DEVELOPMENT STRATEGY OF EDUCATION CURRICULUM IN STTAL

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ABSTRACT

In the era of the industrial revolution 4.0, the preparation of mastery of maritime technology and the preparation of human resources is the urgency of the Navy's education. STTAL as one of the Navy's educational institutions has a strategic role as a producer of the Navy's human resources capable of merging themselves in technological development. Demands for the development of science and technology that are so fast affect the development of modernization of technology in the rank of maritime technology and graduate qualifications, it is necessary to make adjustments by conducting an evaluation and development in the education curriculum. A concrete step in addressing this requires a strategy to develop STTAL education curriculum in response to scientific vision, efforts to achieve graduate qualifications expected in accordance with societal needs and stakeholder needs. With SWOT analysis, a matrix will be obtained which shows the strengths and weaknesses as well as opportunities and threats which will later be used as a reference to make the right and appropriate strategies.

Keywords*: SWOT Analysis, STTAL Education Curriculum, Industrial Revolution 4.0*

1. INTRODUCTION

The role of the TNI in the era of the Industrial Revolution 4.0 is very dependent on the good and bad development of its human resources. This means that the human resources within the TNI organization must be proportionately provided with the best education and training, and even as perfect as possible. In this context, the main tool of the weapons system does not mean not important, but the man behind the gun remains the most basic element in creating a professional navy. (Octavian, 2014).

In preparing the mastery of technology in the rank of marine and the preparation of human resources is the urgency of the Navy's education. The implementation of education in the Navy's Educational Institution is directed at the achievement of the Navy's vision of the realization of a reliable and respected Navy (Apriyani, 2019).

Indonesian Naval Technology College or (STTAL) is one of the four educational implementing units within the Navy which has been established since 1966 in charge of organizing educational development programs in the field of defense technology at the rank of maritime affairs. STTAL is an element of implementing and developing a central executive that is located directly under the Commander of the STTAL. STTAL has the main task of assisting Kasal in carrying out the education required for tertiary science and technology tertiary institutions as well as fostering all ranks of his strength including the facilities and infrastructure of his organic support to support the Navy's primary duties.

STTAL currently has a study program that has been accredited by BAN-PT which includes: S-1 and D-III Study Programs in Mechanical Engineering, S1 Electrical Engineering Study Programs and D-III Electronics Engineering and Informatics Engineering, S-1 Study Programs Industrial Management Engineering, Hydrographic and D-III Hydro-Oceanography Study Program, and S-2 Study Program Systems Analysis and Operations Research.

STTAL has a strategic role as a producer of skilled Navy personnel who are capable of merging themselves in technological development. In responding to the demands of the development of science and technology that are so fast influencing the development of modernization of marine technology and graduate qualifications, it is necessary to make adjustments by conducting an evaluation and development of the education component. In this regard, one of the important components of education for evaluation and development is the education curriculum.

A concrete step in addressing this requires a strategy to develop STTAL education curriculum in response to scientific vision, efforts to achieve graduate qualifications expected in accordance with societal needs and stakeholder needs. Efforts to develop these strategies must be able to produce formulations and implement so that the organization can achieve its objectives and the institution is required to better understand the needs and expectations of students as consumers. (Wiyono, Welsa, & Prayekti, 2019).

Based on the background description stated above, the problem statement in this study is how the strategy used to develop the STTAL education curriculum. The problem statement is divided into two main issues that become research questions are how to identify the factors that influence in determining the strategy of developing STTAL

education curriculum and how to develop strategies in an effort to improve the quality of the ASRO STTAL education curriculum.

The purpose of this research is to Identifying the factors that influence the decision making of the STTAL education curriculum development strategy and to provide alternative strategies that can be used to develop STTAL education curriculum.

