

Relevance of Vocational Higher Education Graduates with Requirements of Workforce in Indonesia

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Abstract: Indonesia is characterized by the cross-border integration of labor force. With the emergence of various new jobs, with the increase of innovative technology and creativity, Indonesia's demand for labor force continues to increase and it faces increasingly fierce competition. Vocational Higher Education as higher education that produces ready-to-use graduates is increasingly to meet the needs of an increasingly dynamic and complex world of work. The purpose of this study is to examine the job demand of graduates from vocational universities in Indonesia. The approach taken is a quantitative approach using secondary data from the Directorate General of Higher Education and BPS to produce relevant research. Based on macro data, the current tendency in Indonesia to open many new universities massively and more profitably without providing adequate and quality infrastructure, so that the number of graduates is increasing. The gap between the demand and supply of formal workers who do not match education and skills is more than half. It opens opportunities for foreign workers. Thus, there is a need for increased cooperation and synergy between vocational universities in Indonesia and the business world.

Keywords: Vocational, Higher Education, Workforce

1. Vocational Higher Education

The Vocational Program is a university-level educational program designed to train personnel capable of building expertise and know-how in their field, ready to work and able to compete globally. Vocational education is a university that supports the mastery of certain applied skills. The education program includes Diploma: D1 / Primary Expert, D2 / Young Expert, D3 / Associate Expert and D4 / Applied Bachelor which is equivalent to the undergraduate academic education program. The existence of vocational education can create work-ready resources because this education prioritizes practical knowledge that can be directly applied in the world of work so that it is not a waste of time to master specific knowledge. Vocational graduate students will be given special skills that will be their provision in the future, namely work experience. They will also hold a vocational degree or associate expert degree when they have completed their studies.

Vocational has a very important role in improving the quality of workforce in the Global Era so that today's young generation must be able to compete and continue to develop themselves with others [1]. In addition, it is also required to be able to master technological developments and have more selling points than others and maintain nationalism and ethics. The industrial world's need for young, dexterous, and skilled workers is very high. Not only

that, the industrial world also needs a workforce with good attitudes and soft skills, ready for change, innovative and have high endurance. In general, vocational education (diploma program) aims to prepare students to become members of society who have the ability of professional experts through the application, development, dissemination and use of technology and art to improve people's lives and enrich the national culture. Vocational higher education is intended for students who want to have reliable and qualified professional skills, because this education does not require high thinking skills, but is sufficient for those who are very creative, disciplined, and able to cooperate. The advantage of vocational education graduates is that there are sufficient provisions during vocational education [2]. Because the graduates of professional colleges go through quite a long practical training. Vocational education has a strategic position where vocational education will dedicate itself to ensuring its graduates have competencies in accordance with the changing times in the world of work [3]. Industrial cooperation with vocational education institutions is very important because graduates from vocational education are based on industrial orders.

2. Indonesian Workforce Demand

The Workforce demand can be interpreted as a market that unites sellers and buyers of work. The sellers of work in this market are job seekers (job owners), while the buyers are people/institutions that need work. The labor market is organized to coordinate meetings between job seekers and people or institutions in need of work. To meet the company's labor needs, the workforce demand is felt to provide a way out for companies to meet it [4]. Thus, it does not seem that only job seekers benefit from the existence of this market. To create synergistic conditions between the two parties, namely between sellers and workforce providers, good cooperation between all parties involved is needed, namely workforce sellers, workforce buyers, and the government.

The workforce market connects all the needs and supplies of workforce, or all demand and supply in society with all mechanisms that enable productive transactions between individuals who sell their power and employers who need workforce [5]. Indonesia has a large informal sector workforce and low labor productivity in Indonesia. Currently, workers in the informal sector contribute around 57 percent of the workforce in Indonesia. Another classic problem of the workforce in Indonesia is of course low productivity. In the period 2000-2014, the increase in wage rates far outperformed the level of productivity of workers in Indonesia (fig 1) [6]. There is nothing wrong with rising wages. It's just that wage increases need to be rationally justified. The increase in the minimum wage does have a positive impact on workers in the formal sector, but it has zero impact on workers in the informal sector. As a result, the welfare of informal sector workers cannot be improved by increasing wages [7].

