

**Thesis Proposal:****Levelling Up: Determinant of Upskilling Among Indonesian Workforce****i. Abstract**

Upskilling, defined as an effort to help someone learning new professional skills to participate in the economy, is the key to helping people integrate into better and improved jobs. It has been proven that upskilling has many benefits, including boosting economic growth improving the overall quality of jobs. However, willingness to upskill could vary between demographic features such as age and education. There is a big question regarding whether these variables also determine whether someone will participate in the government-provided skill training in Indonesia, the Pre-Employment Card program. Identifying characteristics of people who participate in this program could help the government emphasize their focus on advocating and making the program more compelling to the most vulnerable group.

There is one outcome of interest in this research, participation in the Pre-Employment Card program, with age and education level as the independent variables of interest. Besides the mentioned variables, other features and demographic features such as gender, previous working status, activity in the last week, and previous training participation will also be regressed to the outcome.

The hypothesis is that age and education level, after controlling for other demographic characteristics, are the most important determinants of the Pre-Employment Card program. Using logistic regression and dominance analysis, this study will explore the association (not necessarily causation) between our independent variables of interest and participation in skill training and how strong the relationship is compared to other variables.

## ii. Introduction

The ever-expanding technological advancement is shifting the way we work. It changes not only the skills that the industry demands but also the human capital investments of students and workers. The question of how to prepare the labor force with the skills they need has become more pressing now than ever. Moreover, the COVID-19 pandemic will most be expected to exacerbate these needs. Together with the fourth industrial revolution, the pandemic will accelerate a structural change of skills' needs that will harm the vulnerable workers if not adequately addressed. Low-skill and low-educated workers will likely have more need to catch up with the upcoming changes by upskilling.

Upskilling, defined as an effort to help someone learning new professional skills to participate in the economy, is the key to helping people integrate into better and improved jobs. As some researchers have suggested, upskilling has many benefits, including boosting economic growth via Gross Domestic Product (GDP) and improving the overall quality of jobs by creating new jobs (World Economic Forum 2020). Moreover, according to the same research, by 2022, 54 percent of all employees will require significant upskilling, and 94 percent of employers said that they expect employees to pick up new skills on the job.

The Indonesian government has made an effort to facilitate job seekers in Indonesia to do upskilling by Pre-Employment Card (*Kartu Pra-Kerja*) program since April 2020. Pre-Employment Card is a skill development program provided in the form of training incentives to all job seekers aged 18 or above who are not in formal education. During the program, the beneficiaries can take online training in several selected digital education platforms, and after completion of training, they are entitled to IDR 600,000 (USD 42.77) monthly cash incentives for

up to four months. This relatively new program is currently being improved in each wave, with one of the agenda is to make the program more inclusive to all workforce.

This program potentially has a long-lasting positive impact on job seekers. It equips them with learning opportunities to participate in the labor force with value-added skills. Therefore, it is essential to understand who and what are the reasons behind the decision-making process of participation in the Pre-Employment Card. This is an essential line of inquiry because Indonesia's government is improving this relatively new program.

The central question that this project seeks to answer is: *What is the most important characteristic that determines someone's decision to join the Pre-Employment Card program?*. The identified primary determinant from this research should help the government emphasize their focus on advocating and making the program more compelling to the most vulnerable group.

### **iii. Literature Review**

Despite the wealth of evidence on the positive effect of upskilling, studies on the determinant of employees' decision to participate in a skill training program are still lacking. Furthermore, among these research, the amount of study explicitly trying to look at participation and determinants of the Indonesian workforce in an upskilling program is very limited. Therefore, this section will specifically review the existing literature related to upskilling and the decision behind it by first exploring the evidence on the determinants of upskilling globally before turning to studies that were specifically explaining skill training in Indonesia.

Empirical research on workers' training intention has consistently found that training motivation varies between individual characteristics. Using a meta-analytic path method, Colquitt, LePine, and Noe (2000) have summarized from 20-years of research that willingness to join a training program can significantly be predicted by a set of individual characteristics such as age,

gender, and job involvement. Furthermore, this study also found that among the few studies that focus on demographic variables, age and gender are the two variables that were observed more frequently in studies. Although gender does not significantly affect training motivation, age has been consistently proven as one of the main drivers of someone's decision to join an upskilling program.

