

Fostering a Humane and Green Future:  
Pathways to Inclusive Societies and Sustainable Development



The Influence of Vocational Education and Training on Employment  
Prospect of the ALS Graduates: An Impact Evaluation Study

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**Abstract:** The pressure for technical-vocational education and training (TVET) to deliver skilled and competent laborers has become a major concern in the labor market. As such, the strong desire of exploring the effectiveness of TVET's skills training programs remains. There is limited literature on the employability of the alternative learning system (ALS) graduates in comparison to those graduates of the ALS program who did not pursue TVET. Using the dataset of the World Bank STEP Skills Measurement Household Survey for the Philippines, 2015-2016, this study seeks to determine whether completing TVET has significantly increased the employability of the ALS graduates. Utilizing the method of propensity score matching (PSM), this study finds that ALS graduates who completed TVET are 26 percent more likely to be employed compared to those ALS graduates with no TVET. This result supports the findings of a similar study conducted by the Asian Development Bank (ADB) in 2021 that TVET showed a positive significant impact. This positive and significant effect of TVET on employment to ALS graduates who completed TVET is validated by the use of coarsened exact matching (CEM) and fixed effect model, highlighting the robustness and reliability of the study's methodology. Hence, this study concludes that TVET in the Philippines plays a significant role in promoting employability among the ALS graduates.

**Key Words:** *TVET; ALS; employment; impact evaluation*

## 1. INTRODUCTION

Human capital is deemed vital in a dynamic society and economy. It allows countries to remain competitive and relevant to the growing demands of the global economy. Given its importance, there is a need to prioritize human capital investment. The literature on human capital theory is based on the seminal work of Becker, which according to Leuven (2005), views training as an investment. Investing in human capital aims to increase productivity, but this comes with a cost.

Investing in human capital is crucial for economic growth and development, especially for a developing country such as the Philippines. Therefore, more resources should be directed toward programs on training specific skills and knowledge. The Technical Vocational Education and Training or TVET provides opportunities for individuals to be equipped with specific skills.

This study stems from the dissertation work of Abing (2023) and focuses mainly on the impact of technical vocation on employment. Specifically, this study investigates how graduates of TVET, who went through the Alternative Learning System (ALS) program, progressed to be absorbed in the workforce. This study presupposes that completing TVET improves employability, compared to those who only completed ALS. Thus, this study tries to answer the question: Does TVET lead to an increase in employability of ALS graduates.

The study is divided into the following sections. The next section discusses the methodology, which consists of the underlying framework of the theory of change and method of estimation such as the propensity score matching, coarsened exact matching and fixed effect regression model. The third section covers the results and analysis. The

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last section summarizes the study and provides policy recommendations.

## 2. THEORETICAL FRAMEWORK

The theory of change is a framework utilized in impact evaluation research to serve as a valuable tool in expressing the underlying assumptions and causal pathways of a program or intervention. By outlining the anticipated inputs, activities, outputs, outcomes, and impact of a program, the theory of change offers a clear roadmap for evaluating the effectiveness of the program or Technical Vocational Education and Training (TVET) (Blamery and Mackenzie, 2007).

Before completing their technical vocational education and training, ALS graduates faced difficulties in finding employment due to their lack of essential skills required in the job market. Additionally, their limited financial resources hindered their ability to pursue higher education for acquiring and enhancing employability skills. However, with the introduction of TVET, ALS graduates who were unable to proceed to higher education were given an opportunity to acquire new knowledge and skills required in various economic sectors. Consequently, ALS graduates who completed TVET have better employability skills compared to those without TVET. Notably, the completion of the TVET program significantly increases the likelihood of ALS graduates securing employment, as depicted in the schematic diagram presented in Figure 1.

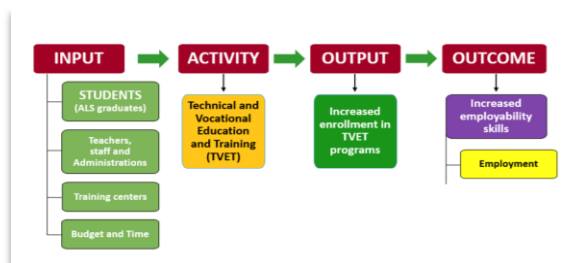


Figure 1. Schematic Diagram of the theory of change

Figure 1 illustrates the positive impact of TVET on the employability skills of ALS graduates who have completed the program. It elucidates the

performance and success indicators of TVET, categorized into four components: input, activity, expected output, and outcome. The program implementation strategies are outlined in the input and activity sections, while the expected output and outcome pertain to the program's objectives.

## 3. METHODOLOGY

### 3.1. Method of Estimation

This study examined the influence of TVET on the employment outcomes of ALS graduates. To compare the employability of ALS graduates with and without TVET, the study employed three methods: propensity score matching (PSM), coarsened exact matching (CEM), and the fixed effect regression model. These methods were utilized to address the issue of selection bias that may arise from the non-random assignment of individuals to TVET. PSM calculates the probability of program assignment based on observed factors, while CEM matches ALS graduates with and without TVET through exact covariate matching. Both methods require ALS graduates with similar observed characteristics prior to enrolling in TVET. Additionally, the fixed effect model was employed to estimate the relationship between an outcome and explanatory variables, which included a fixed effect dummy variable.

