

## Industrial Revolution 4.0 as a Strategic Issue of Higher Education

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### Abstract

This study aims to explore strategic issues of the industrial revolution 4.0 in the higher education environment, accompanied by an in-depth analysis with the perspective of change management and how they adapt. The method used is SWOT analysis by scanning the environment through non-probability sampling using snowball data collection with the help of Google forms so that stakeholders can respond through a multimedia platform. The results of data processing in the form of index numbers by contrasting strengths and weaknesses as well as opportunities and threats. The final result is the ordinate point 2.93, 013 which is in quadrant 1 with good internal strength but has not been able to seize opportunities, which requires more adequate consolidation of resources. It was concluded that private higher education in Banten Province at a young age still requires strengthening in terms of human resources, finances, stable intake of students and educational infrastructure that must be updated according to the demands of the industrial revolution 4.0.

Keywords: *Revolution 4.0; Strategic Issue, Higher Education*

### Introduction

Indonesia is also the most populous country in the world. Large populations with higher purchasing power are potential markets, but large populations with high-quality Human Resources (HR) are a huge competitive advantage. Implications of this ability to boost economic growth and productivity include the provision of employment and prospective land (Suseno & Dwiatmadja, 2016). In addition, assuming greater education, growth and growth spurt will be significantly reduced. Indonesia, on the other hand, is a country with a lot of natural and fertile power. Natural resources can be managed effectively by expanding the processing industry, which adds value to products and minimizes the export of raw materials (Saefudin, et al, 2019).

As a result, the government established a nine-year compulsory education program, and low education had an impact on the quality of Manusi Resources in the form of incompetent labor (Suseno et al. 2020).

In Indonesia, unemployment and poverty are challenges that demand government attention as well as private sector participation.

Please study the statistics of the Central Statistics Agency (BPS) for 2014 and 2019. According to BPS, there are more than 600,000 open higher education graduates in Indonesia, out of a total of 7,147,069 open unemployment. According to the Bureau of Labor Statistics, open unemployment reached 7.05 million people in August 2019. In terms of numbers, there has been huge growth in the last five years.

So, what happened in Banten Province? According to BPS Banten Province, 489,216 people were unemployed in Banten in May 2020. This figure includes 12.58 percent of university graduates and 2.1 percent of D1/II/III graduates. Banten Province will be the top position in Indonesia if we go back three years, from 2018 to 2020 (Suseno, 2019).

It's a fact that makes us uncomfortable. As a bit of a thought, a bachelor wants to start working as soon as possible and improve his or her life rate. However, the desire to earn a decent living vanished when he saw the reality above.

The industry believes that what the institution produces is irrelevant, and graduates are still unemployed as a result of this fact. As a result, anything in college tends to stand out (Yusuf & Suseno, 2010).

This revitalization approach was developed by the Ministry of Education in General Vocational Education in collaboration with industry and polytechnics. The main goal is two: all polytechnic graduates must find a new career that utilizes their skills. No one could be trusted, and no one could be hired with lesser skills. This sector needs a skilled workforce.

The challenge is, what instruments do we use to find jobs that match our capabilities while also providing a competent labor supply for the industry?

Proper practicum tools should be accompanied by appropriate practicum tools in terms of rejuvenating vocational education in the Ministry of Education, which intends to give vocational students more practicums than learning in theory with a ratio of 70:30. As a result, a practical learning target of 70% is achievable (Suseno, et al. 2021)

However, many schools that offer vocational education will face challenges in terms of practicum tools due to the high cost of these tools if practicum facilities and infrastructure are not yet available.

There are 1,365 vocational educational institutions in the United States, with 1,103 vocational academies and 262 polytechnics. There are 1,103 new vocational academies, six of which have facilities and infrastructure, and another 1,088. 13 of the 262 polytechnics, on the other hand, have passed, with the remaining 240 requiring new buildings and infrastructure (Suseno, et al. 2020)

With a mature and comprehensive strategic design, PGRI Banten Polytechnic must be part of the solution in addressing development, especially in Banten Province. All existing problems are intended to be resolved as quickly as possible with the support of the strategic plan of PGRI Banten Polytechnic.

