

ARTICLE

Vocational Secondary Education in Indonesia: Yea or Nay?

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Abstract

This paper addressed the Indonesian government's current policy focusing on the improvement of technical and vocational training and education, particularly vocational high schools, to improve productivity and decrease youth unemployment, thereby enhancing the human capital and economic growth of the country. Using cross-countries reviews and current data on vocational high schools in Indonesia, this paper provided supporting and disputing arguments on the policy. The expansion of vocational high schools can substitute the general high schools, allowing more students to enroll in formal secondary education. As vocational high school graduates can be easily employed, the employment advantage of the vocational high school graduates might diminished compared to general high school graduates. In Indonesian, there are issues that must be addressed if the country wants to focus on vocational high schools, such as quality and relevance of vocational education to private sector, resources for quality improvement of the schools, and coordination among stakeholders. The analysis in this paper was preliminary, and a more thorough analysis applying economic methods is necessary to support the findings of this paper.

1. Introduction

Indonesia's has experienced relatively stable economic growth from 2014-2018, with an average of growth of approximately 5 percent per year and an increase of Human Development Index from 68.90 in 2014 to 71.39 in 2018. The unemployment rate has also declined from 5.94 percent in 2014 to 5.34 percent in 2018.² Despite promising economic performance in the last five years, quality of human resources in the country remains an issue. Despite decreasing unemployment, youth unemployment was still relatively high in 2018, with 26.67 percent unemployment for age 15-19 and 16.73 percent for age 20-24.

Moreover, low skilled labor was still high, with as much as 40.69 percent of the employment being for junior high school graduates or below.

The government administration formed in October 2019, with President Joko Widodo serving the country for the second term, prioritizes improvement of the quality of human resources. Enhancing the quality and competitiveness of human resources is one priority in the Medium-Term Development Plan of 2020-2024. Technical and vocational education and training (TVET) is considered a major program to enhance the productivity of human resources and combating youth unemployment as graduates of this type of education should have competencies to enter the labor market.

The government defines a broad portfolio of TVET that consists of both formal and non-formal education. Formal education includes vocational high schools (*Sekolah Menengah Kejuruan*, SMK) on the secondary level and polytechnic/academy, vocational schools for higher learning, and community colleges on a tertiary level. Non-formal education consists of government training centers, private training centers, and private courses³. Looking at the current portfolio of TVET in Indonesia, formal education plays a significant role. In 2019, there were approximately 14,000 vocational high schools with 5 million students, and approximately 1,400 schools and 600,000 of students on a tertiary level (Figure 1).⁴

Despite the range of formal vocational secondary education available, the unemployment rate of vocational high school graduates was higher than other levels of education. In 2019, employment rates of vocational graduates were 10.4 percent, whereas the employment rate of general high school graduates and academy/diploma graduates was 7.9 percent and 6

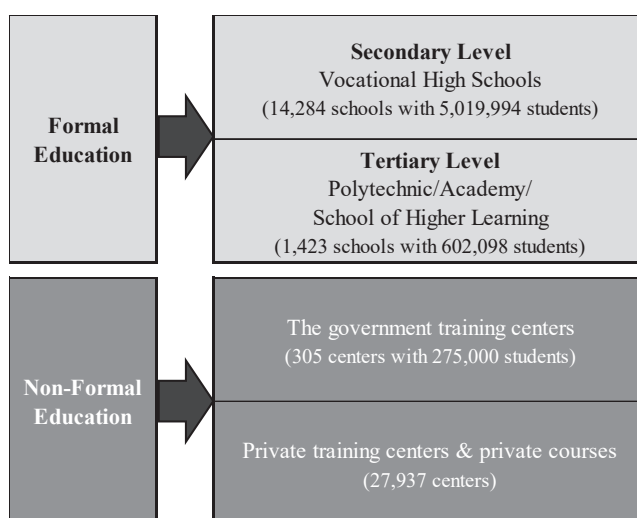


Figure 1. Portfolio of TVET in Indonesia, 2019

Source: adapted from Bappenas et al. (2019)

