been used, integrated with the Balanced Score Card. The steps taken in this study were: first, conducting a SWOT analysis qualitatively; second, doing a SWOT research quantitatively; and third, using the Balanced Score Card to formulate the strategic issues and determine the effective strategy for organization. The object of this study was the Mechanical Engineering Education (MEE) Study Program and Civil Engineering Education (CEE) Study Program in Faculty of Teacher Training and Educational of Sebelas Maret University of Indonesia. The subjects of this study were the planning team, heads of the study programs, and their students. The result shows that SWOT method integrated with the Balanced Score Card can be used effectively to find out the exact strategic issues. Based on these strategic issues, the planning team can easily formulate the strategic planning in each study program.

Key words: *SWOT analysis, integrated SWOT-BSC, strategic planning*

1. INTRODUCTION

As an educational institution which manages various resources, the technology and vocational education must have an effective strategy to achieve the objectives that have already been set (Zohrabi, 2011). One meaningful dimension of Technology and Vocational Education (TVE) is the corporate dimension. Corporate dimension implies that PTK should be perceived and managed effectively and efficiently (Mahyar, 2004). It is inevitable that universities and companies have many similarities, i.e. in having customers, processing and generating products/ services, and managing the human resources, finance, and customers (Indrajit, 2005). Based on these similarities, universities should have a strong management system like a corporation.

Based on the review of various literature it is known that the conventional SWOT method has many drawbacks, one of which is that SWOT does not specifically offer alternatives in developing the strategy, so that the chosen strategy tends to be subjective, and even political (Bryson, 1999). Besides, the SWOT method does not offer strategies to develop based on

priority scale. As a result, the chosen strategies do not meet the objectives set before and are not systematically designed (Kaplan, 1996). Balance Score Card (BSC) is an effective tool that has been used by lots of advanced industries all over the world in formulating the *corporate strategy* (Kaplan, 2006). By balancing the score cards between the internal-external factors of SWOT analysis, it is assumed that TVE can formulate its strategies effectively and efficiently (Zohrabi, 2011).

2. THEORETICAL REVIEW

2.1 Strategy

Strategy is a commitment to undertake a set of actions which is better than the others (Oster, 1999). Hitt (2005) defines the strategy as a set of coordinated and integrated action plans to exploit the existing capabilities and to gain competitive advantages. Abraham (2006) describes that *Strategy is how a company actually competes*. This implies that the strategy shows how an organization obviously possesses the ability to perform its activities. Strategy is associated with what the organization is doing, how well the activities are carried out in a plan. According Allio (1990), "strategy is the art of

deploying resources toward market opportunities in a way that distinguishes a business from its competitors". This implies that strategy is an art of distributing all the resources to gain market opportunities by doing something different from the competitors.

Bryson (1988) reveals that strategy can be defined as a pattern of objectives, policies, programs, 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, strategy is then an extension of the mission to bridge the organization and its environment. Strategies are generally made to respond to strategic issues, i.e. an outline of the organization's responses to the fundamental policy choice (Kaplan, 2004). Strategy is used to achieve the two approaches, namely the purpose approach and the vision approach. For the purpose approach strategy is generally formulated to reach the goals and for the vision approach 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 process of designing strategic planning. SWOT stands for *strengths*, *weaknesses*, *opportunities*, and *threats*, usually formulated in a matrix. SWOT matrix is used to analyze and deploy the internal strengths and weaknesses as well as the external opportunities and threats to get a promising future strategy (Rauch, 2007). SWOT analysis is a systematic analysis to identify the key internal and external factors of an organization which will then be used as a basis for designing and formulating strategies and work programs. So through the analogy of the various factors, SWOT analysis can present four types of strategies such as SO, ST, WO, and WT (Abraham, 2006).

There are two kinds of approaches in the SWOT analysis, i.e. the qualitative SWOT matrix and the quantitative SWOT matrix (Rangkuti, 2014). 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 called a *scorecard*, given that the measurement for a phenomenon will always be easier to do when using numbers (scores) showing various figures representing certain achievements. It is called *balanced*, 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 ability and performance for the future which is about to come (Rangkuty, 2013).

