Governmental Outsourcing Job Training and Its Impact on Voluntary and Involuntary Unemployment in Taiwan

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ABSTRACT

The purpose of this study was to investigate the impact of public sector's outsourcing program of job training on different categories of unemployment (voluntary vs. involuntary). The data were derived from the Training Information Management System (TIMS) that was managed by the Taiwanese government. Limited to participants at one regional center in 2010, the final sample consisting of 1,241 respondents. Differentiated by training programs, these participants received training hours ranging from 180 to 362. Multiple indicators were employed to evaluate the outcomes such as the wages and whether participants obtain a job within 90 days. Multiple linear and logistic regressions were conducted. Findings revealed that participants with previous voluntary unemployment were more likely to land a job with a relative low pay than their involuntary counterparts. In terms of education, a junior-college-level degree fares better in job-seeking as compared to college degree holders. Intriguingly, the findings partially confirmed job search theory and revealed financial aid being a possible intermediate factors. Accordingly, this study brought insights into the effectiveness of job training programs in Taiwan.

Keywords: Unemployment, public-sector outsourcing, job training programs, Training Information Management System (TIMS), Taiwan

INTRODUCTION

For most countries in the world, as in Taiwan, the issue of unemployment has been the main target of research. Among all kinds of governmental endeavors, training programs are often employed as a means to combat unemployment. Besides training programs, the other primary categories of government-sponsored strategies include private sector incentive schemes like wage subsidies, direct employment programs in the public sector, and services and sanctions that aim at improving job-search efficiency (Kluve, 2010). In general, training programs are often conducted to enhance job skills of the unemployed and relatively disadvantaged individuals.

However, there is little consensus on whether training programs are effective, which target groups most benefit from them, and which types of program seem promising. A meta-analysis of 31 studies in the U.S. between 1962 and 1998 has shown a positive impact of government-funded training programs for adult women (Greenberg, Michalopoulos & Robins, 2003). Moreover, this synthesized work indicated classroom skills training is the most effective training type compared with basic education, on-the-job training, or a mix of classroom and workplace. In addition to the advantage of increasing wages, research suggests the positive effects of government training in terms of enhancing employees' well-being (Andersen, 2008). In sum, Andersen's (2008) study concluded that individuals benefit from either previous or current participation in job training even though the

impact decreased over time. One should be cautious when interpreting those findings, however, since the results' vary by contextual factors, targeted groups and different types of programs.

Moreover, findings regarding training effectiveness among different countries could be compared. In the case o Europe, 137 program evaluations from 19 countries were studied by meta-analysis and intriguing results were reported (Kluve, 2010). Different from the focus on government-funded training studied in the U.S. (Greenberg et al., 2003), Kluve (2010) compared various types of active labor market programs such as job search assistance, job training and wages subsidies. His findings concluded that training programs yielded modest impacts on post-program employment rates. In terms of the effectiveness of programs targeting different groups, Kluve's (2010) analysis revealed that programs for youth, who are defined as age 25 and below, was consistently found to be less effective. Realizing the divergence in previous findings, individual countries should conduct their own studies based on comprehensive datasets.

This article presents a new source of evidence into how training programs may effectively enhance employment. Unlike the mainstream research studying pay raises for low-waged women, adults and youth, this study targeted the performances for both the voluntary and involuntary unemployed after completing training programs. Specifically, the data were drawn from Training Information Management System (TIMS), a data set constructed nationwide and managed by the Taiwan government. Selecting participants at one training center in 2010, the study compared voluntarily vs. involuntarily unemployment of those with varied backgrounds to determine if there were differences associated with the possibility of getting a job, and whether those differences were also present in the granting of wages.

RESEARCH QUESTIONS

This study was designed to answer the following questions:

1. After receiving job training, is there any difference in wages between the voluntary and involuntary unemployed groups as they landed a new job?
2. After receiving job training, is there any difference in job attainment between the voluntary and involuntary unemployed groups?
3. What are the other factors contributing to the difference in wages and job attainment after job training?

LITERATURE REVIEW

Since the factors affecting employment are complex, the intention to review prior research was not to find "golden rules" of how to conduct quality training programs. Instead, we intended to investigate the impact of training programs on the voluntary and involuntary unemployment and tried to examine their association with positive employment outcomes. From a theoretical perspective, job search theory and its assumptions about individual job-seeking behaviors are pertinent in interpreting the results. Other discussions such as voluntary versus involuntary unemployment were included since they provided the background of the study.