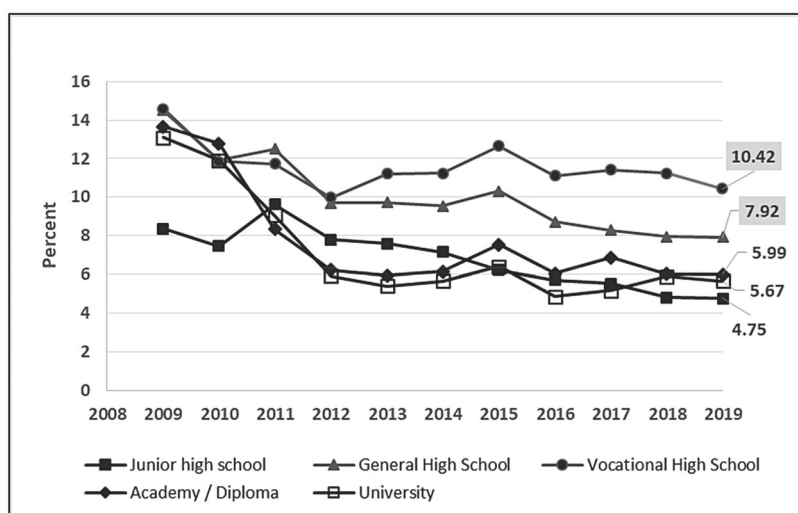


Figure 2. Unemployment Rate of Indonesia by Education, 2008-2019

Source: Statistics of Labor Force (Sakernas, BPS), several periods.

percent, respectively. In contrast with the unemployment rate of general high school graduates, the unemployment rate of vocational high school graduates was higher since 2013, and the gap has continued to widen (Figure 2). This data offers insight into vocational high school graduates, who cannot be easily absorbed by the labor market.

The government policy to enhance vocational high schools was developed 2006 as the policy to reduce high unemployment rates among educated youth (Newhouse & Suryadarma, 2009). The government targeted the ratio of 70:30 of vocational high school students to general high school students by 2015. In order to achieve these targets, the constructions of new general high schools were halted, while new vocational high schools were built and a number of existing general high-schools were converted into vocational high-schools.

Despite the increased number of vocational high schools, there are issues in the implementation in terms of skill and competency mismatch, lack of school-to-work transition, and an imbalance between supply and demand of labor (Bappenas et al., 2019). Addressing this issue, the government must revitalize vocational high schools in Indonesia by issuing the Presidential Decree No. 9 of 2016. However, the results of the revitalization program are not yet apparent. Therefore, the current policy to improve vocational high schools to enhance human resources in Indonesia and reduce youth unemployment requires further consideration.

This paper provides a preliminary analysis of the formal vocational education in Indonesia, focusing on vocational high schools as the major component of it. Vocational high schools in Indonesia are not only the largest portfolio of formal vocational education, but are

also managed under the provincial governments.⁵ Vocational high schools receive the same types of the central government funding as general high schools.⁶ Will focusing on the revitalization of vocational high schools accelerate the employability of graduates and lower unemployment? What are the issues and challenges in implementing this policy? This paper is a preliminary analysis limited to a literature review and descriptive analysis. However, this paper discusses current condition of vocational high schools in Indonesia and serves as background for future analysis.

2. Literature Review

A number of cross-country studies have provided supporting and disputing arguments on vocational high schools, particularly in comparison to general high schools. Most studies have discussed the return on education of both types of school, showing unfavorable findings for vocational high schools. For example, comparing the social rates of return of general and vocational secondary education in developing countries, Bennell (1996) concludes that there is no clear evidence that rates of return of vocational secondary education are significantly lower than those of general secondary education. Among 19 countries, only five developing countries found evidence, one of which was Indonesia. The study on school-to-work transition in selected developed countries shows other weak links between schooling and employment, except in Germany and Japan (Ryan, 2001). In Germany, the link between schooling and employment can be enhanced by vocational education, apprenticeships, and labor market programs. In Japan, school-employer recruitment networks can promote hiring graduates and easing the school-to-work transition.