The research has some expected benefits,there are with the right education curriculum development strategy, STTAL students are expected to be highly efficient in meeting the needs of graduate users. STTAL as one of the Navy's Educational Institutions will get educators and educational staff with competence and be able to follow the development of information technology so as to be able to increase the strength of the Navy. Can be used as a reference for students conducting a study of the development strategy system within the Navy's organization.

2. MATERIALS AND METHODS.
2.1 Development Strategy

The development strategy has a formulation function and in considering internal and external factors faced by the company. Strategy formulation includes activities to develop the vision and mission of a business, identify external opportunities and threats of the organization, determine internal organizational strengths and weaknesses, set long-term goals of the organization, make a number of alternative strategies for the organization, and choose certain strategies to use. (Wheelen & Hunger, 2010).

The development strategy is the action that will require top management's decision in developing the business to realize it. The development strategy also affects the life of the organization in the long run because the nature of the development strategy is future oriented

(Afridhal, 2017) (Amalia, Hidayat, & Budiatmo, 2012).

2.2 Curriculum Development

Curriculum Development is a new curriculum idea or practice using potential parts of the curriculum in the hope of solving problems or achieving goals. Curriculum development generally starts from fundamental conceptual changes and then structural changes involving components of change in objectives, changes in content and structure, changes in strategy, changes in curriculum facilities, and changes in curriculum evaluation systems (Lismina, 2018).

The curriculum is a set of plans and arrangements regarding graduate learning outcomes, study materials, processes, and assessments that are used as guidelines for organizing study programs. Based on this understanding curriculum planning and regulation as a curriculum cycle has several stages starting from the needs analysis, design, development, implementation, evaluation and follow-up improvements made by the study program. The curriculum cycle runs in order to produce graduates in accordance with the learning achievements of predetermined study program graduates (Ristekdikti, 2019).

2.3 SWOT Analysis on the Curriculum Development Strategy of the ASRO S2 Study Program STTAL

SWOT analysis is a relevant strategic planning method used for determining alternative strategies for curriculum development for the S2 Asro STTAL Study Program. The initial process of SWOT analysis by evaluating strengths, weaknesses, opportunities, and threats in a project (Rangkuti., 2012) (Tasos Hovardas, 2015) (Gurel & TAT, 2017) (Cui, Allan, & Lin, 2019). These four factors form the acronym SWOT that identifies internal and external factors (Dyson, 2004) (Istiqomah, 2017).
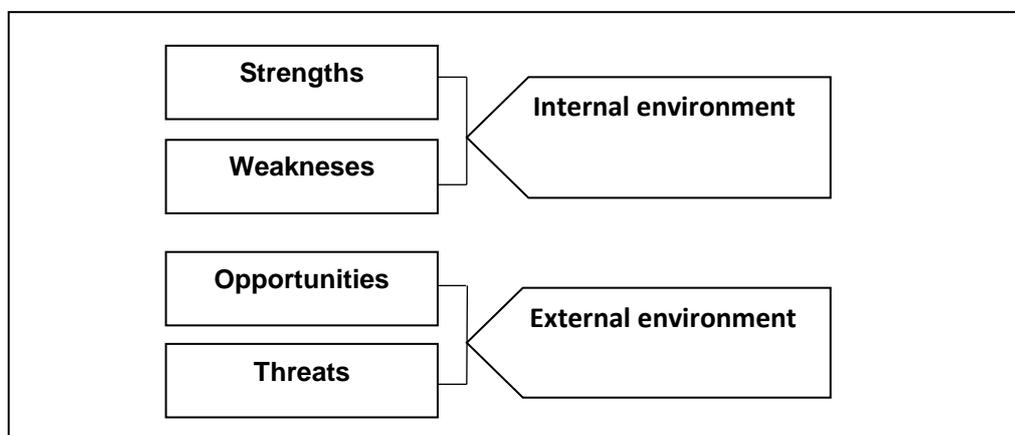

