PROCEEDINGS OF THE

1ST INTERNATIONAL CONFERENCE ON FINANCE AND ECONOMICS 2014

June 2nd – 4th, 2014

Vietnam, Ho Chi Minh City

Honorary Chairs:

Le Vinh Danh	President of Ton Duc Thang University
Petr Saha	President of Tomas Bata University in Zlín
Zsolt Rostoványi	President of Corvinus University of Budapest

Conference Chairs:

Drahomíra Pavelková	Chair, Tomas Bata University in Zlín
Trautmann László	Co-chair, Corvinus University of Budapest
Nguyen Thi Bich Loan	Co-chair, Ton Duc Thang University

Keynote speakers:

Milan Zelený	Fordham University at Lincoln Center (USA), Tomas Bata University in Zlín (Czech Republic)
Pal Tamas	Professor of Communication Institute of Sociology, Hungarian Academy of Sciences Budapest (Hungary)
Vo Tri Thanh	Vice President of the Central Institute for Economic Management – CIEM (Vietnam)

Preface

Dear Conference Participants!

"The International Conference on Finance and Economics" creates the possibility for gathering and exchange of knowledge and experience of all those, who are actively engaged in this area: researchers, representatives of companies, banks, insurance companies and other financial institutions, public administration as well as PhD students. We are very pleased that we managed to prepare the conference with the active participation of three universities from three different countries:

- Ton Duc Thang University (Vietnam)
- Tomas Bata University In Zlin (Czech Republic)
- Corvinus University Of Budapest (Hungary)

The programme of the conference, as well as the proceedings you have received, confirm that all these subjects and relevant problems are covered and that there is an opportunity for exchange of ideas and opinions. On the basis of double blind reviews, only papers that met the requirements of reviewers regarding the content, structure, and the completeness of the references cited were included in the Conference Proceedings.

This year again the conference programme includes contributions presented by economists from academic, public and private spheres; this creates a bridge between theoretical knowledge and practical experience in the area of finance and economics.

We hope that the course of the conference, the opportunity of personal contacts, exchange of knowledge and experience as well as information contained in the proceedings will contribute to the enrichment of understanding of the given set of current problems and to the support of further growth of cooperation.

Dr. Nguyen Thi Bich Loan
Dean of the Faculty of Finance and Banking - Ton Duc Thang University

prof. Dr. Ing. Drahomíra Pavelková
Dean of the Faculty of Management and Economics - Tomas Bata University in Zlin

Assoc. Prof. Dr. László Trautmann
Dean of the Faculty of Economics - Corvinus University of Budapest

The proceedings will be applied for inclusion in the Thomson Reuters Conference Proceedings Citation Index database.

List of Papers

THE USAGE OF PROPENSITY SCORE MATCHING METHOD FOR TRAINING IMPACT EVALUATION ON PRODUCTIVITY IN VIETNAM: THE CASE OF SMALL AND MEDIUM ENTERPRISES (SMEs)

Nguyen Khanh Duy, Nguyen Thi Hoang Oanh, Nguyen Duy Tam, Pham Tien Thanh, Truong Thanh Vu

Abstract

This paper investigates the determinants of human capital investment in formal training (off-the-job training in short term) and estimates effects of this investment on productivity using Propensity Score Matching (PSM) method. This paper uses the data from two surveys on the small and medium enterprises (SMEs) in Vietnam: SMEs2009 (completed in 2010) and SMEs2011 (completed in 2012) with detailed information about training and firm characteristics. The results found that training has positive impact on the productivity of household business, but there is no evidence about the impact of training on productivity of the firms in formal sector; and there is no impact of training activities on productivity in the near future (one or two years).

Keywords: evaluation, training, matching, PSM, SMEs, Vietnam, productivity, investment in human capital.

JEL Classification: J21, O15

1 INTRODUCTION

In recent years, there is a substantial progress in many industries where knowledge and well-trained workers play a key role in production. The accumulation of human capital plays an important role in explaining economic performance and long-term growth (Lucas, 1988). This paper conveys the importance of training in organizations as a basis for increased productivity. Training is widely understood as communication directed at a defined population for the purpose of developing skills, modifying behavior, and increasing competence. Generally, training focuses exclusively on what needs to be known. Although in organizations there is an increasing concern that training investments are justified by improved organizational performance (Salas & Canon-Bower, 2011), it is difficult to find a strong evidence of this argument in the human resource literature. More and more studies have tried to estimate the effect of training on corporate productivity, they do not always agree about this effect. Some studies, such as Dearden et al. (2006), found considerable effects of training on productivity. However, Black and Lynch (2001) did not find any impact of training on productivity in their research. The main objective of their paper is to establish effects of training on the enterprise's productivity as the first step in dealing with the tension between the need for training and the doubts about its benefit to enterprises.