As most countries believe that vocational education aids in developing human capital promoting economic growth, evidence in China suggests the opposite (Loyalka et al., 2015). Applying longitudinal data to more than 10,000 students in vocational and academic high schools from two provinces of China, attending vocational high schools (majoring in computer) substantially reduces math skills and does not improve computing skills compared to general high schools. Attending vocational high school increases dropout, particularly among disadvantaged (low-income or low-ability) students. The findings suggest that the expansion of vocational high schools as a substitute for general academic high schools can deteriorate human capital in developing countries such as China.

The arguments against the advantage of vocational high school graduates compared to general high school graduates in developing countries have been found in Turkey. Torun and Tumen (2017) show that the vocational high school graduates are more likely to be employed than general high school graduates. However, when including location-specific socio-economic

factors, such as education, employment, and business activities, though there is a substitute of general high schools to vocational high schools, there is no significant evidence that the substitution is an increase in employability for vocational high school graduates. Therefore, the establishment of vocational high schools can substitute the general high school but does not necessarily increase the employability of vocational high school graduates.

A recent cross-country study by Hanushek et al. (2017) shows the differences in the life cycle work outcomes in wages and work opportunity, and career-related training of graduates from general and vocational education. Graduates from vocational education are more likely to work from an early age, though their employment advantage will reduce over time. Graduates of general education are more likely to participate in career-related training compared to graduates of vocational education. Institutional structure in school or educational systems in the country and work-based training affect the labor impact of vocational education graduates. The study also found that there was mixed evidence on the advantages of vocational education in easing school-to-work transition. Countries such as the United States focus on general education as vocational education that provides specific skills can easily be obsolete and cannot adapt to new technology. Other countries such as Germany focus on vocational education with “dual system” that involves industry in the education system through apprenticeships with the argument by providing specific skills needed by the industry to increase employment as the person can enter labor market at an earlier age.

Foster and Bol (2018) offer similar empirical evidence on the Netherlands. The belief that vocational education is beneficial for labor market allocation of young people is not common in the Netherlands. As Hanushek (2017) argues, the study applies life course hypothesis to show vocational decline hypothesis, which posits that the early benefits of having vocational education disappear later in graduates’ careers and turn into disadvantages before retirement. Graduates of vocational high schools have higher employment probability related to their qualification, however this pattern reverses in later life. As having specific skills is an advantage when entering labor market, the specific skills also make the vocational graduates less adaptive in the changing working environment.

Comparing formal education with different levels of vocational education, Lopez-Mayan and Nicodemo (2012) find that there are no significant difference in the estimates of determinants of transition between vocational secondary education and tertiary education. Students who graduated from tertiary vocational education and spent more time studying do not necessarily have more success in finding a first job compared to the ones graduated from secondary vocational education. Despite education level, apprenticeships play an important role in entering the labor market for vocational education graduates.

In Indonesia, the relevance of formal vocational secondary education in bridging school-

to-work for graduates reducing youth unemployment has been discussed since the 1980s. Most studies have compared the rate of return of education between general and vocational high school graduates. The studies found that education rate of returns was higher for general high schools graduated compared to vocational high school graduates (Clark, 1983). In general, high school graduates are more highly paid compared to vocational high school graduates, particularly in urban areas. However, vocational high school graduates can sometimes get jobs more quickly and have shorter waiting times after schools. The study still, however, suggested that general high schools are a wiser investment than vocational high schools.

