12-2023

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Abstract

Technical Vocational Education and Training (TVET) was institutionalized by the Philippine government in order to fill in the gaps left by the higher education system in transitioning students to the formal workforce. However, recent studies suggest that TVET graduates have a difficult time gaining employment and wage increases because of skills supply and demand mismatches and the devaluation of TVET degrees. The mismatch is observed through the high unemployment rates of TVET graduates and various job availabilities that could not be filled up by these graduates due to the incompatibility of skills formation with job requirements which is evident in several sectors including ICT, Health Services, Agriculture, and Tourism. This paper used Naive Bayesian Regression and Propensity Score Matching methods to measure the direction and magnitude of labor market outcome differentials between TVET and High School graduates, as well as the Blinder Oaxaca Decomposition to measure how much endogenous and exogenous sources explain said wage and employment differentials.

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Policy Recommendations

1.   Improve linkages between the TVET system and the labor market.

As mentioned in our study, there is an evident mismatch between the skills demanded and the skills supplied in the Philippine labor market. The employment rate of TVET graduates is merely 60.9% which shows that they are unable to secure jobs despite high availability as they do not possess the skills required by the industry (UNEVOC, 2010). This was attributed to TVET's unresponsive programs, insufficient market intelligence, and inadequate investment in education among others. With this, policy revisions should be made that aim to enhance linkages between the TVET system and the labor market by involving industries in developing TVET curricula in order to better ensure that skills supplied evenly correspond to the demand of the market. This may be done through improved accessibility of Labor Market Information (LMI) for the purpose of training planning and career development. It would also be beneficial to recognize the importance of involvement from the private sector and public-private partnerships (PPPs) in training provisions in vocational training centers (VTCs). Other countries, such as Singapore, have been improving labor market information accessibility in the form of downloadable LMIS (labor market information system) applications which utilize labor market signaling frameworks which provide in-depth interpretations of labor market supply and demand fluctuations. This method provides a clearer picture of the vocational needs of various industries, guiding educational institutions in properly equipping their students and reinforcing their partnership with industries, as well as helps the government make more informed decisions on human resource specifications demanded by these industries (Parinsi et al, 2018). Companies may even take a direct role in designing and defining the curriculum content of TVET programs, supported by a legal mandate by the government, such as in the case of Slovenia's and Iceland's apprenticeship programs (Renold et al., 2018).

2.   Implement capacity building programs for the TVET system.

In order to further strengthen the workings of TVET in the Philippines, the government can implement all-encompassing capacity building programs for TVET institutions. This is to address the controversies concerning TVET which prevent it from being seen as a viable post-secondary degree, such as (a) the mismatch between the TVET curriculum and the demands of the labor

market and (b) low training quality that arises from obsolete equipment and facilities, misaligned curriculum design, and institutional mismanagement (Vandenberg & Laranjo, 2020). They could also upgrade the testing and certification processes by improving TESDA's and other TVET agencies' human resources capacities that would allow them to better monitor and assess the performance of TVET providers. Moreover, this would help them more accurately evaluate the success of TVET courses in fulfilling demand from the labor market. Additionally, the government may enrich psychosocial capital building. Our study suggests that psychosocial traits serve as latent variables for human capital, and the results showed that the covariate "openness to experience" had a positive impact on labor market outcomes through the endowment effect, then it may be advantageous to retrofit the TVET curriculum to focus more on values education, which would ultimately boost capacity also in the psychosocial aspect, not just the skills and ability aspect.

3. Provide support to vocational training centers for skills training for vulnerable groups.

The purpose of TVET is to enable individuals to find decent employment and wage opportunities by providing them with skills that are needed in the labor market. Having ready access to TVET programs is especially crucial for disadvantaged or vulnerable population groups, specifically the unemployed, out-of-school youths, rural area workers, the disabled, or workers in the informal sector. Having said this, increased support for VTCs providing short-term skills training to such groups should be prioritized by the government, and this can be in the form of direct funding (investment in equipment and/or subsidies) or capacity building (private sector linkages, training provisions). Revising funding allocations would provide considerable value added, as well as pave the way for existing VTCs to become centers of excellence. Furthermore, even as simple as providing flexibility to disadvantaged groups in the manner of completing TVET programs could generate higher performance and completion rates. Austria's integrative vocational training program, for example, accommodates socially and academically disadvantaged students by allowing them to complete the course at their own pace or to attend only the crucial portions of the program (Hoeckel, 2010).