Although investment in human capital plays a very important role in enhancing the corporate competitiveness in the context of international integration and aftermath of global economic crisis, local enterprises, especially SMEs, do not make an appropriate investment in human

ICFE 2014 - The International Conference on Finance and Economics
Ton Duc Thang University, Ho Chi Minh City, Vietnam
June 2nd - 4th, 2014

capital. According to Xuan Ngoc (2011), a survey of 437 managers and 335 enterprises showed that in 2010, the budget for training was equal to 7.13% of wage fund, which means the cost per worker was only VND389,000. This percentage in 2009 was 6.89%, implying that only VND313,000 was spent on training for each worker. Le Thi My Linh (2009) stated that the majority of company owners have not been aware of the importance of training human resources, 59% of the enterprises in HCMC do not have the written training policies. Therefore, quality of human resource is hardly satisfactory due to very low investment in human capital. GSO (2012) showed that in 2011, the proportion of unskilled workers was 84.4% in the Vietnam.

The low investment in human capital may be affected more by perception of the importance of training than by shortage of financial source in enterprises. Tran Kim Dung (2011) showed that the most powerful factors affecting training activities were vision or awareness of the leaders as well as the whole workforce of the company rather than the shortage of fund for training. According to the Government's Decree 56/2009/NĐ-CP, the State offers support for training to SMEs in South Vietnam through Southern SME Technical Assistance Center. However, in 2011, the training in enterprises did not have any improvement; there were only 15 courses held by the center for 663 trainees. Xuan Ngoc (2012) stated that in fact, the companies often "hunt" skilled workers instead of training; and many enterprises are willing to spend on training activities but worried about the labors' "jumping" to another companies after training. Moreover, most of the enterprises have not evaluated the effectiveness of training activities and claimed that it was very difficult to conduct such activities.

The research on the impact of investment in human capital on productivity is highly necessary to enterprises, especially SMEs in Vietnam. The surveyed enterprises might or might not do investment in human capital. This may be considered as natural experiment, and a good opportunity to construct control group via propensity score matching (PSM) method for analyzing the impact of this activity on productivity.

The paper comprises five sections. The first is this introduction, and the second describes the theoretical models that explain the relationship between training and enterprises outcomes as well as the empirical studies on investigating this relationship. The third section presents our research methodology for estimation the effect of training on enterprises productivity. The fourth section presents our empirical results of the effect of training. The final section comprises implications and conclusion.

2 LITERATURE REVIEW

2.1 Theoretical background of the impacts of training on productivity and wages

- **Theoretical Models of Relationship between Training and Enterprise's Outcomes:**

The literature on strategic human resource management (SHRM) provides a number of models to explain how training leads to enterprises' outcomes. Wright & McMahan (1992) provided a conceptual framework that incorporates six theoretical models for the study of SHRM. According to their framework and the theoretical models, HRM practices influence HR capital pool and HR behaviors; HR behaviors then lead to enterprises' outcomes. Basing on these theories that link HRM practices to enterprises' outcomes, P.Tharenou et al. (2007) proposed a theoretical framework shown in Figure 1 that links training to enterprise outcomes.
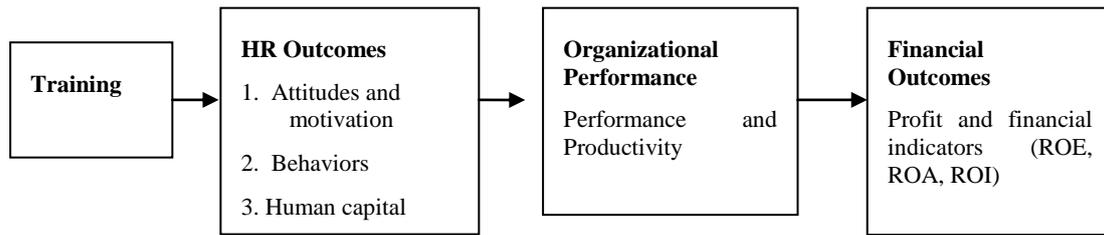
Fig. 1 - Theoretical Model Linking Training to Organizational Outcomes. Source: Tharenou et al. (2007).