Figure 1. SWOT Concept Scheme

SWOT analysis can be applied by analyzing various things that affect the four factors, then applying them in the SWOT matrix (Ommani, 2011) (Osita, R., & Justina, 2014) (Irawan, 2017). In determining the strategy, the technique used is to look for cross strategies from the four SWOT factors, namely:

1) S-O Strategy: A strategy to utilize all strengths and optimize opportunities.
2) S-T Strategy: A strategy to utilize all strengths in overcoming existing threats.
3) W-O Strategy: Strategies to utilize opportunities optimally to overcome weaknesses.
4) W-T Strategy: Strategy to overcome weaknesses and eliminate threats that arise.

|	**Strengths**	**Weakness**
Opportunities	Strategy to utilize all strengths and optimize opportunities. **(S-O Strategy)**	Strategies to utilize opportunities optimally to overcome weaknesses **(W-O Strategy)**
Threats	Strategy to utilize all strengths in overcoming existing threats **(S-T Strategy)**	Strategy to overcome weaknesses and eliminate threats that arise. **(W-T Strategy)**

Table 1. SWOT Matriks   Sumber: (Anggraini, 2018)

2.4   Research Metodhology

In this study using primary and secondary data sources. Primary research data sourced from data collected by the author himself from the first source or place of research object. Whereas secondary research data is sourced from data that has been previously collected by other researchers, agencies or other sources that have been tested / valid. This secondary data was obtained from literature, articles, journals and websites on the internet regarding the research conducted.

The research subjects are agencies directly involved in the research, namely STTAL while the object of research is the intended target in the research, namely education experts, curriculum experts, lecturers, students within the STTAL environment and graduates user.

Based on the problems in the study, this research method uses the SWOT method. In the SWOT analysis there are several stages, namely identifying internal factors and external factors which are then arranged in a matrix. From the results of these factors then compiled in the SWOT matrix to develop alternative strategies to help match strengths and opportunities (SO strategy), strengths and threats (ST strategy), opportunities and weaknesses (WO strategy) and weaknesses and threats (strategy WT).

To solve problems in the observed research, steps are needed and determined to describe the approach and model of the problem. The steps taken are:
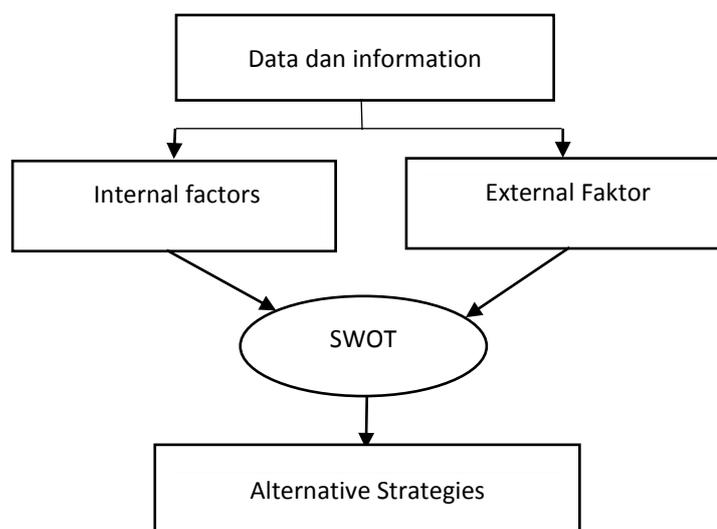
Figure 2. *Research Metodhology*

3. RESULT AND DISCUSSION

3.1 Identification of Internal and External Factors

Curriculum development of the S2 STTAL Study Program is currently aimed at achieving a common perception in the mindset, attitude patterns and action patterns in the administration of the Navy's education in accordance with STTAL's vision and mission.