Job search theory

According to Bloemen (1997), job search theory presents an explanation of why individuals accept certain job offers. In essence, job search theory asserts that wage – the amount of money one is willing to work for – determine the choice of a job. Initially, the theory was focused on personal decision of accepting a job. Later, the theory is extended, thus expanding its ability to explain employment beyond wages (Bloemen, 1997). Given the fact that unemployment compensation often acts a subsidy to job searching, the increase in unemployment compensation is expected to follow with the increase in reservation wage, resulting in a lower job-acceptance rate with longer duration of unemployment (Fitzgerald, 1998). In this sense, job search theory implies the equilibrium between

labor support and the unemployment duration since the unemployed are more likely to land a job as their financial support is approaching the end.

Empirical studies have shown that individuals with a higher level of education are more likely to get a job, but a reverse relationship is found with those with more than 13-14 years of schooling (Kettunen, 1997). Arguably, it is not surprising to see people with a higher level of education being more prone to longer durations of unemployment due to their relatively high expectations of wages. That is, the higher expectation wage may prolong the job-seeking period since jobs with better pay are less available. Yet there is limitation to employ a model of job search due to an assumption of active searching for employment (Fitzgerald, 1998). According to job search theory, an employed individual would never choose to quit the job, which may contradict the voluntary unemployed group in this study. Realizing this, the difference between voluntary and involuntary unemployment is introduced.

Voluntary and involuntary unemployment

Based on literature review, research differentiated the impact of voluntary and involuntary unemployment based on issues of psychological well-being such as happiness (Chadi, 2010; Dockery, 2005), distress (Popovici & French, 2013; Waters, 2007), or on the inducement of related behaviors like smoking and drinking (Falba, Teng, Sindelar, & Gallo, 2005; Popovici & French, 2013), or even on the risk of mortality (Tsai, Lan, Lee, Huang, & Chou, 2004). In general, findings reveal that people with voluntary job loss are associated with optimum levels of wellness and good performance in re-employment.

With a focus on depression, Waters' (2007) study brought insight into the different impacts of voluntary and involuntary unemployment on individual re-employment. Waters (2007) studied the differences between the voluntary and involuntary unemployment due to job redundancy in Australia. Comparing 102 individuals who voluntarily took a job redundancy with their involuntary counterparts, he found voluntary job losers experienced lower levels of depression and that they engaged more in job-seeking activities than the involuntary ones. After three months, Waters further examined the impact of the types of redundancy (voluntary vs. involuntary) on re-employment. His main finding revealed that voluntarily redundant employees fared better in organizational commitment; they expect re-employment quality and encountered a significant drop in depression compared with their previous states (Waters, 2007). Following this finding, the voluntary unemployed individuals may fare better in job search activities than their involuntary counterparts after receiving job training.

The unemployment duration

Job search theory may imply the association between labor support and the unemployment duration. Arguably, the role of the unemployment duration is crucial as we investigated the effectiveness of training programs. With the data drawn from the Dislocated Worker Survey (DWS), representing all adult workers who experienced job losses between 1979 and 1984, Addison and Portugal (1989) indicated that a longer duration of unemployment predicted a lower level of subsequent earnings. Even though no program was introduced as the intervention, the unemployment duration was negatively associated with the wages of the subsequent job. However, it is worth mentioning that years of schooling were not included in Addison and Portugal's (1989) analysis.

In Taiwan, unemployment support for the involuntary unemployed is issued for six months during a period of two-year unemployment. And an extension for nine months is made for the involuntary unemployed individuals who are 45 and above as well as for those who are mentally or physically disabled. To clarify, the state of involuntary unemployment which issued by firms is strictly verified. Due to the unemployment compensation for the involuntary unemployed individuals, we assumed the relationship between the unemployment duration and the likelihood to obtain a job is negative, especially for those who lost their job voluntarily. Given the financial support available during the six months of unemployment, the involuntary unemployed persons may suffer less from the financial pressure than do the voluntary unemployed individuals. Thus, those involuntary unemployed individuals should be more capable of making their job choices during the duration of support. Instead, their voluntary counterparts could be rushed to fill the job vacancy due to the realities of life.