The theoretical framework shown in Figure 1 implies a direct linear relationship between training and organizational outcomes. However, theories of SHRM (e.g., resource-based theory, behavioral theory) imply that other types of relationships also need to be considered in addition to the basic model in Figure 1. The literature on SHRM provides alternative perspectives on the relationship between HR practices and organizational outcomes that are generally referred to as the universalistic, contingency, and configurational perspectives (Delery & Doty, 1996; Ostroff & Bowen, 2000). These perspectives can also explain different types of relationship between training and organizational outcomes.

The most basic perspective is the universalistic one. According to this perspective, some HR practices such as formal training are work practices that are believed to be linked to organizational effectiveness for all organizations that use them (Delery & Doty, 1996; Ostroff & Bowen, 2000). The basic premise of this perspective is that the greater use of particular HR practices will result in better organizational performance, and organizations that provide more extensive training will be more effective. Basing on the universalistic perspective, training is predicted to have a positive relationship with organizational outcomes. The model shown in Figure 1 corresponds to this perspective.

A second perspective is known as the contingency perspective. The general premise of the contingency perspective is that the relationship between a specific HR practice and organizational performance is contingent on key contextual factors, and the most notable of which is organization's strategy (Delery & Doty, 1996). Thus, organizations adopting particular strategies require certain HR practices that will be different from those required by organizations with different strategies. The contingency perspective is more complex than the universalistic perspective because it implies interactions between HR practices and organizational factors. Organizations with greater congruence between HR practices and their strategies, or other relevant contextual factors, should have superior performance (Delery & Doty, 1996). When applied to training, the contingency perspective suggests that extensive formal training will be the most effective when used in combination with certain organizational strategies (Schuler, 1989).

A third perspective is known as the configurational perspective. This perspective suggests that there are ideal types or configurations of HR practices for HR systems that lead to superior performance (Ostroff & Bowen, 2000). In high performance systems, HR practices need to be complementary and interdependent, working together to develop valuable, unique human capacities to increase organizational effectiveness (Barney & Wright, 1998). When applied to training, the configurational perspective suggests that, when used in conjunction with other complementary HR practices, training will enhance organizational effectiveness better than when used independently. Thus, when enterprises invest in training, training must be consistent with other HR practices. HR practices consistent with training include careful screening of applicants for potentials and trainability, practices to decrease turnover, use of

promotion from within and internal labor markets, use of performance-contingent incentive systems, defining jobs broadly, and providing opportunities for employee participation (Baron & Kreps, 1999; Lepak & Snell, 1999).

In summary, the SHRM literature suggests that the nature of the relationship between training and organizational outcomes might be universalistic as suggested in Figure 1 that HR outcomes mediate the relationship between training and organizational performance. This relationship might be moderated by organizational factors such as firm strategy according to the contingency perspective or moderated by other congruent HR practices according to configurational perspective.

- **The impacts of training on wages**

In order to have a contingency research of the impacts of training, it is necessary to investigate the impacts of training on wages. The training hardly becomes the sole cause of the improvement in productivity. Productivity could be enhanced by a variety of components such as the technology innovation, the business strategy or other advantageous externalities. Meanwhile, the wages premium accrued to the trained workers may be considered as a reward of their contribution to the productivity improvement. To be assured that training has a contribution on the productivity enhancement; this research study investigates the impacts of training on wages.

Furthermore, the study on the impact of training on both productivity and wages could help to determine the nature of labor markets which could be either perfect or imperfect in competition. In the simplest neoclassical view of the labor market where the market is perfectly competitive, wage will be equal to the value of marginal product. Therefore, the wage could be taken as a direct measure of productivity. In competitive labor market, the return accrued to workers in the form of wages and the productivity premium of a trained worker equal its wage premium. However, if the labor market is characterized by imperfect competition, the strict relationship between wages and productivity seems to be broken. In particular, the firms usually apply a compressed wage structure that wages increase less steeply in training than productivity in order to compensate for the training costs. With imperfect competition, the estimated impact of training on wages is likely to be only a lower bound on the impact of training on productivity as there are gains from training not passed on to workers (Acemoglu & Pischle, 1999).