3. RESEARCH METHOD

The method used to formulate a strategy for the technology and vocational education is doing SWOT research quantitatively. The quantitative SWOT research covered 15 components of the technology and vocational education (see Table 1). This quantitative SWOT study used questionnaires as the research instruments. Forty respondents were selected including the faculty members, alumni, and students, by using the purposive sampling technique. Based on the result of the quantitative SWOT research, the quadrant position of the organization can be determined.

The Balanced Score Card was used to identify the scores/numbers obtained from the quantitative SWOT research in the form of SWOT matrix and then translate them into strategic issues. The SWOT matrix contains 8 boxes containing the strategic issues of each SWOT and the strategy between SO, ST, WO, and WT. By balancing the internal and external factors of each component, the strategic strategies can be developed.

4. RESULTS AND DISCUSSION

4.1 SWOT Quantitative Research Result

Based on the quantitative SWOT research some scores recapitulated from each variable of

No	Variable	S	W	O	T
1.	Vision & mision	0.2 01	0.2 16	0.2 40	0.1 92
2.	Student	0.2 60	0.2 56	0.2 56	0.2 48
3.	Curriculum	0.2 56	0.2 40	0.2 72	0.1 92
4.	Staf	0.3 20	0.2 24	0.2 88	0.3 44
5.	Facilities	0.2 64	0.2 60	0.2 64	0.3 16
6.	Financial	0.2 66	0.1 05	0.2 35	0.1 47
7.	Learning process	0.2 97	0.2 70	0.3 15	0.3 60
8.	Management	0.1 96	0.3 20	0.3 48	0.3 48
9.	Industries participate	0.1 50	0.1 80	0.1 65	0.2 00
10.	Information and Communication Technology	0.1 50	0.1 50	0.1 20	0.1 90
11.	Production Unit	0.1 08	0.1 20	0.1 20	0.1 60
12.	Institution Colaboration	0.1 08	0.1 60	0.2 00	0.1 30
13.	Participate of Governance	0.2 72	0.2 88	0.2 80	0.2 96
14.	Technician	0.1 08	0.1 64	0.1 40	0.1 48
15.	Research	0.2 96	0.2 40	0.3 92	0.3 20
Jumlah		3.2 52	3.1 93	3.6 35	3.5 91

0.059 0.043

both study programs can be shown as follows
 (Table 1 for MEE, Table 2 for CEE).:

Table 1. Summary of SWOT analysis in Mechanical Engineering Education (MEE) Study Program

No	Variable	S	W	O	T
1.	Vision & mision	0.2 10	0.1 80	0.2 40	0.2 00
2.	Student	0.2 62	0.2 40	0.2 96	0.2 96
3.	Curriculum	0.2 0.2	0.2 0.2	0.2 0.2	0.1 0.1

4.	Staf	0.2 88	0.2 36	0.3 20	0.2 72
5.	Facilities	0.2 39	0.2 62	0.2 72	0.3 08
6.	Financial	0.2 31	0.2 59	0.2 52	0.1 26
7.	Learning process	0.2 95	0.2 92	0.3 33	0.3 06
8.	Management	0.1 96	0.2 44	0.3 36	0.3 32
9.	Industries participate	0.1 50	0.1 50	0.1 74	0.2 00
10.	Information and Communication Technology	0.1 50	0.1 50	0.1 39	0.1 00
11.	Production Unit	0.0 88	0.1 38	0.1 30	0.1 52
12.	Institution Colaboration	0.1 18	0.1 20	0.1 90	0.1 38
13.	Participate of Governance	0.2 72	0.2 72	0.2 88	0.3 20
14.	Technician	0.1 01	0.1 32	0.1 20	0.1 60
15.	Research	0.3 08	0.2 40	0.3 04	0.3 36
Jumlah		3.1 86	3.1 55	3.6 90	3.4 38
		0.031		0.252	

Based on Table 1 and Table 2, the quadrant position of each study program can be determined, as shown in Figure 1a and Figure 1b.