An empirical study with data from Taiwan compared the voluntary and involuntary unemployment with the following results (Shiou, 2004). First, successful re-employment rates are positively associated with higher levels of education no matter whether individuals lost their former jobs voluntarily or involuntarily. Also, people who had served in large companies in the service industry and job searching via a non-official channel, such as when relatives were used for referrals, are positively associated with re-employment. Realizing this, we may further verify how the level of education attainment is related to the possibility of re-employment given the conflict results shown in previous research. Namely, two opposite assumptions could be established: If education is positively associated with re-employment rate as Shiou's (2004) study indicated or if this positive effect only exists in a range of schooling, such as 13-14 years as Kettunen found (1997).

Job search theory indicates that wages play an important role in determining an individual's choice of a job. Meanwhile, factors like education level and unemployment duration may be helpful in explaining why this is the case. Also, the differences among the voluntary and involuntary unemployment may result in varying outcomes. Therefore, the levels of education, gender, age and marital status were included as demographic variables. Arguably, the duration of unemployment may function as a mediator since it is related to whether individuals decide to land a subsequent job. To further illustrate the focus of this study, a research framework is shown in Figure 1.

Components of modeling

Based on a review of prior research, three components were selected as the main constructs in the research framework as displayed in Figure 1. The construct includes individual background, the characteristics of participation in training programs, and outcomes. First, for individual background, four elements were selected as demographic factors. The educational attainment, gender, age and the marital status of each participant were included. Next, the characteristics of participation consisted of whether participants were unemployed voluntarily or involuntarily, the duration of unemployment (measured by weeks), and the training hours of various programs. Notably, most of these variables were constructed as categorical variables. For instance, age was categorized into four ranges: 15-24, 25-34, 35-44, and 45 and above. In this sense, the ages from 15 to 24 could be compared with the youth groups identified in most previous studies. The box at the far right of the model characterizes three indicators of outcomes. In addition to job attainment, which is (whether participants landed a job within 90 days), the rates of wages and the period after program training completion were constructed as part of the outcome variables. More details about each variable can be found in the section on Measures.
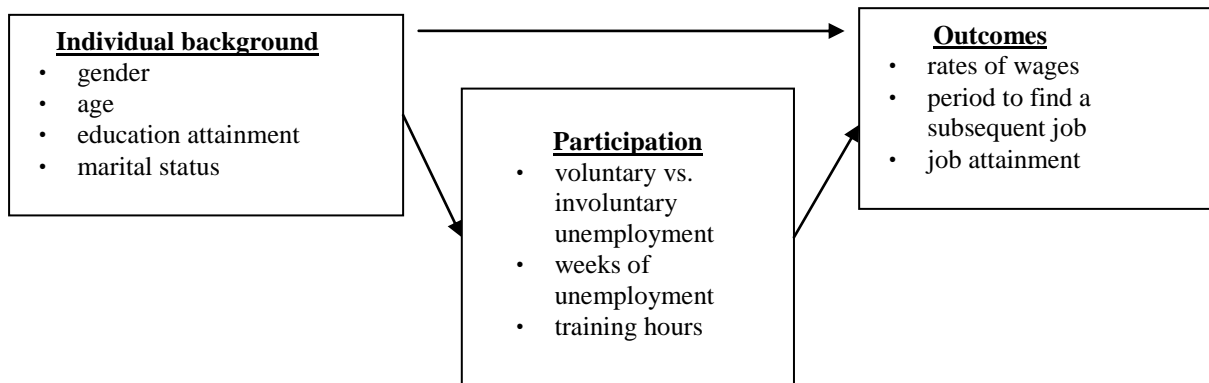

Figure 1: Regression/Logistic modeling

METHODS

This section describes the data and analytic techniques used for this present study. Specifically, the source of the data and the final sample were introduced, representing one-thirds of the total participants at one training center. Moreover, measures that included all variables and the descriptive information were reported before further running the more advanced analysis. The last part deal with

analysis techniques, including multiple and logistic regression based on the categories of outcome variables.

Sample and Data
Data for this study mainly came from one center for job training out of a total of six in Taiwan. It is noticeable that this job training center, which is located in the central part of Taiwan, is the largest training center with the most trainees. The data are commonly known as the Training Information Management System (TIMS) and are managed by the Bureau of Employment and Vocational Training in Taiwan. First, the data incorporate annualized data on each individual that enrolled in a certain centers for job training in 2010. The unemployment rate was around 5.2% nationwide in 2010 (Directorate-General of Budget, Accounting and Statistics, Executive Yuan). However, only individuals indicating their states of employment after receiving programs were included, and this criterion reduced the sample size to 1,241. Thus, the final sample presented around 30% of the total participants (4,323) at this job-training center in 2010.