2.2 Basic Framework

- **The impacts of training on productivity**

The econometric analysis in this paper follows the literature in assuming that technology at firm level can be characterized by a Cobb-Douglas production function (Dearden et al., 2006):

$$Y = A \, L^\alpha \, K^\beta \tag{1}$$

where Y, L, K are added value, labor and capital respectively; A represents technological progress, and α and β denote the elasticity of added value with respect to capital and labor.

Under the assumption that trained and untrained workers have different productivities, effective labor equation can be written as:

$$L = N^U + \gamma N^T \tag{2}$$

where: N^T and N^U represent trained and untrained workers respectively, L is effective labor, and γ is a parameter that characterizes trained workers' relative productivity. This parameter will be greater than 1 if trained workers are more productive than untrained workers.

Substituting equation (2) in to equation (1) we obtain:

$$Y = A \, [N^U + \gamma N^T]^\alpha \, K^\beta = A \left[1 + (\gamma - 1)\frac{N^T}{N}\right]^\alpha N^\alpha \, K^\beta \tag{3}$$

where: N is the total number of workers and $\frac{N^T}{N}$ is the ratio of trained workers to the total.

Under the assumption of constant returns to scale (α+β = 1) we can write the production function in intensive form and express labor productivity as follows:

$$\frac{Y}{N} = A \left[1 + (\gamma - 1)\frac{N^T}{N}\right]^\alpha \left(\frac{K}{N}\right)^\beta \tag{4}$$

Applying a log − transformation and approximating around 1, we obtain:

$$\log\left(\frac{Y}{N}\right) = \log(A) + \alpha\,(\gamma\text{-}1)\,\frac{N^T}{N} + \beta \log\left(\frac{K}{N}\right) \tag{5}$$

where: The dependent variable, labor productivity, is measured as the natural logarithm of real added value per employee from the balance sheets; $\frac{N^T}{N}$ is the proportion of trained workers in an industry; and $\log\left(\frac{K}{N}\right)$ is measured as the natural logarithm of the real value of tangible fixed assets from the balance sheets (plant and machinery, land and buildings, tools and equipment).

- **The impacts of training on wages**

In order to measure wage differentials between trained and untrained employees, we apply firm-level wage equations as in Hellerstein et al. (1999). We define the wage of individual j as:

$W_j = W_U\,D_{j,U} + W_T\,D_{j,T}$

Where W_j is the wage of individual j. W_U and W_T are the average wages of untrained and trained employee respectively and $D_{j,U}$ and $D_{j,T}$ represent a dummy equal to one if the employee j is untrained or trained respectively. By summing up all employees at a firm, the total wage bill of a firm equals by definition the sum of wages if trained and untrained employees multiplied by respectively the number of trained and untrained employees active in the firm. This expression could be rewritten as:

$$\overline{W}L = W_U L_U + W_T L_T = W_U L + \lambda_T\,W_U L_T = W_U L\left(1 + \lambda_T\,\frac{L_T}{L}\right) \tag{6}$$

Where $\lambda_T = \dfrac{W_T - W_U}{W_U}$ represents the relative wage premium for a trained employee compared to an untrained one. Dividing both sides by the number of employees and taking logs Equation (6) we obtain

$$\overline{w} = \mathrm{w_U} + \ln\left(1 + \lambda_T \frac{L_T}{L}\right) \approx \mathrm{w_U} + \lambda_T \frac{L_T}{L} \tag{7}$$

Where the last step follows from the fact that ln(1+x) could be approximately by x if x is small.

From the above equation, it seems to have the impact of training, hereby represented by $\dfrac{L_T}{L}$, on the average wage of a firm. This framework places a basis on our study in estimating the impact of training on the firm's wage.