## **Theoretical Framework**

### **SWOT Analysis**

SWOT analysis is a tool for assessing external strengths, weaknesses, opportunities, and threats. In terms of organizational structure, the company must identify internal and external problems to analyze the operating status of the existing institution, which will be followed by the implementation of the strategy. External data on opportunities and hazards is available from a variety of sources, including users, regulatory governments, suppliers, bankers, and partners from other industries. Partner Help scanning is used in a small number of sectors. Partner Scanning Partner Assistance Assistance (Suseno, 2021). The process of identifying the structural components necessary to formulate an industrial strategy is known as SWOT analysis. The purpose of this analysis is to maximize the positive features of strengths and opportunities while reducing the negative aspects of weaknesses and threats. The decision-making approach in setting strategies is strongly related to vision capabilities, missions, objectives, and strategies, as well as industrial policy. As a result, in eighteen current circumstances, strategic planning is required to assess important strategic aspects of the industry in terms of strengths, weaknesses, opportunities, and hazards. (Rangkuti, 2009, Suseno, et al. 2021).

External elements such as opportunities and threats are compared to internal factors such as strengths and weaknesses in SWOT analysis.

According to Fahmi, when conducting research using SWOT analysis to gather reliable data, the following external and internal elements should be considered as important factors to consider when conducting SWOT analysis (Fahmi, 2013: 260).

### **External elements**

External factors influence the establishment of aspects of opportunities and threats relating to various situations of events outside the industry that have consequences in industrial decision-making that have consequences in political, legal, economic, technological, demographic, and socio-cultural circles of industrial and macro, political, legal, economic, technological, demographic, and socio-cultural business.

### **Internal elements**

Internal elements related to various situations of events outside the industry that have consequences in industrial decision making greatly affect the formation of strengths and weaknesses. These internal elements

concern a variety of functional management which include: sales, funding and financing, operations, human resources, research and development, information systems management, and industrial culture.

## **Methods**

The approach in this research is qualitatively descriptive. Quantitative SWOT analysis is created using research data from questionnaires issued to various stakeholders (Strengths, Weaknesses, Opportunities, Threats). Analyzing data is an in-depth study of internal and external issues that have a significant impact on the strategic development of the university. The EFE matrix (External Factor Evaluation) is used to identify external problems, and the IFE matrix (Internal Factor Evaluation) is used to identify internal difficulties, as well as swot matrix examination of issues being evaluated for drafting (Summary, 2009).

When conducting mapping analysis with SWOT techniques, according to Summary (2009), the following procedures should be taken: 1) Identify internal and external problems in the learning environment, and 2) design a SWOT approach. In determining the strategic actions of certain institutions, determining concerns that stand out as strengths, weaknesses, opportunities, and threats 3) define dominant concerns as strengths, weaknesses, and opportunities, and assign values or weights to each factor based on the dominant issue of value weight, and 4). According to the influence of existing issues, each dominant issue receives grades ranging from 4 (excellent) to 1 (poor).

The data is then converted to a quantitative database and examined with a dominant criteria matrix to identify the position of the "business" or institution, based on the qualitative SWOT matrix above. (Robinson and his partner, 2008)

The matrix table contains 2 (two) important elements: the total EFE weight point score on the X-axis and the total IFE weight point score on the Y axis, as well as the availability of a college quadrant map. This is important to remember because each of the four quadrants has its own method and evaluation system for comparing one quadrant to the next. Accuracy in matching external factors (opportunities and challenges) with internal ones (strengths and weaknesses) becomes the main study in creating trustworthy goals and objectives for the university.

## **Results And Discussions**

### **1. Mapping with SWOT Analysis**

The first step in doing a SWOT analysis is to identify the most important internal and external factors.