### 3.2 Empirical Model

#### 3.2.1 Probit Model

In Equation 3.2.1, the probability regression model of the study is presented, which aims to reveal the likelihood of an ALS graduate enrolling in and successfully completing TVET based on the treatment outcome of employment.

$$P_i = \beta X_0 + \beta A_i + \beta S_i - \beta H.size_i - \beta C.stat_i - \beta Reg_i + \varepsilon_i \quad (3.2.1)$$

Where  $P_i$  is the probability of an ALS graduate to complete in TVET,  $X_0$  is a constant variable,  $A_i$  is the age of the beneficiary measured in years from



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18 to 64 of age,  $S_i$  is the sex of the beneficiary, 1 male, 0 for female,  $H.size_i$  is the household size or household listing measured in numbers,  $C.stat_i$  is the civil status of the beneficiary which is dummied by a variable has a spouse, 1 has a spouse, 0 otherwise and  $Reg_i$  is the region. categorical variable that categorizes individuals based on their geographical location, using the National Capital Region (NCR) as the base category since it is the most highly urbanized. The hypothesis suggests that age and being male have a positive association with TVET, indicating that as individuals grow older, their likelihood of completing TVET also increases. Male individuals are more likely than females to enroll in and successfully complete TVET. A larger household size is associated with a lower probability of completing TVET. Individuals who have a spouse are less likely to graduate from TVET compared to those without a spouse. Finally, individuals residing in less urbanized regions have a lower likelihood of pursuing and completing TVET when compared to those residing in highly urbanized regions such as NCR.

### 3.2.2 Outcome Model

In addition to TVET, this study incorporated control variables such as age, sex, household size, marital status, and region. These variables were selected based on previous empirical studies on program evaluations, indicating their significant influence in explaining the employability skill outcomes, specifically in terms of employment. Equation 3.2.2 presents the statistical regression model that demonstrates the impact of TVET on the employability outcomes of ALS graduates who have successfully completed the program, with a specific focus on employment.

$$Y_i = \beta X_0 + \beta T_i + \beta A_i + \beta S_i - \beta H.size_i - \beta C.stat_i - \beta Reg_i + \varepsilon_i \quad (3.2.2)$$

Where  $Y_i$  is the employability outcome measured in terms of employment 1 employed 0 otherwise, the independent or explanatory variables  $T_i$  is a binary treatment variable, 1 ALS graduates with TVET completion and 0 otherwise,  $A_i$  is age,  $S_i$  is the sex of the beneficiary,  $H_i$  is the household size  $C_i$  is the

civil status of the beneficiary  $Reg$  is the region, a dummy fixed variable and is a categorical variable using NCR as the baseline variable and  $\varepsilon_i$  is the error term that captures unobserved characteristics.

The prediction is that there is a positive relationship between TVET and employment, indicating that ALS graduates who have completed TVET are more likely to be employed compared to those who have only finished ALS without pursuing TVET. Furthermore, it is anticipated that age and being male will have a positive association with employment outcomes, suggesting that older individuals and males are more likely to find employment. On the other hand, individuals with spouses, larger household sizes, and those residing in less urbanized regions are expected to have a lower likelihood of securing employment.

### 3.3 Data

The cross-sectional data utilized in this study was obtained from the 2015-2016 World Bank Skills towards Employment and Productivity (STEP) Skills Measurement Household Survey specifically focused on the Philippines. For this study, sample observations were selected from individuals aged 18 to 64 residing in regions I to IVA, V, VI, IX, X, XIII, CAR, and NCR.

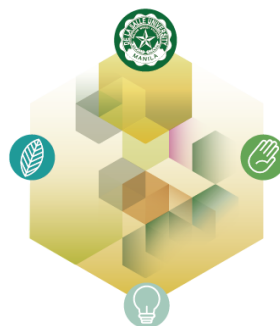
## 4. RESULTS AND DISCUSSION

### 4.1 Summary of Statistics of the Sample

Among the total of 650 observations, it was discovered that 36.2 percent were employed individuals, while 31 percent were ALS graduates who had completed TVET. On average, the individuals in the sample were 39 years old with a household size of eight members. The mean percentage of individuals living in each region was found to be 9.6 percent.

Furthermore, when comparing the mean differences between ALS graduates who pursued and completed TVET and those without TVET, it was observed that, on average, a higher proportion of ALS graduates with TVET completion (55.4 percent) were employed compared to ALS graduates without TVET (27.5 percent). ALS graduates who completed TVET were also, on average, one year older than ALS graduates without TVET. Both

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groups had an average household size of eight members. The majority of ALS graduates without TVET were males, whereas the proportion of males among ALS graduates with TVET completion was lower. Additionally, both groups had a higher percentage of individuals with a spouse compared to those without a spouse. In terms of regional distribution, ALS graduates with TVET completion were found to have an average representation of 2.7 percent in each region, while ALS graduates without TVET had an average representation of 2.6 percent in each region.