2.3 Empirical Studies

Impact of training on performance of enterprises (productivity, added value, returns…): The impact of human capital investment, especially training activities related to job, productivity, wage, or firm performance, has been studied in many countries. Ballot et al. (2001) used data from two panels of large French and Swedish firms for the same period (1987-1993), and confirmed that firm-sponsored training and R&D are significant inputs in two countries, although to a different extent, and have high returns. Dearden et al. (2005) used panel data at firm level in England, and then indicated that one-percentage-point increase in training is associated with an increase in value added per hour of about 0.6% and an increase in hourly wages of about 0.3%. Konings & Vanormelingen (2011) used the data from 1997-2006 of Belgium, and then concluded that productivity increases by 1.4%-1.8% in response to an increase of 10 percentage points in the share of trained workers while wage only increases by 1.0%-1.2%. In Vietnam, Nguyen, Ngo & Buyens (2008) surveyed 196 companies and indicated that firms which implement training activity in 2006 increased sales and productivity in both manufacturing and non-manufacturing sectors. Storey (2002) asserted that the relationship between training and firm performance works strongly enough to big firms in the US, but it is uncommon to SMEs in the UK. There is evidence that "high performance work practice" appears to be associated with better performance in large US companies, but argument that this relationship is less likely to be present in middle-sized companies is also supported.

Dearden et al. (2006) analyzed the relationship between training, wages and productivity at the sector level for the case of Britain. Focusing on wages and productivity simultaneously provides the possibility of directly testing the hypothesis of wage compression required to have firms paying for general training. They found large effects of training as productivity and wages go up by respectively 0.6% and 0.3% in response to a 1% point increase in training.

Dumas & Hanchane (2010) evaluated the impact of job-training programs, initiated by the Moroccan government and called "special training contracts", on the performance of Moroccan firms. The paper highlighted that "special training contracts" is an efficient measure of public policy. Indeed, job-training programs increase the competitiveness and performance of Moroccan firms. Additionally, it was shown that firms had different

perceptions of the role of public policy. It was emphasized that training effects were higher when training was considered as part of a human resources development strategy. On the contrary, when firms considered public policies just as a financing opportunity, they did not get any returns from training.

The above researches mainly used OLS method for cross-sectional data, or GMM method for panel data. This method could not measure the real impact of training on firm performance when the selection of firms with or without training activities is not a random experiment. Very few studies applied PSM method to investigate the impact of training activities on firm performance although this is the most common technique of evaluation impact of programs, projects, policies, and discussed in the training curriculum of World Bank by Khandker et al. (2010).

Rosholm et al.(2005), with reference of evaluation methods of training activities by Heckman et al. (1999), used propensity score matching method (PSM) technique to evaluate the impact of training activities on wages − the case of the firms in Africa − via constructing control group for comparison. With the combined data between firm level and personal level from Kenya and Zambia (1995), Rosholm et al. (2005) initially used Probit model to specify the determinants on the participation of employees in training activities. These included the factors related to the proprietary characteristics, job positions, membership of the union, and regional factors. In the second step, the employees were divided into treatment group and control group based on propensity score matching method, and the region of common support is specified. In the third step, evaluation impacts were developed via comparing the result of training activities and wages between the two groups. As the results, in Kenya, training activities made the wages increase by 2.3% and statistically significant at 10%; while in Zambia, the impact of training activities on wages was very small and statistically insignificant.

Determinants of investment in human capital (training): In order to evaluate the impact of human capital investment on productivity, the firm performance, or wages; it is the most important to construct a model that reflects the determinants on human capital investment via using Logit, or Probit model. The following studies showed the determinants of the human capital investment by firms.

Forrier & Sels (2003) indicated that the investment in training was explained by number of employees, types of industry, characteristics of the internal labor market, number of contracts, number of fixed-term contracts, hours of agency work per employee, turbulence or change in the number of staff, inflow, and outflow.

Jones (2005) found that the factors affecting the probability of providing training in Australian manufacturing SMEs were introduction of major change in production technology, documented formal business plans, introduction of business improvement programs (QA, JIT), changing business structure and employment size, and innovation.

Hansson (2007) used the data from 5,824 private-sector organizations to examine determinants of training with OLS regressions. The results suggested that the most important factors in determining the provision of company training were largely related to the company management. Factors determining the provision of training including the intensity and the incidence are, with the direction of the association in brackets, whether the company analyses training needs (+), whether it has a written training policy (+), and the employees' educational level (+). The training also depends on whether the company focuses on internal promotion (-

), the degree of unionization at the firm (-) and, to some extent, on the firm's past profitability (+). The incidence of training is determined by the employees' age (-).