#### **Strength**

1. The learning process is good.
2. Have academic and non-academic achievement
3. Availability of facilities and pre-means
4. Have a superior program (Character Building Program)

#### **Chance**

1. Parents have an interest in getting their son on campus with a work placement.
2. Public trust increases

#### **Debilitation**

1. Innovation in the educator learning process has not been maximized
2. Low employee work ethic
3. Nonconformity of science qualifications with taught courses

#### **Threat**

1. Industrial Revolution 4.0
2. Quality competition with other campuses is very strict

The IFE matrix (Internal Factor Evaluation) is organized in table 1 and the EFE matrix (External Factor Evaluation) is organized in table 2. The IFE matrix (Internal Factor Evaluation) is organized in table 1 and the EFE matrix (External Factor Evaluation) is organized in table 2.

**Table 1 IFE matrix calculation**

Do not	Internal Issues	Weight	Rating	Shoes
<b>Strength Indicator</b>				
1	The learning process is good.	0.7331	4	2.9324
2	Have academic and non-academic achievement	0.8848	3	2.6544
3	Availability of facilities and pre-means	0.8689	4	3.4756
4	Have a superior program (Character Building Program)	0.8602	3	2.5806
Number of Power subtotal scores				11.643
<b>Weakness Indicators</b>				
1	Innovation in the educator learning process has not been maximized	0.872	4	3.488
2	Low employee work ethic	0.8602	4	3.4408
3	Nonconformity of science qualifications with taught courses	0.8936	2	1.7872
Number of subtotal weakness scores				8.716

**Table 2 CALCULATIONS OF EFE Matrix**

Do not	External issues	Index	Urgency	Shoes
<b>Opportunity Indicator</b>				
1	Parents have an interest in getting their son on campus with a work placement.	0.872	2	1.744
2	Public trust increases	0.8646	3	2.5938
Number of chance scores				4.3378
<b>Threat Indicator</b>				
1	Industrial Revolution 4.0	0.7464	2	1.4928
2	Quality competition with other campuses is very strict	0.905	3	2.715
Number of Scores				4.2078

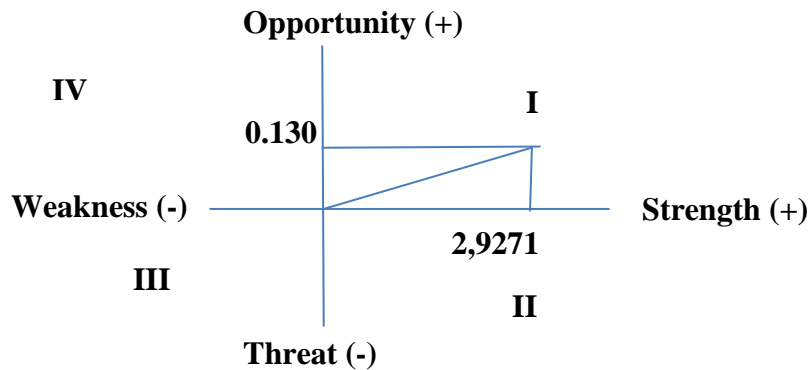
**2. Strategy Assumptions (IFE/EFE Matrix and SWOT Matrix)**

According to the results of the EFE analysis above, the chance factor got a score of 4.3378, while the threat factor got a score of 4.2078. The results of this analysis show that efforts to improve quality and competitiveness strategies still have a chance, despite the fact that it has a lower value than the odds it has. Furthermore, by compiling the IFE/EFE matrix, the following values/scores can be obtained for each internal and external factor:

$$\text{Internal Assessment Score (S - W)} = 11,643 - 8,716 = 2,927$$

$$\text{External Assessment Score (O - T)} = 4.3378 - 4.2078 = 0.13$$

The following SWOT analysis formulations can be used to determine the position of the campus based on the value of the above factors:



Swot Matrix results show that Higher Education in Banten Province of Indonesia is in quadrant I which is a favorable position, but must be more consolidated to the resources owned, except 2 public universities namely Sultan Ageng Tirtayasa University and Sultan Maulana Hasanudin Banten State Islamic University. Because of higher education's position in Indonesia's Banten province, currently has opportunities and strengths, it is very important to maximize existing opportunities to strengthen the position by implementing methods that support aggressive growth policies (aggressive strategies).