Measures
Based on the data that were available in TIMS, each variable was coded to facilitate the analytic process. As for the component indicating the results of program training, one out of three outcome variables was a dichotomous measure; the other two were manipulated as continuous variables with numerous levels of classification.

Three outcome variables were run separately to determine their association with various independent variables. The primary outcome was a dichotomous measure of whether participants got a job within 90 days after the completion of the training. The 90-day period is regulated by the Taiwan government, which asks for documentation on the employment rates of each training center (Lai, 2012). Individuals who found a job within 90 days were coded as 1; otherwise, they were coded as 0. The other two outcome variables were the preparation period (measured by days) and the monthly wages. The preparation periods were divided into twelve sections in 10-day cutoff points, which corresponded to the construction of the TIMS. Specifically, 0-day was coded as 1, which meant participants land a job on the first day of training completion. The other preparation periods followed in sequence with days 1-10 coded as 2, days 11-20 coded as 3, and so on. The last two sections, 91-100 and 101 and above, were coded as 11 and 12, and are considered part of a grace period that requires paperwork. That is, participants are allowed to report job attainment beyond the period of 90 days, which must be verified by a program manager. These cases helped to account for the successful employment rates for the training center. Also, the wages were divided into five sections, including wages below NT 15,000 coded as 1, between NT 15,001 and NT 20,000 coded as 2, between NT 20,000 and NT 25,000 coded as 4, between NT 30,000 and NT 35,000 and above coded as 5 (1 NT=0.033 $). In the year of 2010, the minimum wages policy was set as NT 17,280 per month, which was put into practice in July, 2007.

Individual backgrounds and characteristics of participants made up the explanatory variables in the present study. In terms of background variables, males were coded as 1 and females were coded as 0 (the reference group). As for the four age ranges, ages between 15 and 24 were coded as 1; ages between 25 and 34 were coded as 2; ages between 35 and 44 were coded as 3, and ages of 45 or above were coded as 4. Educational attainment was divided into three levels: degrees of senior high school and below were coded as 1, junior college degrees were coded as 2, and college degrees or above were coded as 3. Married status was coded as 1 and unmarried status was coded as 0. The groups with the least number of participants, such as the oldest age group and the group with the educational attainment of a junior college degree, were selected as the reference groups. More details can be found in Table 1.

The characteristics of participation consisted of the following: whether participants were unemployed voluntarily or involuntarily, the duration of unemployment (measured by weeks), and training hours of various programs. The classification of training hours were divided by industries, which corresponded to the needs of local markets. As a result, the location of training vary depends on the firms which outsourced from the government. Specifically, voluntary unemployment was coded as 1, and involuntary unemployment was coded as 0. In Taiwan, the status of unemployment is strictly verified since it is related to financial support (Lai, 2012). Only the involuntary unemployed are

qualified to apply for support. The unemployment duration consisted of three categories. Measured in weeks, an unemployment below the duration of 23 weeks was coded as 1, between 24 and 51 weeks as 2, and 52 weeks or above as 3. The training hours were divided into three categories (180-240 hours=1, including cultural and creative work, travel-related work, and leisure farming; 241-300 hours=2, which included work in biotechnology; 301-362 hours=3, all industries mentioned and green energy). The category with the least number of participants functioned as the reference group. These included the involuntary unemployed with an unemployment persons duration of 24-51 weeks, and those with training hours between 241 and 300.

Analytic Approach
Both techniques of multiple regression and logistic regression were employed to investigate the relationship between explanatory variables and outcome variables. In general, the use of multiple regression serves two purposes (Allison, 1998): researchers can combine various explanatory variables to produce an optimal prediction, and the effect of an individual explanatory variable can be separated to see its contribution to the whole model. Since the technique of multiple regression can be applied only with continuous variables as the outcomes, the method of logistic regression was conceived of to deal with categorical data such as the variable referring to job attainment in the present study. In essence, logistic regression can be employed to treat categorical data in a quantitative manner, which greatly improves data analysis (Agresti, 2007). Arguably, interpretations of the results from the two techniques have much in common. The results of the modeling are shown in Table 2.

RESULTS

The results are of two types: descriptive information for variables employed and findings from the technique of modeling. The results are displayed in Tables 1 and 2.