Chen (2009) compares general and vocational high school graduates in Indonesia from several aspects, such as employment opportunities, labor market earnings, and access to tertiary education. The study applies a longitudinal individual data from the Indonesia Family Life Survey (IFLS) in 1997 and 2000, to track a cohort of high school students, both general and vocational education, in 1997 and employment status in 2000. The findings demonstrate that there was no significant difference in term of employment opportunities and earnings between graduates of general and vocational high schools. Attendance at vocational schools leads to significantly lower academic achievement as measured by national test scores, and graduates of vocational high schools are less likely to enter college due to their limited academic achievement.

Newhouse and Suryadarma (2009) deepens the analysis of Chen (2009) by analyzing determinant factors in selecting high schools and the impact on wages of attending different types of high schools. The study questions government policy to expand the establishment of vocational high schools in Indonesia in 2006. The authors argue that countries such as Tanzania and South Korea failed in policy to expand vocational education to address the shortage of skilled workers, primarily because of parents prefer general to vocational education (Newhouse & Suryadarma, 2009). This study differentiated not only between general and vocational high schools, but also between public and private schools.

There are two main factors determining high school education, namely academic ability and level of parental education. Junior high school graduates with high test scores and higher levels of parental education tend to choose general high schools, either public or private, followed by public vocational schools. Private vocational schools are the last option. The study also concludes that graduates of public schools, both general and vocational, earn higher wages compared to private ones. There is no significant difference between wages of public vocational and public general graduates. Though public vocational schools increase the possibility of obtaining jobs, this advantage diminishes in the younger cohort. Moreover, the wage of public vocational school graduates has significantly decreased across the most recent

cohort.

Applying IFLS, a recent study by Mahirda and Wahyuni (2016) supports the findings of Newhouse and Suryadarma (2009). The study confirms that there is no significant difference between the return of schooling in general and vocational high schools in Indonesia. The study suggests that, despite promoting vocational high schools with higher investments, the government should focus on promoting general education, easing access to higher education, and improving the curriculum of vocational education.

Both cross-country reviews and Indonesian empirical studies on vocational secondary education have offered contradictory findings on the role of vocational high schools in enhancing human capital. Vocational high schools can ease the school-to-work transition and increase youth employability, assuming that school programs are designed to meet the labor market demand. However, despite the short-term benefit of employability for graduates, the medium-term impact is discouraging as the wages of vocational high school graduates seems to be less than that of general high school graduates.

3. Descriptive Analysis and Discussion

The current formal education system in Indonesia distinguishes between general and vocational education from s secondary education level. Promoting vocational secondary education can be an appealing option for developing countries, including Indonesia, to improve labor market outcomes. Vocational high schools have been an instrument to enhance students' enrollment in secondary education to increase youth employment as graduates possess skills for the labor market. The following section discusses current vocational high school in Indonesia to determine whether promoting vocational high schools is plausible in enhancing human capital.

	Public	Private	Total
Number of schools	3,612	10,672	14,284
	25.3%	74.7%	100%
Number of students	2,197,191	2,822,803	5,019,994
	43.8%	56.2%	100%
Number of teachers	144,001	138,684	282,685
	50.9%	49.1%	100%
Student teacher ratio	15	20	18

Figure 3. Brief Profiles of Vocational High Schools in Indonesia, 2019

Source: calculated from <http://datapokok.ditpsmk.net/>

Currently, there are over 14,000 vocational high schools in Indonesia, consisting of public schools (25 percent) and private schools (75 percent) distributed in 34 provinces. There are approximately 5 million students enroll in vocational high schools, with approximately 282,000 teachers, giving a student to teacher ratio of 18 to 1 (Figure 3).