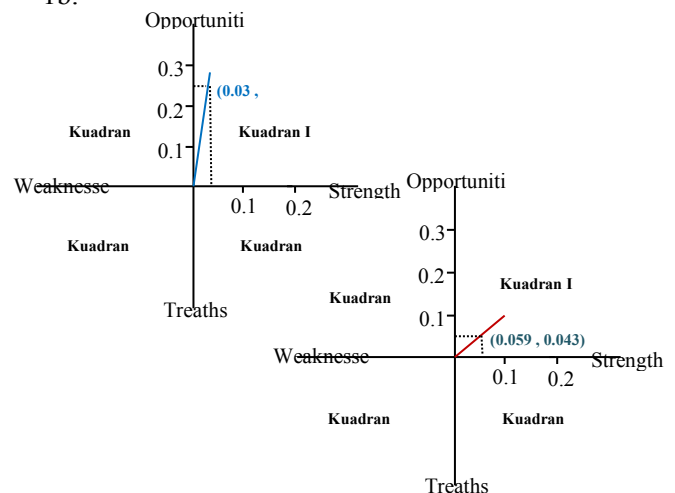


Figure 1. The quadrant position after quantitative SWOT analysis for: a) MEE Study Program, and b) CEE Study Program

Based on the figure above, it can be seen that both MEE and CEE study programs are in Quadrant I (positive, positive). This implies that each study program constitutes a strong organization and has quite a good opportunity to develop. The recommended strategy given here is **Progressive**, meaning that the organization is in its **prime** and **solid** condition so that it is highly possible to keep expanding, increasing the growth to achieve maximum progress.

The Quadrant Analysis for MEE Study Program: based on the scores in the quadrants, there are some things to consider by the Team or Policy Makers of this study program, in that the figures obtained are relatively greater than those resulted by the CEE Study Program. In general, MEE Study Program has less weaknesses and the strength is superior. However, the score for strength is relatively close to the weakness. This implies that MEE Study Program must take certain actions to improve the performance of the institution to be more robust in running the program.

The score for Opportunities is 0.252. This means that actually MEE Study Program has an excellent opportunity. This is indeed very beneficial for the institution because the opportunity is greatly influenced by some external circumstances. In this case, at least the market opportunity has been created. The world of work is widely open to its graduates and this condition is very promising. However, with the score only 0.031 for the Strength, this study program needs to perform a variety of innovations to increase the strength to achieve the maximum number of opportunities.

Quadrant Analysis of CEE Study Program: based on the scores in the quadrants, there are things need considering by the Team or Policy Makers of this study program, i.e. that the figures obtained are relatively small. Score for strength is only 0.059 out of 4.0, which is quite low. However, in general, compared to its

weakness, the strength of CEE Study Program is still superior. What needs to be paid more attention is the high score of opportunities which comes to only 0.043. It can be understood that this figure shows CEE Study Program has relatively small chances. It needs to be carefully anticipated because opportunities are determined more by the (external) market than by the internal factors. CEE Study Program has to work hard in managing its strength outstandingly to create more opportunities for the institution to keep its existence.

Illustrations of the organization's position above are just general descriptions. Mathematically, when the numbers are different then the angles are different even though they are still in the same quadrant. It also implies a consequence that interpreting the quadrant positions into the strategies will also be different. By describing these generalizations into (qualitative) partitions then the strategy issues can be developed into a strategy (Figure 2).

Based on Figure 2, the Team can translate the meaning of each point. For example, point 1 (vision and mission) is in quadrant 1, meaning that the vision and mission of the organization is already solid and is likely to be used as the basis for the movement towards the achievement of objectives. Point 15 (research), on the other hand, is in quadrant 3. It implies although in fact the MEE Study Program has the strength of qualified human resources, but there are many factors that hamper so that research is not running well. It is then recommended that the Study Program needs to change the strategy to maximize the strength in order to avoid threats related to research. With the same pattern, the Team can then develop a strategy using the qualitative SWOT matrix for each variable to see the quadrant location of each point for each variable.