Guidetti & Mazzanti (2007) presented a conceptual review over the main aspects concerning the role of human capital investment and training activities within production processes, followed by empirical evidence from two local economic systems in Northern Italy, based on recent survey data. Theoretical and empirical considerations were brought together in order to provide new insights into the role of training and factors associated with training activities at firm level. This research constructed the theory of influential factors on training activities comprising the following five main groups: firm characteristics, internal labor market factors, workforce features, techno-organization innovation, and performance. Moreover, this research suggested many measurement indicators for those notions.

The paper of Castrillón and Cantorna (2005) found that managerial decision to develop training is determined by a factor that was extraneous to the investment in new production technologies, that is to say, recruitment policies. As for the existence of a specific training budget, implementation of the advanced manufacturing technologies does not appear to determine a company's decision to allocate specific budget items to personnel-training programs. It is concluded that training policies of organizations are strongly influenced by external factors.

3   RESEARCH METHODOLOGY

3.1 Research objective and research question

This research could help policy-planning agencies understand determinants of corporate investment in human capital thence develop policies to support enterprises and encourage them to carry out the training activities effectively. It investigates the impact of training activities on the productivity of enterprises and then enables SMEs to trust in the training activities and pay more attention to strategies for developing the human resources efficiently.

In particular, this research aims to reach the following objective:

•   Measure the impact of human capital investment on labor productivity.

In order to achieve the objective, the research will focus on answering the following question:

•   How is the impact of human capital investment on the productivity of SMEs?

3.2 Methodology

This research uses qualitative methods to answer the research question. The main method is Propensity Score Matching (PSM). PSM constructs a statistical comparison group that is based on a model of the probability of participating in the treatment by using observed characteristics. Participants are then matched, on the basis of this probability or propensity score, to non-participants. The average treatment effect of the program is then calculated as the means difference in outcomes across these two groups (Khandker et al., 2010).

This research does not employ traditional methods, such as multiple regressions, to investigate the impact of investment in human capital on productivity because such methods are only reasonable with respect to randomized experiments. The greatest difficulty of impact evaluation is to identify the outcome without the program; in particular, the difficulty in this research is to identify the potential outcome if the enterprises do not invest in human capital.

In reality, we cannot find an enterprise that both invest and does not invest in human capital at the same time. A lot of techniques for impact evaluation (such as PSM, DID, Match DID, etc.) help to construct counterfactual outcomes in order to compare with the enterprises which invest in human capital, and then the problem of causal effect of the programs/ associated policies on the outcome is settled (Khandker et al., 2010).

Based on the literature review and empirical studies, the model of determinants of human capital investment in SMEs may include explanatory variables as shown in Table 1.

Tab. 1 - The Expected Variables in Logit/ Probit Model. Source: own.

		Note
I	**Dependent variable**	
	Investment in human capital (training)	Dummies (1: Yes ; 0: No)
II	**Independent variables**	
1	ln(size)	Continuous
	Total assets	
2	Age of firm	Continuous
3	Industrial park/zone (IZ)	Dummy
4	Form of ownership/legal status	Dummies
5	Percentage of managers, professionals, office workers (%)	Continuous
6	Turnover	Continuous
7	Business plan	Dummy
8	Constraints to growth	Dummy
	Does the firm face any major constraints to growth?	
9	Negatively affected by the global economic crisis	Dummy
10	Member of one or more trade associations	Dummy
11	Network	Dummy
12	Union	Dummy
	Does the enterprise have a local/plant level trade union/employee representative organization?	
13	The long-term attachment	Dummies
	Buying social, insurance, health insurance for employees	
14	Labor market	Dummies
	How does the enterprise hire workers?	
	Is there any difficulties in recruiting workers with the required/appropriate skill level	
15	Percentage of short-term contracts (%)	Continuous
16	Research and development (R&D)	Continuous
17	Percentage of modern technology (%)	Continuous
18	Innovation	
	Number of personal computers	Dummies
	Sell products via e-trading	(And/or)
	Purchase services from outside the enterprise	Continuous
	Automatic job rotation system	
	Days of inventory	
	The firm has made major improvements in existing products or changed specification	
	The firm has introduced new production processes/new	

	technology since August			
	Environmental standards certificate			
19	The firm has been involved in training courses supported by the national or international organizations			Dummy
20	Government assistance			Dummy
21	Industry			Dummies
22	Formal/ household enterprises			Dummy

All the variables in table 1 will be put in to probit model to estimate the probability of investment in human capital. Khandker et al. (2010) stated probit or logit model is only considered intermediary step in PSM, but not the main focus. After estimating the probit model, this study will evaluate the impact of the human capital investment on productivity and indicators reflecting the firm performance via using PSM techniques.