Compared to the general high schools, the number of schools and students of vocational high schools in Indonesia has increased significantly. As can be seen in Figure 4, in 2012, the number of vocational high schools was 10,256, lower than the number of general high schools

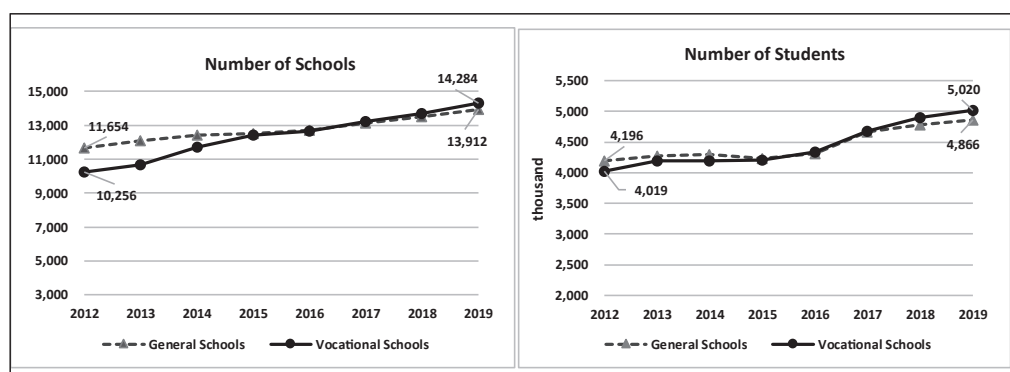


Figure 4. General High Schools vs Vocational High School in Indonesia, 2012-2019

Source: calculated from <http://publikasi.data.kemendikbud.go.id/>; <https://dapo.dikdasmen.kemendikbud.go.id/>; <http://datapokok.ditpsmk.net/>

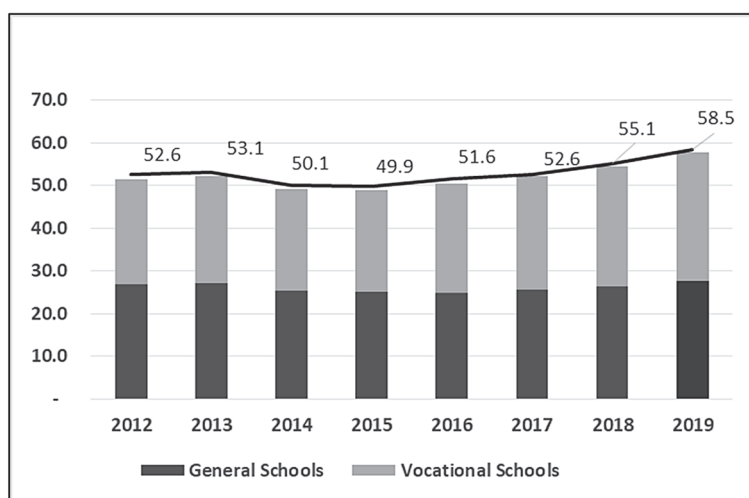


Figure 5. Net Enrolment Ratio of General High Schools vs Vocational High School in Indonesia, 2012-2019*

*excluding the students from Islamic secondary education and non-formal secondary education (*Paket C*)

Source: calculated from <http://publikasi.data.kemendikbud.go.id>

of 11,654. From 2012 to 2019, the number of vocational high schools increased by 28.2 percent to 14,284, whereas the general high schools only increased by 16.2 percent to 13,912. The number of vocational high students has also increased from approximately 4 million in 2012 to around 5 million in 2019, an increase of 19.9 percent. The number of general high schools increased by 13.8 percent, from approximately 4.2 to approximately 4.9 million students. In 2016, the number of schools and students in vocational high schools surpassed the number of schools and students in general high schools.

Consequently, the net enrollment ratio for secondary education increased from 2012-2019. Taking into account the net enrollment ratio of general and vocational high schools,⁷ the ratio increased from 52.6 in 2012 to 58.5 in 2019. Since 2016, the share of vocational high schools in the ratio has been higher than for general high schools (Figure 5).