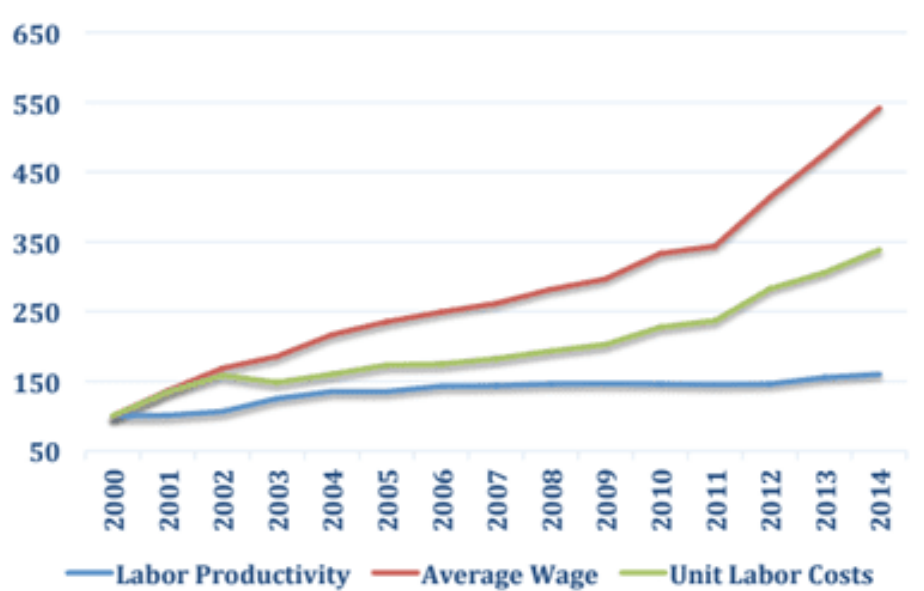


Fig 1. Productivity, Wages, and Costs per Worker in Indonesia (Aswicahyono and Rafitrandi, 2018)
Source: macroeconomicdasboard (2020)

Indonesia's labor market is so rigid that it creates a phenomenon known as "jobless growth" and reduces poverty, a situation exacerbated by increased technological efficiency. There is a tendency for industries, especially exporters, to replace workforce into more efficient and cheaper machines in line with the rigidity of the workforce market [8].

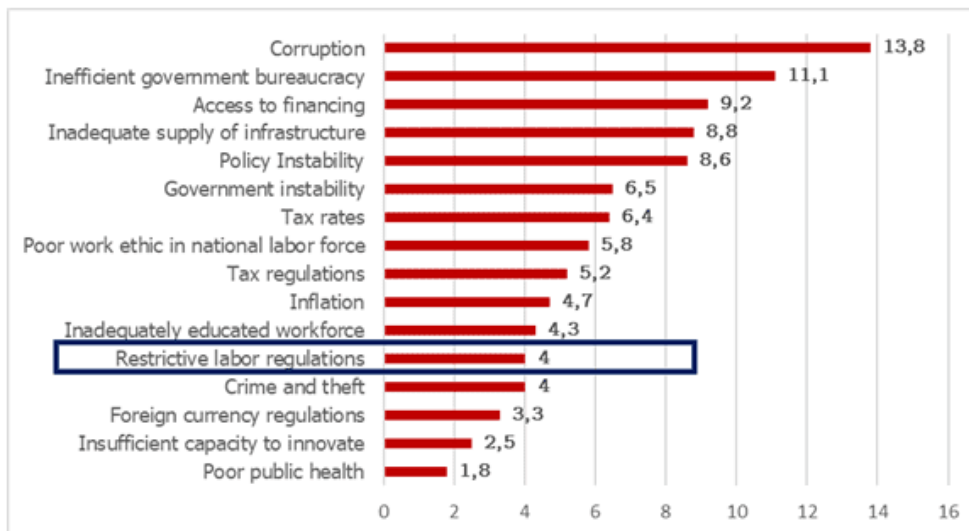


Fig 2. The Most Inhibiting Factors in Doing Business in 2017 (World Economic Forum, 2018)
Source: macroeconomicdasboard (2020)

Unlike the implementation of work in the industrial era 4.0, the foreground is the management of information technology through various devices that support the implementation of work. Simply put, Industry 4.0 offers everyone the opportunity to interact with modern information technology services. Returning to the educational base of the use of information technology, the Industrial Age 4.0 has become one of the masses where there has been a more effective change in thinking and ways of working to achieve the desired results, supported by pragmatic and regulatory social and non-social use. Industry 4.0 does not abandon old rules, but adds new applications to build a new paradigm in working based on the application of technology. The development and application of technology in various fields of work as well as the introduction of an independent and qualified workforce are documentation of Industry 4.0 to face the development of modern technology. In the era of Industry 4.0, an important focus is to train employees who know how to work effectively and efficiently using technology to build themselves, the nation and the country in the future.

An increasing percentage of jobs will require college and advanced degrees.