The following will describe the existing conditions and STTAL education curriculum:

Table 2. Internal factor analysis

Internal factor analysis	
Strengh	*Weakness*
1. The learning outcomes of graduates have been described according to SN DIKTI. 2. Educational objectives are formulated in accordance with the needs of relevant stakeholders. 3. The process of structuring the education curriculum is in accordance with the rules of the Higher Education 4. Have a supported budget.	1. The education curriculum has not been revised for five years 2. There is no student handbook 3. There are lecturers who have not yet made teaching administration devices 4. There are subjects that are not up to date 5. Lack of practical training 6. The number of credits in some subjects does not meet the needs.

Table 3. External factor analysis

External factor analysis	
Opportynities	*Threat*
1. Improving the quality of student human resources 2. The policies of the Navy leadership in determining the education curriculum. 3. Dynamic technological and information developments 4. The success of graduates in their careers.	1. There are violations that cause delayed study completion 2. The existence of protocol activities that disrupt the learning schedule 3. Placement of graduates does not match the educational background 4. Less than optimal students in working on the thesis.

3.2 Discussion

Based on the above analysis, the main strategy that must be implemented for the development of the STTAL curriculum can be applied. The four strategies are as follows:

Table 4. SWOT Matrix STTAL Curriculum Development

IFAS EFAS	STRENGHT (S)	WEAKNESS (W)
	1. Educational curriculum development is carried out by a team of educational experts. 2. Educational objectives are formulated in accordance with the needs of relevant stakeholders. 3. The process of preparing the educational curriculum structure is in accordance with SN DIKTI's rules. 4. Have a supported budget.	1. The education curriculum has not been revised for five years. 2. There is no student handbook. 3. There are lecturers who have not yet made teaching administration devices. 4. There are subjects that are not up to date. 5. Lack of practical training 6. The number of credits in some subjects does not meet the needs.

OPPORTUNITY (O)	STRATEGI (SO)	STRATEGI (WO)
1. Improving the quality of student human resources. 2. The policies of the Navy leadership in determining the education curriculum. 3. Dynamic technological and information developments. 4. The success of graduates in their careers.	1. Develop the formulation of learning outcomes. based on the improvement of science and technology and the quality of human resources. 2. Managing every budget of student education activities until graduation.	1. Develop competency-based education curriculum to improve the quality of human resources and follow the development of science and technology. 2. Arrange student handbooks in accordance with the applicable curriculum. 3. Analyze and update each subject and Lattek as needed. 4. Carry out administrative order for the lecturer to complete the teaching device.
THREAT (T)	**STRATEGI ST**	**STRATEGI WT**
1. There are violations that cause delayed study completion. 2. The existence of protocol activities that disrupt student learning schedules. 3. Placement of graduates does not match the educational background.	1. Implement curriculum well and routinely hold commander hours for assistance and consultation. 2. Maximizing coordination with the leadership of the Navy in the placement of graduates. 3. Organize an optimal learning schedule so that it can go hand in hand with protocol activities.	1. Have a breakthrough to design a new curriculum with the implementation of a customized schedule of protocol activities. 2. Routinely provide legal counseling, so there is no violation of discipline. 3. Knowing the interests of students' talents and skills so that the placement of graduate positions can run optimally in accordance with their expertise and interests.

With the above results, four strategies are obtained namely SO, WO, ST and WT. To answer the challenges in the era of the industrial revolution 4.0, STTAL must prepare a competency-based education curriculum with the aim of mastering the technology of ocean and maritime departure.

After calculating the weighting of internal and external factors, the current STTAL condition is in quadrant 3 so it must uses the WO strategy. This means that some weaknesses must be overcome by utilizing existing opportunities, the strategies that can be used as a reference are the following strategies:

a. Develop competency-based education curriculum to improve the quality of human resources and follow the development of science and technology.

b. Arrange student handbooks in accordance with the applicable curriculum.

c. Analyze and update each subject and Lattek as needed.

d. Carry out administrative order for the lecturer to complete the teaching device.