### 3. Strategic Issues

3.1. To eliminate unemployment, a marriage is required between vocational education and the industrialized world.

This issue is aimed at:

- a) Increase the absorption of vocational alumni into the world of work
- b) Implementation of curriculum and learning systems that are able to answer the challenges of industrial, local, national and international needs
- c) Achieving a College reputation that demonstrates excellence

3.2. Introduction of PGRI Banten Polytechnic as Vocational Education that establishes relations with the industrial world

This issue is aimed at:

- a. Facilitate cooperation with the world of work and industry
- b. The needs of the world of work adjust to the development of the world of work and business

3.3. Improving the quality of Education, Research and Community Service.

This issue is aimed at:

- a) The need for the achievement of quality and strength of research results relevant to the policy of the College.
- b) The need for increased publication and incubation of research results
- c) The need for the involvement and reach of colleges in community service programs

### 4. Mission Vision and Strategic Goals

4.1. All :

Become a Professional Vocational College with a competency orientation, strengthening character and independence in the fields of management, business and technology by 2024

4.2. Mission

1. Organizing and developing quality vocational education in creating graduates who are characterful, competent, adaptable, independent, faithful and devoted.
2. Develop a curriculum to anticipate the needs of the world of work in the fields of management, business and technology.
3. Develop and improve the quality of education management based on the principles of good governance.
4. Conduct research and community service for the development of science and skills for the welfare of the community.

5. Develop and strengthen networks and partnerships at the national, regional and international levels.
6. Improving the welfare of the entire academic community of PGRI Banten Polytechnic.
7. Increased quantity and quality of facilities and infrastructure to support the process

#### 4.3 Purpose

1. Forming character and developing yourself
2. Open insights and expand knowledge
3. Get higher job opportunities
4. Getting the opportunity to generate more income
5. Improve useful skills
6. Get as many relationships as you can
7. Benefiting both children and families

#### 4.4. Target:

1. Good relations between parties within
2. The realization of a good cooperative relationship with the parents of students
3. The realization of a good cooperative relationship with DUDI
4. The realization of a good cooperative relationship with the government
5. The realization of good cooperation relations with other campus public
6. Complete produce graduates who have knowledge in the field of Informatics Management.
7. Complete produce graduates who have knowledge in the field of Mechanical Engineering.
8. Complete produce graduates who have knowledge in Electronics Engineering.
9. Complete produce graduates who have knowledge in the field of Digital Business
10. Complete produce graduates who have knowledge in the field of Logistics Management
11. Complete produce graduates who have knowledge in the field of International Business Administration.
12. Complete produce graduates who have noble character and morals

### Conclusion

Utilizing the SWOT exam, the research exam for the definition of an important college setting has brought a plan that pays attention to part of further developing quality assistance and extends admission to different business sectors. Information is dissected using SWOT network planning tools using (four) procedures: SO, ST, WO, and WT. An elective procedure that is expected to foster schools, in particular the SO (Strength Opportunity) methodology by using all the potential and resources they need to adequately capture and utilize valuable and proficient open doors, which are demonstrated by estimates given the consequences of THE IFE and EFE exam techniques and swot grids to obtain the preferred system that is expected to foster the school, In particular, SO (Strength Opportunity) techniques use all the potential and qualities they need to capture and utilize open doors successfully and productively. The SO methodology, which is a demonstration of the expansion of associations in the field of training and framework offices with appropriate partner partners and combines school greatness projects with partners, is the plan of progress demonstrated by this exploration.

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