Many studies have found that age correlates negatively with training participation. The decrease in motivation for training, as declines in cognitive ability, of workers from older age group compared to their younger counterparts has been at the center of narratives around why the age of workers is negatively associated with workers' training participation (Kanfer and Ackerman 2004). This relationship has been explained as both moderators or is mediated by other variables by many studies. One study by Bertolino, Truxillo, and Fraccaroli (2011) found that the relationship between proactive personality and training intention is moderated by age. Using a survey completed by 252 government employees and logistic regression as the method, the study found that younger age correlates more to training intentions compared to older age (Bertolino, Truxillo and Fraccaroli 2011).

There has been few research that looks at the relationship between educational level and training participation. This limited number is mainly due to the at-beginning segmentation of target study by their education level. A study conducted by Sanders et al. (2011) explains training intentions specifically for lower-educated workers, which includes only workers with lower secondary educations, while on the other hand, some studies predominantly focus on higher educated workers (Noe and Wilk 1993). However, among the few studies that look at the workers' motivation for training, they found that workers with lower education have lower participation in the training program, mainly due to negative experiences in school (Knud 2006, Tharenou 2001).

Existing work on the determinants of training focuses almost exclusively on the employer-provided training in a specific country, whereas different countries could have a different level of willingness to participate in training and its determinants. A very recent study that surveyed 366,000 people in 197 countries, including Indonesia, found that willingness to learn varies significantly between regions (Kovács-Ondrejko, et al. 2019). Using simple descriptive statistics, the study categorizes countries into four categories based on respondents' perceived impact of training effectiveness and the time they spent learning a new skill that indicated various stances of a country on a training perception, participation, and determinant. Although this study also found that age and education level in a simple tabulation has a relationship with willingness to learn, they could not give a country breakdown analysis because of the limited sample size for each country that might lead to a result that is not representative.

The existing literature suggests that Indonesia's workforce in a training program is still very low and varies among workers' characteristics. Despite the significant importance of training to foster continuous skills development critical in today's labor force landscape, most Indonesian workers do not have access to training (OECD/ADB 2020, World Bank 2020). Using data from Indonesia's national labor survey (the *Sakernas*), OECD/ADB research also shows that among this very small proportion of Indonesian workers who have access to training, two-thirds of them live in urban areas, and 60 percent of them are men, which indicates the inequality of access to training. Using the same data, other research found that education level also plays a role in predicting the Indonesian workforce's participation in training. Around a quarter of workers with higher education have access to training, while only seven percent of workers with primary education have the same opportunity (World Bank 2020).

However, the statistical analysis presented in research related to Indonesia's case was limited to standard tabulation and descriptive statistics without looking at the significance level of each variable to training participation. Moreover, the *Sakernas* data from years previous to 2020 that was mainly used in this research only provides information regarding general training, not the Pre-Employment Card program training, which is our main interest of study. Overall, a study gap that looks explicitly at the determinant of the Indonesian workforce in joining a government-provided training program remains. Therefore, this study aims to focus on answering this question.

#### **iv. Theory and Hypothesis Development**

Globally, the willingness to upskill could vary between demographic features. A study found that low-educated workers and those in the 21-40 years old age group are spending more time in learning new skill compared to other groups (Kovács-Ondrejko, et al. 2019). Moreover, the inequality to access higher education that still exists in Indonesia has also been proven to not only creating a gap in access to better jobs but also to skill training (World Bank 2020). Therefore, there is a big question regarding whether these variables also determine whether someone will participate in the government-provided skill training in Indonesia, the Pre-Employment Card program, or not. Based on the background reviews of previous observational studies on characteristics of workers who participate in the upskilling program, this study hypothesizes that age and education level, after controlling for other demographic characteristics, are the most important determinants Pre-Employment Card program.

As of now, there have not been many studies addressing the determinants of upskilling participation in Indonesia. A study based on a Boston Consultation Group (BCG) observed the conditions under which type of employment, age, and education affect the willingness to join a skill training program (Kovács-Ondrejko, et al. 2019). However, this particular study focuses

on the global trend and cannot be zoomed in to a particular country of interest. Moreover, since the Pre-Employment Card program is very new, existing works around this focus exclusively on this program's effectiveness and implementation rather than the decision behind the participation (Kurnianingsih , Mahadiansar and Setiawan 2020). Fortunately, the latest Indonesian Labor Force survey asked questions on the participation in the Pre-Employment Card program.

This study will explore the hypothesis that age and education level, after controlling for other demographic characteristics, are the most important determinants of the Pre-Employment Card program. The hypothesis will be proven using the findings on the regression model with participation in the Pre-Employment Card program as the dependent variables. The hypothesis will not be rejected if it is proven that education and age level have the highest importance in terms of its association with participation variable, and it will be rejected if otherwise.