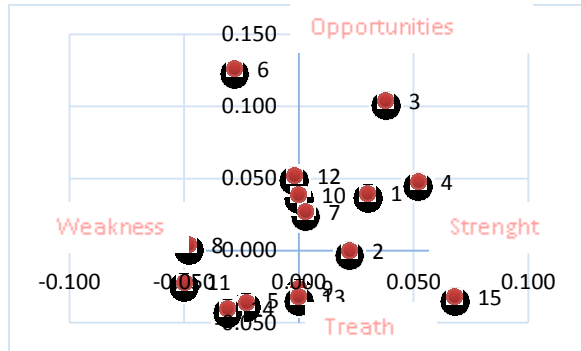


Figure 2. The organizational position of each variable for MEE Study Program

4.2 SWOT-Balanced Score Card

This section tries to address three questions at once, i.e. finding the strategic issues, developing the strategies, and finding alternative strategies to address the existing strategic issues. All three points can be carried out by using the SWOT analysis which is integrated into the Balanced ScoreCard (Table 3). In principle, SWOT-Balanced Score Card matrix has 8 boxes containing lists of the strengths, weaknesses, opportunities, and threats. With reference to the results of quantitative SWOT research, the scores resulted from the SWOT research can be used to balance between internal and external factors in making decisions concerning the strategies. Based on the balance of existing factors and with the magnitude of SWOT scores obtained, the strategies of SO-BSC, ST-BSC, WO-BSC, and WT-BSC can be formulated (Table 3)

Table 3. SWOT-Balance Scorecard Matrix

	OPPORTUNITIES	TREATHS
EXTERNAL	A. Government policy to enhance vocational school B. The attention of the business community to school C. The positive trend of vocational education to support the	A. competitors can formulate a vision and mission well B. vision and mission easily forgotten by the citizens of the campus
INTERNAL		

	achievement of the vision	
STRENGTHS	SO-BSC	ST-BSC
1. Clarity of vision, mission and goals in study program 2. Vision and mission statement of study program has been properly socialized 3. The vision and mission in accordance with the needs of the market	> Enhancement of building capacity (1,2+A,B,C) > Develop quality relationships with partner institutions (1,3+B,C)	> Internalisation of vision and mission (1,2+AC) > An increase in publications and communications (1,3 + A)
WEAKNESSES	WO-BSC	WT-BSC
1. Vision, mission not yet fully used as a guide for programming 2. The vision and mission are not yet fully understood by the academic community	> Conduct an evaluation of the achievement of the vision and mission of the study program (2+B) > Increased procurement of workshop to preparation of vision and mission instrument (2+BC)	> Increase research-based study program evaluation to determine the achievement of the vision and mission of the study program (1,2+AC)

In the same way, the Team can develop strategies for other variables. If the 15 variables have been analyzed with the technique of SWOT-Balanced Score Card, the next step is to assess the Team once again and by this it is still possible to find some other strategies for the options. These additional strategies are what is referred to as alternatives strategies. These alternative strategies are to be decided or the selected strategy. The strategies that have been decided by the Team will then be recapitulated and become a document of institutional strategic development.

4. CONCLUSION

Technology and Vocational Education (TVE) is one of the organizations that have unlimited resources. The role of TVEs in Indonesia is very strategic in sustaining the economic growth and the progress of our nation's competitiveness. Therefore TVE must work hard to be able to formulate effective strategies to realize the expectations of our nation. Strategic planning for TVE needs to be constructed in such a way that the progress of TVE and its role in improving the quality and relevance in education can be measurably monitored and evaluated. To be able to formulate a strategy in the strategic planning requires a careful analysis of the environment in order to obtain effective strategic formulations. Integration of SWOT analysis with Balanced Score Card has been proven effective in formulating strategies for the Technology and Vocational Education.

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