### 4.2 Covariate

An important finding emerged from the study: age, sex, civil status, and household size do not have a significant impact on the likelihood of an ALS graduate pursuing and completing TVET. Instead, it was discovered that other factors, such as the geographic location or "region" of individuals, play a crucial role in influencing their participation in the program. However, upon conducting further analysis, the hypothesis regarding age and household size was supported, indicating that as individuals grow older and their household size increases, they are more likely to enroll in and successfully complete TVET.

Surprisingly, the study's hypothesis regarding sex and civil status was challenged. Contrary to expectations, females and individuals with spouses were found to be more likely to enroll in and complete TVET, suggesting a deviation from the anticipated male bias. This unexpected outcome suggests that there may be specific training programs that are better suited for females, indicating the need for tailored approaches. Alternatively, individuals with spouses may be motivated by the desire to secure improved career opportunities. The findings of this study carry important implications for policymakers seeking to address gender equality issues and improve employment opportunities for ALS graduates.

### 4.3 Common Support

The common support, or overlap condition, is one of the key assumptions underlying propensity score matching (PSM) methodology (Heinrich, et al., 2010; Rosenbaum and Rubin, 1983). It ensures that every individual has a positive probability of being

assigned to either the treatment or control group. Figure 4.2 presents compelling evidence supporting this assumption by displaying the estimated density of the probability of receiving each treatment level. The red line represents the treatment group, while the blue line represents the untreated group. Importantly, the graph demonstrates that none of the estimates exhibit excessive concentration near 0 or 1. Instead, the predicted probability densities of both groups largely overlap, indicating substantial common support between them. This finding strongly indicates that the overlap assumption is not violated.

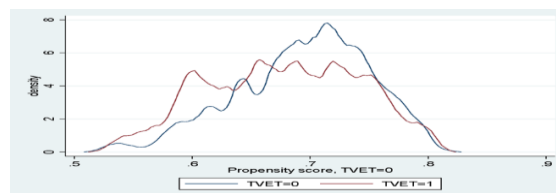


Figure 2. Overlap Plot

### 4.4 Balance Test

Maintaining balanced covariates is crucial in this study as it ensures that the distributions of the covariates are comparable across different treatment levels. This balance is essential because it reduces the likelihood of biased treatment effect estimates. Biased estimates can potentially mislead the conclusions drawn about the effectiveness of the program. By emphasizing the importance of balanced covariates, this study ensures the robustness of the analysis and the reliability of the treatment effect estimates, thereby providing valuable insights into the program's effectiveness.

### 4.5 Estimated Impact of TVET on Employment

These findings provide valuable insights into the value of TVET for ALS graduates and highlight its significant positive impact on their employment prospects. It implies the following key points: First, in the face of technological advancements and the high demand for skilled labor, TVET effectively fulfills its objective of producing employable skilled workers, making investment in human capital through TVET worthwhile.



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Table 1. Estimated Impact of TVET on Employment

	Matching Technique		
	Nearest Neighbor	Caliper bwidth (0.1)	Kernel bwidth (0.001)
ATE	0.262*** (0.048)	0.262*** (0.048)	0.257*** (0.047)
ATET	0.307*** (0.051)	0.307*** (0.059)	0.290*** (0.046)

*The standard error is in parenthesis.*

*Level of significance of the p-value: \*\*\*1%, \*\*5%, \*10%*

Second, introducing TVET to unemployed individuals or those seeking employment can enhance their chances of finding a job, underscoring TVET's potential to address issues of unemployment and underemployment. Third, technical and vocational training significantly enhances the employability and functionality of ALS graduates in the labor market compared to those who do not pursue TVET, emphasizing the importance of TVET in equipping individuals with the necessary skills and knowledge for the job market. Fourth, through skills development programs, TVET can contribute to achieving inclusive growth by providing education and employment opportunities for individuals who may lack access to higher levels of education, thereby promoting social mobility and reducing labor market inequalities.

Additionally, the study reveals that, consistent with previous research by Becker (1962), González et al. (2019), and Cools et al. (2017), male individuals have a higher likelihood of employment compared to their female counterparts, suggesting sex bias favoring males in employment due to perceived higher work productivity. Moreover, the region in which an individual resides, such as Region 9, has a notable negative impact on their participation in TVET, aligning with previous research by Strand (2013) and Berrington et al. (2016) indicating that limited resources and lack of information access may discourage individuals from actively pursuing training and education opportunities.

### 5. CONCLUSION

This study aimed to determine the impact of TVET on employment outcomes through the methods propensity score matching, coarsened exact

matching and fixed effect regression model. Results revealed that TVET leads to an increase in employability for ALS graduates. TVET increased the likelihood of being employed between 25% to 28%.

Based on this exercise, TVET proved to be a potent and effective tool in equipping graduates with the necessary skills and competencies needed to be employed. This is a compelling reason for the government to continue promoting TVET programs, especially for ALS graduates. Local government units should work hand in hand with the Department of Education and the Technical Education Skills and Development Authority in supporting ALS graduates, as well as out-of-school youths, to pursue TVET programs.

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