The government policy to increase the vocational high schools in 2006 seems to have had an impact on the increased number of vocational high schools, as well as the number of students in the respective schools. The policy has had a positive impact on the increase of enrollment ratio on secondary education in Indonesia. However, the question remains as to whether graduates of secondary education can be absorbed into the labor market, particularly for vocational high school graduates. Unemployment data in Figure 2 illustrates that most unemployment is due to vocational high school graduates, which has been persistent since 2012. There are indication that expansion of vocational high schools to substitute the general high schools might increase enrolment, but limited impact of employability and hence human capital development as in the case of China (Loyalka et al., 2015), and in Turkey (Torun and Tumen, 2017).

The quality of the vocational high schools must first be examined. Vocational high schools in Indonesia are organized into nine study fields, consisting of 146 competency-based studies. The profile of vocational high schools in 2019 shows that almost 75 percent of schools are privately managed and approximately 31 percent are relatively small schools, with less than 100 students.⁸ For the small size school, the student-teacher ratio is low, with 5 in public schools and 8 in private schools. Furthermore, looking at the quality of schools, as indicated by the accreditation by the Ministry of Education and Culture,⁹ from the total of 14,284 vocational high schools in 2019, 60.2 percent has no accreditation and of most them are private schools. Only 14 percent is accredited “A” as the most qualified vocational high schools (Figure 6).

Looking at the field of studies, most of vocational high schools are in the field of technology and engineering (25.1 percent); information, communication and technology (22.9 percent); and business and management (22.7 percent). Most schools offering these areas of studies are not accredited. (Figure 7).

Types of Accreditation	Number of Schools		Total
	Public	Private	
Accreditation A	657 <i>18.2%</i>	1,341 <i>12.6%</i>	1,998 <i>14.0%</i>
Accreditation B	499 <i>13.8%</i>	2,316 <i>21.7%</i>	2,815 <i>19.7%</i>
Accreditation C	142 <i>3.9%</i>	668 <i>6.3%</i>	810 <i>5.7%</i>
Not yet accredited	11 <i>0.3%</i>	52 <i>0.5%</i>	63 <i>0.4%</i>
No accreditation	2,303 <i>63.8%</i>	6,295 <i>59.0%</i>	8,598 <i>60.2%</i>
Total	3,612 <i>100.0%</i>	10,672 <i>100.0%</i>	14,284 <i>100.0%</i>