It is important to notice that confounding variables must be considered when concluding the relationship between age and education level to the participation in the upskilling program. Even after this study prove the relationship between independent and dependent variables, other factors such as other demographic variables, awareness of the program, time availability to undertake another activity, access to the internet, and other unobserved conditions could act as the confounding variables of this association. For example, while some researchers have found that participation in the upskilling program varies between both gender and education level, these two variables have also been proven to be associated with each other as women are less likely to have good access to higher education compared to men (Feridhanusetyawan , Aswicahyono and Perdana 2004). This study will be able to control only observed variables that are available in the data; gender, previous working status, activity in the last week, urbanicity, and previous training participation. Thus, this study will explore the association (not necessarily causation) between our

independent variables of interest and participation in skill training and how strong the relationship is compared to other observable variables. Therefore, this study could not conclude whether age and education level is necessary and or sufficient for upskilling participation.

#### **v. Research Strategy**

This study proposes a cross-sectional method to capture the relationship between Pre-Employment participation, age, and education in Indonesia's workforce population at one particular time, 2020. Due to the recent implementation of the Pre-Employment Card Program, studies and data on this program are still very limited. Therefore, cross-sectional studies will be a good way to provide analytic clues for the subsequent research.

However, the cross-sectional method has limitations such as reverse causation, unobserved confounding, and uncertainty about temporality that would make it harder to make causal inferences. Therefore, as explained above, this study could not conclude whether age is necessary and or sufficient for upskilling participation. Even after this study prove the relationship between age and training participation, other factors such as awareness of the program, time availability to undertake another activity, and other unobserved conditions could act as the confounding variables of this association.

##### ***a. Data and Variable Limitations***

This research will heavily rely on data from the newest Indonesian Labor Force Survey Data (Survey Tenaga Kerja Nasional, *Sakernas*), collected in August 2020. This data contains complete information about the employment condition and demographic of Indonesian workers. *Sakernas* data is a survey data collected by Indonesian Statistics Bureau that was explicitly conducted to cover all working-age individuals' national labor market characteristics within sampled households. This survey's main objective is to obtain up-to-date information on the



working-age population, the unemployed, the country's inhabitants who have quit work or moved, and estimate the unemployment trends at the district, municipal, provincial and national level. Lastly, the data is also equipped with appropriate weights, which will alleviate the cross-sectional method's coverage issues.

Around 793,500 respondents in the working-age population were surveyed for the August 2020 *Sakernas* round. The ultimate sampling unit for this survey data is households drawn using stratified sampling of households' population socio-economic characteristics.

Each respondent in the survey answered around 30 questions regarding their demographic information, education, activity in the last week, employment status, and working experience. In addition to these questions that consistently appear in each round, the August 2020 *Sakernas* data also includes new questions regarding the impact of the COVID-19 pandemic on respondents' working conditions, such as job loss due, the change in a working hour, and working from home policy. Moreover, this round also supports the Pre-Employment Card program's evaluation process by asking questions regarding the registration and participation of the surveyed respondents.

In the August 2020 round, the questionnaire specifically included a question about whether the respondent knows about the Pre-Employment Card program, and among those who said that they were aware of the program, they were asked, "*Did you register the pre-employment card program?*". Moreover, this data also has information on independent variables of interest, age, and education. The first independent variable of interest is the respondents' age which was recorded in years. For education level, the survey asked about the highest level of education that the respondent has completed. Other variables that will be included as covariates are gender, previous working status, activity in the last week, urbanicity, and previous training participation, which all are also available and asked directly to the respondents in this survey.

However, there are several limitations of the data that might affect the validity of the inferences. The first one is *Sakernas* data did not have information of respondents' economic activity right when they decided to register for the program, which could heavily affect the decision-making process in taking a skill-training program. This variable, however, can be proxied using last week's activity and working experience variable. Moreover, the household consumption often used as an economic condition indicator in Indonesia is also not available in this data. Due to this factor's importance to someone's decision to join skill-training participation, this research will use geographical variables such as urbanicity as the proxy.

The other significant limitation of the data is that the data is a survey; therefore, the dependent variable's validity relies on the respondent's understanding of the Pre-Employment Card program. Moreover, since the administrative data on who participates in the program is not publicly available, this study could not validate *Sakernas* respondents' responses.