Individual background, characteristics of participation and the outcomes
The demographic data were shown in Table 1. By gender, the whole group was comprised of 521 males and 720 females, accounting for 42% and 58% of the sample, respectively. This pattern corresponds to most training programs conducted in other countries (Greenberg et al., 2003). Differentiated by age, four categories were constructed with one 10-year duration as the cutoff point. There were 580 individuals between ages 25 to 34, representing the majority in this study. The oldest group consisted of 95 persons, accounting for 8 percent only. In terms of the highest degree attained, these participants were separated into three groups: (i) Degrees of senior high school and below accounted for 29%, (ii) Junior college degrees accounted for 23% and, (iii) college and master's degrees were approximately half of the total sample (48%). With regard marital status, 355 participants were married (29%) and 886 (71%) were unmarried.

There were 788 individuals who made up the voluntary unemployed group, accounting for 64%, and the involuntary unemployed numbered 453, which accounted for 37% of the total. Thus, voluntary job losers accounted for a larger percentage of this analyzed sample. The duration of unemployment below 23 weeks was the majority, accounting for around 61%. The longest training period of between 301 and 362 hours was taken by more than half of the total sample (53%). The training hours included working in a variety of industries that the unemployed persons had worked with.

Table 1 lists the information for the outcome variables. For job attainment, most participants (more than 70%) landed a job after training. In terms of the length of preparation, the distribution was almost even except for the category of 0-day as well as the last two categories indicating a grace period. For the differences in-between, wages between NT 15,000 and NT 25,000 accounted for half of the participants. Yet it is noticeable that there was a missing value of wages for one-fifths of the 903 participants, and these were people who found a job by the end of the observation. Therefore, efforts should be made to reduce these missing values and to enhance the quality of TIMS.

Table 1: Descriptive Information for Demographic Variables

		Count	Percentage
Gender	Male(1)	521	41.98%
	Female(0)	720	58.02%
Age	15-24 (1)	264	21.27%
	25-34 (2)	580	46.74%
	35-44 (3)	302	24.34%
	45-54 & above (4)	95	7.66%
Education	Senior high school & below (1)	355	28.61%
	Junior College (2)	290	23.37%
	College & master (3)	596	48.03%
Marital Status	Married (1)	355	28.61%
	Unmarried (0)	886	71.39%
Unemployment	Voluntary (1)	788	63.50%
	Involuntary (0)	453	36.50%
Unemployment Duration	23 weeks & below (1)	755	60.84%
	24-51weeks (2)	211	17.00%
	52 weeks & above (3)	275	22.16%
Training Hours	180-240 hours (1)	438	35.29%
	241-300 hours (2)	142	11.44%
	301-362 hours (3)	661	53.26%
Job Attainment	Yes (1)	903	72.76%
	No (0)	338	27.24%
Period of Preparation	0-day (by training completion）(1)	24	2.66%
	1-10 days (2)	122	13.52%
	11-20 days (3)	98	10.86%
	21-30 days (4)	102	11.30%
	31-40 days (5)	94	10.41%
	41-50 days (6)	92	10.18%
	51-60 days (7)	90	9.97%
	61-70 days (8)	88	9.74%
	71-80 days (9)	80	8.86%
	81-90 days (10)	106	11.73%
	91-100 days (11)	6	0.66%
	101 days & above (12)	1	0.11%
Wages	NT 15,000 & below (1)	53	5.87%
	NT 15,001-20,000 (2)	349	38.65%
	NT 20,001-25,000 (3)	204	22.59%
	NT 25,001-30,000 (4)	70	7.75%
	NT 30,001-35,000 & above (5)	43	4.76%
	Missing	184	20.38%

Regression Analyses

With outcome variables indicating wages, preparation days (the days took to be hired after training completion), and job attainment, models were run separately to see their relationship with other factors. It is noticeable that all the explanatory variables were the same for all models. Differentiated by the types of dependent variables, wages and periods of preparation employed ordinal multiple regressions. The outcomes of job attainment comply with the technique of logistic regression. The findings were reported as follows.

In terms of the overall explanations, models indicating wages and job attainment reached the level of significance but the periods of preparation did not. That is, the explained variance was not significantly greater than the unexplained variance. In that case, the model indicating the period of preparation revealed that the various explanatory factors included in this study were not sufficient to explain why different preparation durations existed. Namely, the information drawn from TIMS was insufficient for researchers to investigate this issue. Future researchers should invest more effort on this point if they consider the length of preparation an important indicator of an effective training program. Also, the potential findings can contribute to our understanding, and further enrich the information in TIMS. Given its insignificance, as indicated by the analysis, the findings on the period of preparation would not be reported hereafter. Moreover, the model of wages was labeled model 1; the model of job attainment was referred to as model 2. It was noticeable that the unemployment duration did not reach the threshold of significance statistically in either model, therefore, it will not be reported in detail.