Figure 6. Vocational High Schools in Indonesia by Types of Accreditation, 2019

Source: calculated from <http://datapokok.ditpsmk.net/>

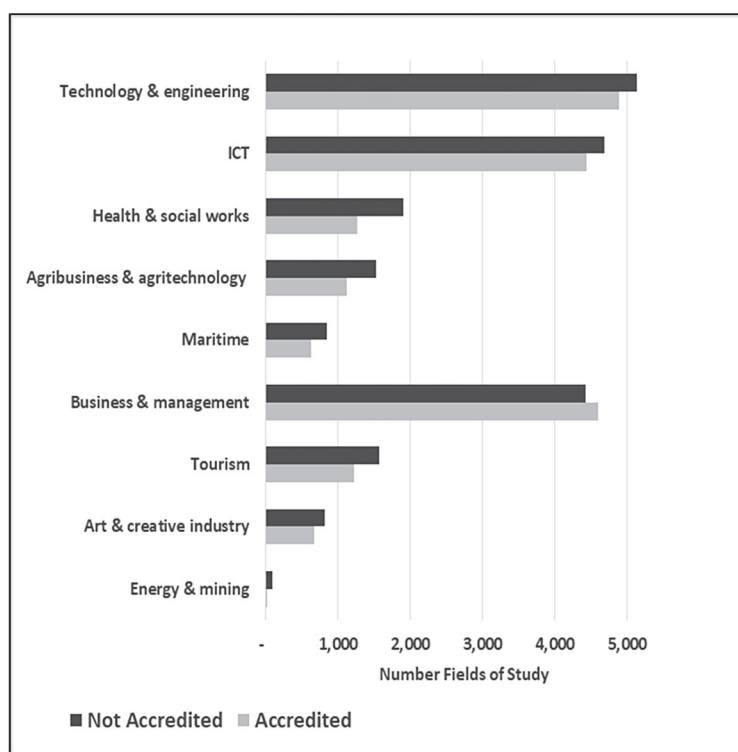


Figure 7. Fields of Study of Vocational High Schools in Indonesia, 2019

Source: calculated from <http://datapokok.ditpsmk.net/>

The data shows that there is a significant share of small and non-accredited vocational high schools, which reflects a low quality of teaching. Issues on the lack of teachers' quality and lack of supporting equipment and infrastructure for study in vocational high schools have been addressed in the literature to support proper practical skill training in vocational high schools. Bappenas et al. (2019) report that there is a lack of vocational teachers in vocational high schools as teachers are not equipped with updated and relevant practical knowledge and skills to teach their students. There are three types of teachers deployed in vocational high schools, namely teachers who teach basic knowledge, those who teach supporting skills and knowledge, and those who teach specific vocational skills and knowledge (vocational teachers). Vocational teachers are important to assure that students have adequate practical knowledge and skills.

Loyalka et al. (2015) implies that vocational high schools can generate qualified human capital, and the government in favor over vocational high schools should allocate sufficient resources to vocational high schools. Currently, most vocational high schools are funded with the school operational assistance (*Bantuan Operasional Sekolah*) decentralized from the central government to the provincial government amounted of IDR 1.6 million per student per year (approximately USD 114)¹⁰. The amount is slightly higher than the amount allocated for general high schools of IDR 1.4 million per student per year (approximately USD 100). However, this amount is significantly below the estimated calculation of IDR 6.8 million (approximately USD 486) per student per year for vocational high schools and IDR 5.8 million (approximately USD 414) per student per year for general high schools (di Gropello, 2013, p. 256). Unemployment among young people in Indonesia is likely due to insufficient skills, and poor quality and lack of relevance of schooling (di Gropello, 2013). Therefore, Indonesia must address the unsatisfactory quality and relevance of vocational education (di Gropello, Kruse, & Tandon, 2011) and allocate resources for quality improvement of the schools.

In terms of demand, surveys on firms in Indonesia have shown that there is a mismatch between the needs of the firms and the competency of vocational high school graduates. Based on a survey of 473 medium and large manufacturing and services firms in Indonesia in 2008, di Gropello (2013) supports vocational high school graduates. Firms perceive that general high school graduates lack specific skills and contact with productive work, whereas vocational high school graduates have higher employability as they are equipped with the specific skills needed by the labor market. However, vocational high school graduates lack general knowledge and skills and suffer from poor quality teaching. This lack of knowledge and adequate teaching may disadvantage graduates as they might have lower incomes (especially in the medium term) and limit their ability to find jobs that match their qualifications.

LPEM FEB UI and ADB (2015) conducted surveys in nine major cities from Eastern to Western regions of Indonesia on 489 manufacturing and services firms. In recruiting new employers, 22.6 percent stated that the company had difficulties in finding new employers, and 64 percent of stated that it was due to lack of candidates with the required skills. Most firms stated that soft and technical skills were equally important. Firms prefer graduates of vocational tertiary education than of vocational secondary level as students from tertiary education have a more accurate sense of preparedness for professional life and readily develop their capacity within the companies and have more technical and analytical skills compared to high school graduates.

To enhance quality teaching in vocational high schools, the collaboration between schools and the business sector must be strengthened. In Germany, the link between schooling and employment can be enhanced by vocational education, apprenticeship, and labor market programs (Ryan, 2001). Germany focuses on vocational education with a “dual system” that involves industry in the education system (Hanushek et al., 2017). Though the dual system has been applied as teaching methods in vocational high schools in Indonesia, implementation is still limited. According to LPEM and ADB (2015), most firms (58.6 percent) do not provide internships for vocational students, and only 5.5 percent of firms collaborate with vocational high schools in developing curriculums.