### ***b. Quantitative Methods and Interpretation***

In terms of statistical analysis, logit regression will measure the existence of an association of independent variables to the outcome. Since the outcome variable in this study is binary (i.e., whether respondent registered in the program or not), logistic regression is more appropriate for finding the association than linear regression. Below is the model that will be used in this study with  $p_{training}$  indicating the probability of someone is participating in the Pre-Employment Card program, *Age* indicating the age of respondent, and ***Var*** is a set of possible mediators. Mediators included in this analysis are gender, previous working status, activity in the last week, urbanicity, and previous training participation. The regression coefficient ( $\beta$ ) in this model is measuring the change in the dependent variable's logit (log-odds) when the independent variable is changed by one unit.

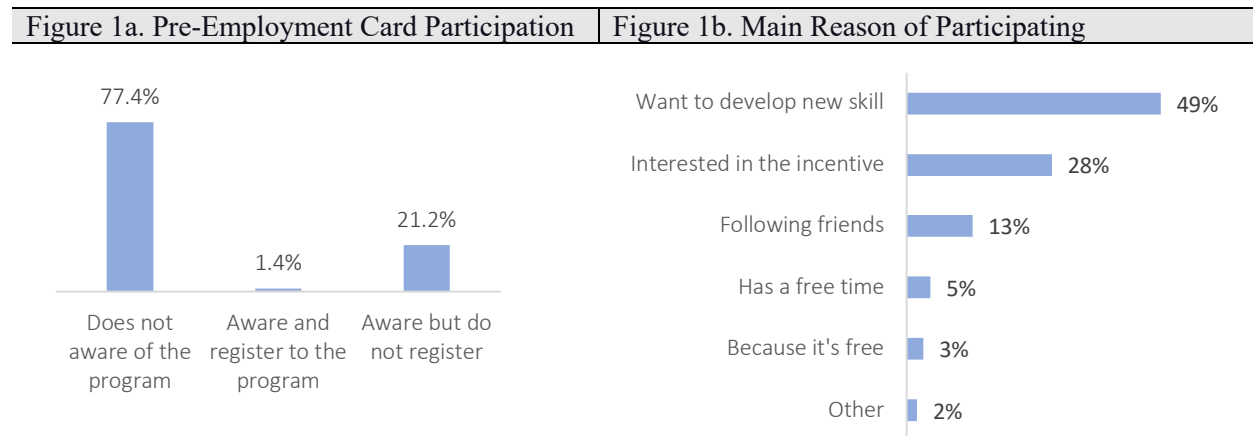
$$\log \frac{p_{training}}{1 - p_{training}} = \beta_0 + \beta_1 * Age + \beta_2 * Education Level + \beta * Var + u$$

This study's main interest is to look at the direction, magnitude, and significance of  $\beta_1$  variable even after adding several **Var** variables. The association of age and education to probability of participating in the program can be established if  $\beta_1$  and  $\beta_2$  is significantly not equal to zero. Using logistic regression, this study also able to look at the odd-ratio of age and probability of participating in a training which indicates that net of other variables, for every year additional of a person's age is, by how much the odds of a participating training is increased.

Moreover, this study will also employ dominance analysis to answer whether age and education level are the main predictor of training participation. Dominance analysis is a method that is widely used to measure the importance of a predictor in a model. This method will say one predictor as the most important if its additional contribution, defined as the change in  $R^2$ , to every possible set of models (that does not include predictor in interest) is greater than that of the other predictor (Azen and Traxel 2009).

## vi. Preliminary Findings

In the preliminary findings, this study confirms that the awareness and participation of the Pre-Employment Card program are still very low. Among the working-age population in Indonesia, only 22 percent aware that this program existed. Moreover, among all, only 1.4 percent aware and actually register to the program. A majority (49 percent) of those who register in this program said that the main reason for participating is to develop a new skill. This finding indicates that the program is successfully designed to make people want to obtain new skill instead of the cash incentive.



Source: *Sakernas* August 2020

When looking at the two variables of interest, age and education, the preliminary analysis found that the distribution of age and education level differ by Pre-Employment Card program participation. Among workers who did not participate in the program, 62 percent of them have middle school or lower education, while among participants of the program, the majority of them (89 percent) have at least a high school education. A similar pattern happened on the age variable. Workers who were not participating in the program is, on average, older than their counterparts, with average age of 41 years old and 29 years old, respectively.