4. CONCLUSIONS

Based on the SWOT analysis for the development of the STTAL curriculum that has been carried out, it can be concluded that the strategic goals that serve as a reference indicator for achieving strategic plans are based on the Vision, Mission, STTAL Objectives and challenges of the industrial revolution 4.0. current and future faced by STTAL. The STTAL curriculum development strategy targets become a tool used to develop strategic factors based on strengths, weaknesses, opportunities and threats.

For further research, it is expected that a weighting on each alternative strategy, adding respondents to be more varied and also further developed to determine the interval model or limit how far the priority weights of the criteria are lowered and raised so as to cause a change in the order of priority strategies.

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REFERENCES

Afridhal, M. (2017). Tanjong Bread Business Development Strategy in Samalanga District, Bireuen Regency. *Agricultural Journal 1 (3)*, 223–233.

Amalia, A., Hidayat, W., & Budiatmo, A. (2012). Business Development Strategy Analysis in Semarangan Batik UKM in Semarang City. *Journal of Business Administration*, 1-12.

Anggraini, D. C. (2018). *Development of Kowal Coaching Instruments to Improve Kowal Performance in Supporting the Basic Tasks of the Indonesian Navy.* Surabaya: STTAL.

Apriyani, R. (2019). Innovation In The Development Of STTAL Human Resources To Face The 4.0 Industrial Revolution. *International Journal Of Asro - STTAL [S.l.], v. 10, n. 1*, 45-53.

Cui, J., Allan, A., & Lin, D. (2019). SWOT Analysis and Development Strategies for Underground Pedestrian Systems. *Tunnelling and Underground Space Technology 87*, 127-133.

Dyson, R. G. (2004). Strategic development and SWOT analysis at the University of Warwick. *European Journal of Operational Research*, 631-640.

Gurel, E., & TAT, M. (2017). SWOT Analysis : A Theoritical Review . *The Journal of International Social Research Volume: 10 Issue: 51*.

Irawan, M. R. (2017). SWOT Analysis To Determine Competitive Strategies in PD. BPR. Regional Bank of Lamongan. *Journal of Economics, University of Kediri*, 40-56.

Istiqomah. (2017). Human Resource Development Strategy As An Effort To Improve The Performance Of Village Apparatuses Using SWOT Analysis. *Journal of Malang State University*, 1-9.

Lismina. (2018). *Curriculum Development in Schools and Colleges.* Ponorogo: Uwais Indonesian Inspiration.

Octavian, A. (2014). Globalization and Transformation of Military Education Institutions in Navy Staff and Command Schools (SESKOAL). *Journal of Community Sociology, Vol. 19, No. 2*, 167-194.

Ommani, A. R. (2011). Strengths, weaknesses, opportunities and threats (SWOT) analysis for farming system businesses management: Case of wheat farmers of Shadervan District, Shoushtar Township, Iran. *African Journal of Business Management Vol. 5(22), pp.*, 9448-9454.

Osita, I. C., R., I. O., & Justina, N. (2014). rganization's stability and productivity: the role of SWOT analysis an acronym for strength, weakness, opportunities and threat. *nternational Journal of Innovative and Applied Research Volume 2, Issue (9)*, 23-32.

Rangkuti., F. (2012). *SWOT Balanced Scorecard.* Jakarta: PT Gramedia.

Ristekdikti. (2019). *Guide to the Preparation of Higher Education Curriculum in the Industrial Era 4.0.* Jakarta: Ristekdikti.

Tasos Hovardas, P. (2015). Strengths, Weaknesses, Opportunities and Threats (SWOT) Analysis: A template for addressing the social dimension in the study of socio-scientific issues. *AEJES (2015)1*, 1-12.

Wheelen, T. L., & Hunger, J. D. (2010). *Essentials Of Strategic Management 5th Edition.* United States Of America: Prentice Hall.

Wiyono, G., Welsa, H., & Prayekti. (2019). Swot Dan Analytic Hierarchy Process Sebagai Acuan Strategi Optimasi Student Body. *Jurnal Riset Bisnis dan Manajemen Vol. 12, No. 1*, 1-8.