Net change in total employment by education required, 2014–30, midpoint automation,¹ step-up scenario

Education level	Employment in 2014, million	Projected net change in employment, million	Change in jobs, 2014–30, %	Employment in 2030 step-up, million
Less than secondary	31.6	11.2	36	42.8
Secondary	56.4	15.0	27	71.4
Associate	17.1	6.8	40	24.0
College	9.3	4.9	52	14.2
Advanced	1.7	1.1	66	2.8

¹Midpoint of earliest and latest automation adoption in the step-up scenario (ie, high job growth).
Source: "Jobs lost, jobs gained: What the future of work will mean for jobs, skills, and wages." November 2017, McKinsey Global Institute, McKinsey.com;
O*NET OnLine; US Bureau of Labor Statistics; McKinsey Global Institute analysis

Fig 3. An Increasing percentage of jobs will require college and advanced degrees
Source: Mckinsey Global Report Institute (2017)

One of the publications of the McKinsey Global Report Institute paper [9] that in Indonesia Employment growth is likely to change the sectoral distribution of the entire Indonesian economy. Labor demand may increase in construction and industry, housing and food services, education, health care, and retail and wholesale trade. Job changes and sector shifts require new skills and higher levels of education [10]. The net change in employment for Indonesians with secondary education will most likely be the largest by 2030, but in percentage terms the greatest opportunity will be for those with higher education [11].

3. Method

Seeing the impact of changes that occur in the labor market in Indonesia and seeing the close relationship between the results of vocational higher education graduates so that this study uses quantitative methods with multiple regression analysis. The data used in this study are the results of vocational higher education graduates, namely; Academies and polytechnics sourced from the Directorate General of Higher Education, as well as formal labor force data sourced from the Central Statistics Agency (BPS). Data was taken from 2020-2021 with 34 provinces. Analysis model used:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \epsilon_t$$

Means:

Y= Formal employment

X1= Graduates of higher education academies

X2= Vocational higher education graduates

The stages in the research analysis use Common Effect Model, Fix Effect Model and Random Effect Model.

4. Finding and Discussion

To choose the best model in this study using 3 techniques, namely Common Effect Model (CEM), Fix Effect Model (FEM) and Random Effect Model (REM). Of the three models and the Chow Test that has been tested, the best results were obtained in the Fix Effect Model test, which is $0.000 < 0.05$ so that in this study it was decided to use Fix Effect Model analysis. In the Langrange Multiplier Test, Null hypotheses are obtained which means No effect. The Multicollinearity Test shows that there is no high correlation value between independent variables not exceeding 0.90 (Ghozali, 2013: 83) so it is concluded that there is no multicollinearity between independent variables.

Sample: 2020 2021

Periods included: 2

Cross-sections included: 34

Total panel (balanced) observations: 68

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	38.92097	0.429116	90.70038	0.0000
X1	0.001371	0.001769	0.775010	0.4440
X2	0.000206	0.000906	0.227869	0.8212

Effects Specification			
Cross-section fixed (dummy variables)			
R-squared	0.989496	Mean dependent var	39.25941
Adjusted R-squared	0.978007	S.D. dependent var	9.626573
S.E. of regression	1.427629	Akaike info criterion	3.854959
Sum squared resid	65.21997	Schwarz criterion	5.029992
Log likelihood	-95.06859	Hannan-Quinn criter.	4.320543

F-statistic	86.12585	Durbin-Watson stat	3.885714
Prob(F-statistic)	0.000000		

Source: Researcher Data, 2023

From the table of research results above, academy graduates (X1) have a prob value. $0.4440 > 0.05$ partially has no direct effect on the workforce as well as polytechnic graduates (X2) with prob values. 0.8212 partially has no direct effect on labor. While the value on Prob (F-statistic) $0.000 < 0.05$ is a direct effect on labor absorption. At an adjusted R-Square value of 0.97 , the meaning of the second graduate, namely vocational, has a strong relevance to the workforce in Indonesia, which is 97% .

Our analysis shows that the likelihood of getting a job varies greatly among people with general professional and academic education. Vocational higher education experiences many challenges and obstacles from the start of the education process to the end of labor absorption by industry. The first challenge facing vocational education is the implementation of the curriculum. The curriculum used in the teaching and learning process and application in industry is often inappropriate. So that when these vocational graduates begin to penetrate the world of work, they will encounter many discrepancies which then become obstacles. Vocational education must listen more to voices and suggestions from industry to determine what they really need so that open unemployment among vocational graduates does not occur again. Then, the next challenge at the beginning of the launching of strengthening vocational programs is that the facilities and infrastructure of Vocational Education must immediately make a big concept about the design of Indonesian vocational education in the future. The concept must contain flows and matrices from the beginning of students or female students entering college until finally they can be accepted in the industry easily. The preparation also includes regulations and rules related to vocational education which must be made as flexible as possible to make it easier for both universities and industry to collaborate and collaborate. Vocational education in the future will be a generation of graduates who have practical skills and abilities in their respective industries as well as Vocational Education for a brilliant future for Indonesia.

5. Conclusion

Vocational higher education is closely related to the absorption of formal labor in Indonesia. To be able to adapt to this fundamental change in vocational education levels, Indonesia must carefully prepare its workforce through workforce training and improved education curriculum. Thus, there is a need for increased cooperation and synergy between vocational universities in Indonesia and the business world.

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