In model 1, wages functioned as the outcome variable for multiple regression analysis. Among various explanatory variables, voluntary unemployment, education and gender were significantly associated with wages. If readers recall the way wages were coded in this study, there were five levels of wages (NT 15,000 & below=1; NT 15,001-20,000=2; NT 20,001-25,000=3; NT 25,001-30,000=4, NT 30,001-35,000 & above=5) and they were treated as a continuous variable. Namely, a positive coefficient implies a positive linear relationship could be predicted between wages and the specific explanatory variable. Given all the explanatory variables were coded as categories in nature, the results obtained could be interpreted as their comparisons with the exact reference group. Also, it is worth noting that model 1 was established by participants who reported having been hired, resulting in the number of 719.

Specifically, as the coefficient of voluntary employment (-.224) indicated in the first row of model 1, it could be interpreted as follows: compared with their involuntary counterparts, the voluntary unemployed had lower wages even though they all landed a job after the completion of training program. However, it is difficult to report the specific different amounts of money between these two groups because of the way wages were constructed in TIMS. Also, it is unknown whether the involuntary unemployed individuals tend to earn more than the voluntary employed persons simply based on model 1. A plausible explanation could be adopted from the job search theory. That is, the voluntary unemployed persons may have lower reservation wages due to their lack of financial support from the government, which prompted them to accept a job offer with lower pay.

In terms of education, the results showed that the higher levels of education a participant possessed, the more wages were obtained after they finished the training programs. Since the review of prior research mostly focused on re-employment rates, information about wage rates was lacking. Yet the findings further revealed another interesting point. Specifically, the school years required to complete junior college are two years more than that needed for senior high school and two years less than college degree. However, the standardized coefficient (Beta=-.157) between junior college and senior high school is larger (Beta=.125) than the one between junior college and college. Thus, the unequal discrepancy showed better advantage in earning a college degree or higher. Moreover, unequal pay for gender was shown in model 1, revealing that males earned more than their female peers given the same conditions of training. Unfortunately, since there is no way to obtain participants' previous wages in TIMS, we could not confirm whether adult women benefited most from increasing wages as shown in prior research.

The outcome indicated in model 2 is whether participants obtain a job within 90 days. Since the technique of logistic regression was employed, the results of model 2 were interpreted differently from model 1. Specifically, the Exp (B) reported in model 2 referred to the odds ratio - a ratio of the probability that the event happened to the probability that it did not. Following this logic, the odds

ratio (1.483) can be interpreted as follows: Given that all other factors are controlled in model 2, being voluntary unemployed increased the likelihood of getting a job by around 1.5 times. Even though this effect is not tremendous, it reaches the level of significance. The other variables that reached the threshold of significance include training hours, a college degree and above compared to a junior college degree, and the first two age groups in contrast to the oldest group with ages between 45-54 and above. Noticeably, the Hosmer-Lemeshow statistical test indicated that model 2 fit the overall model.

As for the training hours, the longest or shortest training periods decreased the likelihood of finding a job compared with the training hours between (241-300 hours). It is difficult to understand why this was the case based on the results of the modeling. At least according to human capital theory, the years of schooling play a crucial role in determining one's earnings (Mincer, 1974). Arguably, training hours can be seen as a way to enrich individual working skills, thus increasing the possibility of getting a job as one empirical study has shown in Germany (Fitzenberger, Osikominu, & Paul, 2010). Yet the results of the present study did not show an advantage as the training hours increased. However, a reasonable explanation could be that training hours are differentiated by various types of industries. Understandably, more training hours do not necessarily assure a greater possibility of getting a job given the varying demands of job vacancies in a local area.

Among the four variables belonging to individual background, only the qualification category indicating a college degree or above reached the level of significance. That is, individuals with a college degree or above have a decreased likelihood of finding a job compared with their counterparts with a junior college degree. Therefore, the participants with higher levels of education were less likely to land a job actually confirmed job search theory. As assumed earlier, college degree holders may be prone to delaying their job attainment because the expected higher wages are less available. If we want to further examine the relationship between different levels of education and job attainment, the pattern of model 2 seems consistent with Kettunen (1997). Namely, a junior college graduate fares better in the likelihood of obtaining a job than the other levels of degrees. Yet the comparison between high school and junior college cannot be confirmed since it did not reach the threshold of significance.