4.   Enrich general skills training in the TVET curriculum

The Coefficient Effect largely explaining the income disadvantage of TVET graduates suggests that firms value the flexibility of skills that HS graduates possess over their TVET counterparts, as there is less cost of training for said workers to be retrained into more productive tasks. Hence, TVET institutions must rethink their curriculums to adapt to rapidly-changing generally-valued skills by workplaces, like technical and managerial skills, alongside their specific training curriculum in order for TVET graduates to not be confined to limited tasks alone. This would allow the said graduates to participate in higher value-added activities within the firm, and in turn, experience possible wage increases. This has also been adopted by countries such as Indonesia, wherein high-quality training projects such as "Empowering BLK Komunitas" have been launched in partnership with digital training providers. These training programs address relevant issues present in local industries by means of applying digital technology and training management systems which would develop the skills necessary in surrounding communities and industries (ILO, 2022).

Introduction

To address the inefficiencies of the Philippine education system (such as high dropout rates and lack of industry skills) the government called for the development of TVET and TESDA in 1994. The TVET program is unique to secondary and tertiary education because it simulates a workplace environment and massively focuses on practical skills, leading to it being a popular post-secondary or secondary-equivalent option among High School graduates and dropouts alike (Peano et al., 2008). However, labor market disparities persist with inconsistent findings from existing literature. Thus, the study evaluated the labor market outcome effects of TVET, with secondary education acting as a control point of comparison. Ultimately, these effects are compared and parsed to determine the factors contributing to the existing differential. The groups being compared are High School graduates and High School graduates with TVET degrees.

Model Specifications and Results

The dataset used is the cross-sectional STEP Skills Measurement Household Survey 2015-2016 collected by the World Bank; this was chosen due to the presence of psychosocial traits in the

dataset, which was incorporated in evaluating self-selection bias and PSM. A sample of 102 employed persons was used to study income, and a sample of 283 individuals (154 of whom are employed) was used to explore employment probability.

The first method used is Naive Bayesian Regression (NBR). It determined the probability that the monthly wage and employment likelihood of a TVET graduate is higher than that of a High School graduate, given that both have an average level of work experience. It found that there is a 40.55% probability that a TVET graduate would have a higher monthly income than a High School graduate—indicating a wage disadvantage as the probability of the converse is much larger. However, NBR discovered an employment advantage for TVET graduates—the probability that a TVET graduate has a higher employment likelihood than a High School graduate is an overwhelming 99.74%.

The second method used is Blinder-Oaxaca decomposition. This determined, through linear regression, the differential between TVET and High School graduate and decomposed it to find the factors behind it. These factors are the explained effect (the portion of the differential explained by differences in work experience and self-selection traits) and the unexplained effect (the portion of the differential that is unexplained by covariates). The unexplained effect is further divided into two—the coefficient effect (the portion of the differential that exists due to how differently employers value the work experience of the groups) and the interaction effect (the portion of the differential that exists due to both the explained and coefficient effects). The Blinder-Oaxaca decomposition agreed with NBR in that there is a wage disadvantage for TVET graduates—it found that they earn Php 7,377 less than their High School counterparts, as the average wage of TVET graduates is 9,000 Php with High School graduates earning 16,377 Php per month. This differential is 82.40% explained by the coefficient effect. However, the decomposition found an employment disadvantage, not an advantage. TVET graduates have 10.45% less probability of employment than their High School counterparts, mostly due to the interaction effect—indicating that discrimination, unknown rational employer decisions, or unseen variables drive the differential.

The final method is Propensity Score Matching (PSM), used to determine the causal effect of TVET. First, it matches individuals who share similar socioeconomic status at age 15 and openness to experience to form them into a treatment group (TVET graduates) and a control group (High School graduates). Then, it determines the causal effect of treatment on monthly wage and employment probability. PSM indicated a positive causal effect on the probability of employment for TVET graduates. Those who enter the treatment are, in the sample, found to have employment probabilities that are higher by .110641; this drives an overall employment probability gap of .1925524. PSM likewise indicated a negative causal effect on the monthly wage of TVET graduates. Those who enter the treatment are, in the sample, found to have wages that are lower by 3,141.20 Php compared to those who did not undergo treatment. This drives an overall wage gap of Php 6,086.01.

Conclusion

Overall, this study was able to gauge the effectiveness of TVET education by means of dissecting and evaluating the labor market differentials between TVET graduates and their high school graduate counterparts using three different methodologies, namely: Naive Bayesian Regression, Blinder-Oaxaca decomposition and Propensity Score Matching. The result on a monthly wage differential was unanimous across all three methodologies, that TVET graduates earn a lower monthly wage than high school graduates. Second, the result on employment likelihood was unanimous for Naive Bayesian Regression and Propensity Score Matching, that TVET graduates experience a higher probability of employment compared to high school graduates. A puzzling, contradictory result on employment probability was elicited by Blinder-Oaxaca decomposition: that High School graduates enjoy a higher probability of employment than their TVET counterparts.

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