3.3 Data

This research uses the secondary data of SMEs in Vietnam in 2009 and 2011 collected by CIEM, ILSSA and DoE (completed in 2010 and 2012) for 10 cities/provinces in Vietnam; and the balance panel data was used in order to estimate the model.

The data of SMEs are conducted by the Central Institute for Economic Management (CIEM) under Ministry of Planning and Investment (MPI), Institute of Labor Science and Social Affairs (ILSSA) under Ministry of Labor, Invalids and Social Affairs (MOLISA); Department of Economics (DoE), Copenhagen University; and Embassy of Demark in Vietnam.

4   RESULTS

4.1 Descriptive Statistics in Labor Productivity

Tab. 2 - Labor productivity (VA/Labor) of enterprises from 2008 to 2010. Source: Calculated from CIEM data (2010, 2012).

	Formal Enterprises				Business households			
	Obs	2008	2009	2010	Obs	2008	2009	2010
Training	119	33.1	32.3	32.6	55	21.8	18.2	19.4
Not training	516	23.2	29.0	30.3	833	13.7	18.0	18.5
combined	635	25.1	29.6	30.7	888	14.2	18.1	18.6
diff		9.8	3.3	2.4		8.1***	0.2	0.9
t		1.365	0.5072	0.3652		3.725	0.0873	0.4602
df		122	613	615		60	70	72
Pr(|T| > |t|)		0.175	0.612	0.715		0.000	0.931	0.647

Table 2 showed the results of independent sample T-test on the difference in labor productivity (measured using VA per regular full-time labor force in 2008, 2009, 2010) between enterprises with and without training (Information on training was captured form SMEs2009 data). In 2008, labor productivity per annual of formal enterprises was 25.1 million VND per capita, that of formal enterprises with training was 33.1 million VND per

capita and that of formal enterprises without training was 23.2 million VND per capita. In the formal enterprises, the difference in productivity between enterprises with and without training was not statistically significant.

For the case of formal enterprises, the difference in labor productivity between the enterprises with training and those without training is not statistically significant. However, for the case of household enterprises in 2008, there is remarkable difference in labor productivity between household enterprises with training and those without training (the difference is 8.1 million VND per capita). For the case of both formal/household enterprises with training and those without training in 2009 and 2010, the results showed that there is no significant difference in labor productivity.

However, the difference in productivity between enterprises with training and those without training does not result from the impact of training because these two groups of enterprises are not similar in terms of firm characteristics. Moreover, the distribution of the enterprises into groups (with and without training program) is not random (this is not the case of random experiment). Such methods as independent sample T-test or normal multiple regression will result in selection bias. One of the non-experimental methods for impact evaluation is PSM. The first stage of this method is to estimate Logit or Probit model in order to investigate the factors that affect the probability of conducting training program. The first stage is to specify the common support region and conduct balancing test. The third stage is to compare the outcomes between treatment group (group with training program) and control group (group without training program) on the basis of propensity score.

4.2 Impact Evaluation of the Human Capital Investment (training) on Productivity

The research analyzes the impact of training on labor productivity as well as other criteria for the case of formal and household enterprises. Thenceforth, probit models were conducted on the basis of two different samples. From the results of probit models (Appendix 1), we can calculate the probability of invesment in human capital (Propensity score) for each firms. These propensity scores will be applied to make comparison between treatment units and control units.

PSM method uses a variety of techniques to compare results of treatment and control group. Each technique has its own advantage and limitation. We calculate the impact by using different techniques to check the consistency. The research employed two techniques including Stratification and Kernel Matching method with Bootstrapped standard errors that are better the other one in PSM methods (Khandker, 2010).

Table 3 showed the results on impact of training (in 2008 and the first half of 2009) on labor productivity and results on performance, finance, and wage (in 2008, 2009, 2010) for the case of formal enterprises and household enterprises.