According to model 2, age seems to fall into a pattern whereby the younger the participants are, the more likely they are of getting a job within 90 days. Differentiated by age, the youngest group is more likely to land a job compared to the oldest group. This finding may contradict the results proposed by prior research that the youth group often performs poorly in the job market; however, it seems to reveal the facts in the context of Taiwan. Moreover, if we review the findings with model 1, it shows that participants in higher age levels tend to earn more compared with their oldest peers even this effect fails to reach the level of significance. Therefore, being younger increases the likelihood of getting a job but most of them may end up with the type of job that has lower pay.

Overall, model 2 expressed the best results among the statistical tests among models. Besides the significance of total explanations conveyed by independent variables, the association between independent variables and dependent variables was shown to be strong after the examination. This evidence further assured us of the validity of the findings in this study.

Table 2: Analytic Results of Three Models   (*p<.05. **p<.01. ***p<.001.)

Explanatory variables	Wages Model 1	Job attainment Model 2
Unemployment		
Voluntary	-0.224(-0.108)*	0.394(1.483)**
Involuntary	—	—
Unemployment duration		
23weeks & below	0.018(0.009)	0.192(1.211)
24-51 weeks	—	—
51 weeks & above	-0.069(-0.028)	-0.094(0.911)
Training (hours)		

180-240 hours	-0.011(-0.006)	-0.611(0.543)**
241-300 hours	—	—
301-362 hours	-0.046(-0.023)	-0.521(0.594)*
Education		
Junior high & below	-0.349(-0.157)***	-0.260(0.771)
Junior college	—	—
College & master	0.243(0.125)**	-0.354(0.702)*
Gender (male:1)	0.414(0.212)***	0.170(1.185)
Age		
15-24 years old	0.067(0.030)	1.293(3.645)***
25-34 years old	0.148(.076)	0.869(2.385)***
35-44 years old	0.218(.092)	0.469(1.599)
45-54 & above	—	—
Marital (married=1)	0.070(.031)	-0.081(0.923)
N	719	1241
R	0.345	—
R square (R^2)	0.119	Strong association[1]
Adjusted R square	0.104	—
F	7.965	-2 Log Likelihood=1378.68
Significance	0.000	0.000[2]
Model fitness	—	Good[3]

Note. Each column contains the usual regression coefficients along with their standardized coefficients in parentheses. So each column indicates "b (Beta)," yet it refers to Exp (B) in model 3.

DISCUSSION

Unlike the research that has focused on wages among various groups, the present study targeted the impact of training programs according to the status of unemployment (voluntary vs. involuntary) for the participants, which brought insights into the best practices of program implementation for future research. Specifically, suggestions were provided to enrich the content of TIMS, which could be further used to resolve the unemployment issue in Taiwan and in other countries with a similar context. After reviewing the results, flexible policies and regulations were further recommended to correspond to the changing situations of the labor market.

Overview of results

The present study reveals insights into the impact of training programs. In general, the findings confirmed the application of job search theory and revealed the potential intermediate such as unemployment compensation like financial aid. Moreover, findings revealed that the youth in Taiwan may not have difficulty obtaining jobs after training, but most of them obtained jobs with relatively lower pay, with the exception of the oldest group, even though the pay gap among the different age groups did not reach the threshold of significance. Noticeably, there is a concern that youth after training may find it easy to obtain low paid job like "McJob" as it is referred to in the U.S. and in Western Europe (Newman, 2006). However, with the data coming from only one training center, the findings may not be sufficient to represent all potential issues. Nevertheless, it provided lessons for in TIMS and particularly for the implementation of public-sector outsourcing in job training programs.

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[1] Nagelkerke R square=0.085 Cox & Snell R square=0.058, indicating a strong association between independent and dependent variables.

[2] Omnibus Test with $\chi^2 = 74.767$ & P＝0.000＜0.05, reaching the level of significance.

[3] Hosmer-Lemeshow Test＝4.342（n.s. P>0.05）, indicating good fitness of model.

Lessons learned

The present study suggests actions to improve the likelihood of desirable outcomes for training programs. There are suggestions about direct improvements for the TIMS and that are related mostly to policy. Specifically, the lessons learned include collecting more information, imparting a greater degree of flexibility in policy and paying more attention to the aged unemployed persons, particularly for those who are 45 years old or older.