4. Concluding Remarks

Prioritizing vocational education for reducing unemployment is a bold step by the government of Indonesia, despite some empirical cross-country evidences showing refuting arguments of the policy. One main disputing arguments is that though graduates of vocational high schools have higher employment probability due to their specific skills, the pattern reverses in later life. As having specific skills is an advantage when entering labor market, in the long-run this advantage might decrease in term of wages and adaptability. Earlier policy imposes in the country to expand the establishment of vocational high schools do not show apparent evidence in enhancing the quality of vocational high school graduates and reducing youth unemployment.

As the number of schools and students in vocational high schools has significantly increased, an improvement quality of teaching in the schools is not in place. There is a significant share of vocational high schools with small size and non-accredited, which reflects a low quality of teaching. The increased of vocational high schools graduates in the last couple of years does not necessarily provide employment, and it even contribute to more youth unemployment as the graduates cannot be absorbed by the labor market. The skills

offered by the vocational high schools does not meet with the demand from business side.

To enhance human capital and reduce youth unemployment through vocational education, especially vocational high schools, Indonesia has to address the unsatisfactory quality and relevance of vocational education. The current vocational high schools have to revitalize in term of quantity and quality including improving the quality of teachers. The development of vocational high schools has to be demand driven instead of supply driven focusing on the skills needed by the private sectors. A more demand-driven curriculum with a strong collaboration with the business and industry, including an effective internship program can improve quality teaching of vocational high schools. Hence, collaboration with business sector in revitalizing vocational education is a must.

Institutional structure in school or educational systems in Indonesia is crucial in achieving the target. The improvement of vocational high schools require inter-agency coordination and an oversight to ensure that the educational inputs can be transformed into outputs (e.g. student skills). A partnership and coordination among stakeholders of vocational education is eminent, which include related ministries, local governments, schools, and private sectors.

This paper does not try to answer the plausibility of secondary vocational education to lower youth unemployment and hence enhance human capital in Indonesia. Instead, it lays out some existing empirical evidence and data to be considered to implement the policy. Yes, vocational secondary education can be a policy instrument for enhancing productivity and lowering youth unemployment, assuming that all underlying conditions are in place to implement a high quality teaching of vocational education. A more thorough analysis applying economic methods is necessary to support the findings of this paper.

Notes

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- ² BPS-Statistic Indonesia (www.bps.go.id), 2019.
- ³ Government training centers (*Balai Latihan Kerja, BLK*) are under the central and local governments. Private training centers (*Lembaga Pelatihan Kerja Swasta, LPKS*) and private courses and training centers (*Lembaga Kursus dan Pelatihan, LKP*) are managed privately under supervision of the Ministry of Labor and the Ministry of Education, respectively.
- ⁴ Statistics of Vocational Education in Indonesia, 2019.
- ⁵ According to the law on intergovernmental relations No. 23 of 2014, the authority to manage senior secondary education is under the provincial government.
- ⁶ The Government of Indonesia allocates 20 percent of government spending to education. In 2019, out of IDR 492.5 trillion of education budget (approximately USD 35.2 billion), around 63 percent is decentralized to local governments and 37 percent is managed by the central government.
- ⁷ The secondary education level in Indonesia consists of general high schools, vocational high schools, Islamic high schools, and non-formal secondary education, with general and vocational high schools having a dominant share.
- ⁸ <http://datapokok.ditpsmk.net/>
- ⁹ In order to assure the quality of education, the Ministry of Education and Culture accredited schools at all levels of education in Indonesia, ranging from A to C, with A is the best quality schools and C is the least quality schools.
- ¹⁰ Using the exchange rate of IDR 1 = USD 14,000 (as per 19 December 2019)

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