Figure 2a. Education Distribution by Program Participation

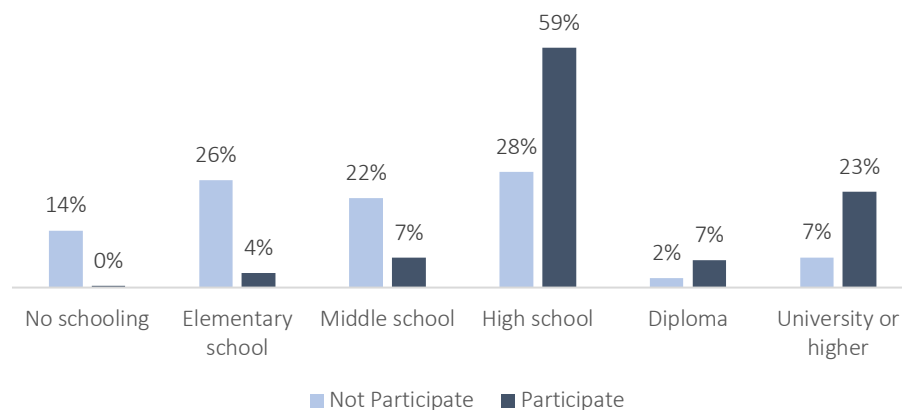
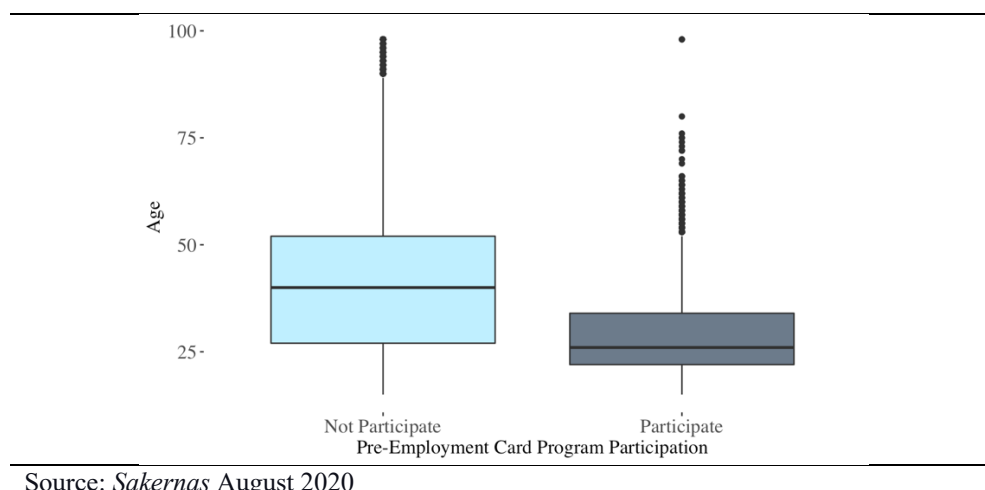


Figure 2b. Age Distribution by Program Participation



This relationship between age, education level, and training participation hold true even after adjusting the control variables. Controlling for gender, urbanicity, activity, working experience, and training experience, age, and education level has a statistically significant relationship with the probability to participate in training (Table 1).

**Table 1. Logistic Regression Models Predicting Participation in Training**

	Participating in Pre-Employment Card Program
Age	-0.070*** (0.001)
Educ: Elementary School	1.131*** (0.158)
Educ: Middle School	1.548*** (0.154)
Educ: High School	3.035*** (0.150)
Educ: Diploma	3.512*** (0.155)
Educ: University or higher	3.577*** (0.151)
Gender	0.216*** (0.021)
Urbanicity (urban = 1; rural = 0)	0.443***

	(0.021)
Activity: Unemployed	0.790***
	(0.027)
Activity: Student	-1.190***
	(0.054)
Activity: Housekeeping	-0.462***
	(0.033)
Activity: Others	-0.468***
	(0.097)
Ever worked	0.627***
	(0.021)
Ever trained	0.428***
	(0.023)
Constant	-5.133***
	(0.155)

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The dominance analysis needs to be done next to confirm if age and education level are the main predictors of training participation. Besides that, these preliminary findings have supported the hypothesis that age and education have a significant relationship with participation in the Pre-Employment Card program. The findings on low awareness and participation in the Pre-Employment Card program also support the importance of doing this study because by understanding who is more likely to participate (or not participate) in this program, the government could create a better targeting strategy to maintain and expand public interest in this program.

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