The intricate reality complicates the interpretation of the results even with the help of theories. In this study, the differences between the voluntary and involuntary unemployment represented this type of fuzziness in particular. Based on prior research, the voluntary unemployed individuals would be expected to have better performance compared to the involuntary job losers. Yet given the fact that only involuntary job losers are qualified for unemployment compensation by the Taiwanese government, as a matter of fact, the voluntary unemployed persons are more likely to land a job because of the pressures of real life, rather than the need to better their position in life by comparison with their involuntary peers. This finding confirmed that a tension exists between maintaining low unemployment rates and assure the unemployment. Namely, these two groups of people cannot be compared fairly given the fact that financial support is a potential intermediate factor. Other complications include details about financial aid, such as its exact duration, the kind of information should be added to the TIMS to facilitate future comparisons.

Employing a means of outsourcing represents the governments' endeavors to correspond to labor market conditions and regional unemployment (Lafferty & Roan, 2000). As the trend toward public sector outsourcing emerges, whether these training programs are effective has been the focus of concern. To craft an informative evaluation, the performance indicators should be set properly (Cheng & Liao, 2009). Arguably, the validity of using 90 days as the job-seeking duration is questionable given more and more countries see it as part of the services offered by centers of training. If that is the case, more flexibility should be given since the conditions of each training center vary greatly.

In terms of the issue of unemployment, the focus is usually on youth, but the findings revealed that the disadvantaged condition of older job losers, especially with respect to their possibilities for re-employment. Arguably, it would not be a concern for those adults who successfully land a job since they usually get higher pay, as model 1 revealed. Realizing this, staff at training centers should pay attention to the aged unemployed persons, who are 45 years old or older, given their relative difficult positions in the labor market. Besides, it is worth mentioning that the age of 45 is not a definite cutoff point that can be used to define this challenging group. Other factors such as levels of education, whether the participant lost his/her job voluntarily or involuntarily, the unemployment duration and so on should be considered when reviewing this case. Finally, program mangers and practitioners should be aware of the differences in age, and further provide assistance to meet the employees' needs.

CONCLUSION AND FUTURE RESEARCH

In this article, a framework with the three dimensions was employed to better understand the outcomes of the public sector's outsourcing training programs. With a national data set (TIMS) managed by the Taiwanese government, the results revealed that critical factors including status of unemployment (voluntary vs. involuntary), training hours, levels of education and age differences were related to the likelihood of obtaining a job. In addition, the difference in wages was associated with participants' gender, levels of education and the status of unemployment (voluntary vs. involuntary). Limitations exists no matter what kind of endeavors were used to engage in systematic inquiry (Vo, 2013). With a secondary data set, the lack of information was inevitable since the design of data-collection does not necessarily correspond to the needs of research. Additionally, the sample in this present study was limited to one center of job training so it presented only partial facts of the public sector's outsourcing job training programs. Moreover, sample selection bias may still exist without the design of quasi-experimentation (Ichino, Mealli, & Nannicini, 2008). However, the results of the present study are still subjected to a deeper understanding about the impact of unemployment status. Caution must be used, however, in further referrals to other training programs in Taiwan. Due to these limitations, adjustments had to be made given the contextual variances.

There is always opportunity for future research to advance what is unknown. Based on the results found in the present study, there is some guidance that can be followed. First, more indicators of program effectiveness should be developed. Accordingly, these indicators would enrich TIMS as a quality data set, and also would function as an index to improve the program itself. By reviewing all aspects of a training program, managers and practitioners can further make sense of their daily work and progress accordingly. A good example of an indicator can be the exact days of preparation instead of ranges of varying durations. This kind of information can enrich the quality of TIMS and could enhance the evaluation of program training properly. Arguably, the days of preparation (by the time to be hired) can be employed to review the effectiveness of programs if more related information could be obtained. Other criteria of program implementation such as the satisfaction of participants, program completion rates, the enrollment, a focus on the disadvantaged or teachers qualification and the like were proposed in order to effectively evaluate programs (Cheng & Liao, 2009). Thus, much effort must still be made before we can fully facilitate the policy-making processes.

In the context of Taiwan, the present study has made the attempt to reflect the components that determine effectiveness in a job-training program. The desirable outcomes originally include the obtainment of a job, the rates of wages and the days spent before getting a job. Yet the model of the last one did not reach the level of significance, suggesting further information is needed. In general, most of the results confirmed the job search theory but they also reflected an urgency to enrich TIMS. The authorities and the practitioners should to do a better job in implementing job-training programs, in terms of the voluntary and involuntary unemployment.

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