Both techniques showed that for the case of formal enterprises, there is no statistical evidence to state that training activities have positive impact on labor productivity in 2008, 2009 or 2010. It was found that there is no impact of training on firms' performance (revenue, profit) and employees' wage. However, training was found to improve the ROA in 2008 from 9.3 to 9.7 percentage point.

For the case of household enterprises, training was found to increase labor productivity, specifically value added per labor in 2008 increase from 32 to 40 percentage point, the revenue per labor in 2008 rises from 35 to 49 percentage point. The results of impact of training on revenue and profit are different among technique. The result using stratification

technique showed that training does not increase revenue and profit in 2008 while the results from Kernel Matching technique with Bootstrapped standard errors indicated that training leads to remarkable increase in revenue and profit (more than 50 percent).

For the case of household enterprise, the impact of training on wage is also unclear and in consistent among techniques. Result from Kernel Matching method with Bootstrapped SE showed that training improves wage per labor by 19.5 percent, while the result from Stratification indicates that there is no impact of training on labor productivity.

There is no evidence to conclude that training activity has positive impact labor productivity for the case of formal enterprises. The reasons may be due to fact that their organizing and evaluating training activities is not good, and their labor-force management skill is not professional; or because of the economic recession which hinder the firms' operation. Moreover, because of higher unemployment rate, it is not difficult for the firms to recruit good-quality employees in labor market, so the firms do not pay much attention to training. Therefore, their program may be not good, which results in the less effectiveness of training program.

Tab. 3 - Average Treatment Effect for the Treated (ATT) of the training using PSM. Source: Calculated from CIEM data (2010, 2012).

		Formal enterprises				Household business		
		2008	2009	2010		2008	2009	2010
Stratification method								
Labor Productivity								
ln(VA/Labour)		0.04	0.003	-0.029		0.325***	-0.136	-0.136
		[0.400]	[0.036]	[-0.306]		[2.830]	[-1.499]	[-1.406]
ln(Revenue/Labour)		0.033	0.066	0.069		0.348**	-0.119	-0.143
		[0.240]	[0.513]	[0.561]		[2.207]	[-0.945]	[-1.049]
Performance outcomes								
Ln(Revenue)		0.121	0.185	0.248		0.146	-0.401*	-0.385*
		[1.449]	[1.113]	[1.483]		[0.667]	[-1.788]	[-1.658]
Ln(Profits)		0.207	0.107	0.121		0.237	-0.367*	-0.262
		[1.417]	[0.598]	[0.702]		[1.216]	[-1.686]	[-1.123]
Financial outcome								
ROA		9.561*	9.562	5.329		-0.720	7.673	6.297
		[1.893]	[0.903]	[0.518]		[-0.089]	[1.161]	[1.012]
Wage								
Ln(Wage/Labour)		0.034	-0.048	-0.07		0.174	-0.135	-0.136
		[0.472]	[-0.557]	[-0.839]		[1.588]	[-1.492]	[-1.524]
Kernel matching & Bootstrapped SE								
Labor Productivity								
ln(VA/Labour)		0.049	0.000	-0.027		0.400***	-0.068	-0.075
		[0.596]	[0.001]	[-0.257]		[3.565]	[-0.761]	[-0.745]
ln(Revenue/Labour)		0.026	0.050	0.066		0.485***	0.012	-0.010
		[0.183]	[0.319]	[0.513]		[2.745]	[0.068]	[-0.059]
Performance outcomes								
Ln(Revenue)		0.181	0.140	0.209		0.502**	-0.028	0.011

		[1.057]	[0.705]	[1.346]		[1.715]	[-0.081]	[0.028]
Ln(Profits)		0.202	0.073	0.086		0.552**	-0.076	0.004
		[1.231]	[0.432]	[0.432]		[2.248]	[-0.232]	[0.012]
Financial outcome								
ROA		9.325*	6.73	1.212		-13.267	2.463	2.052
		[1.678]	[0.511]	[0.083]		[-1.073]	[0.432]	[0.380]
Wage								
Ln(Wage/Labour)		0.050	-0.047	-0.062		0.195*	-0.038	0.006
		[0.617]	[-0.600]	[-0.766]		[1.692]	[-0.255]	[0.046]

Notes: with stratification matching, n.treatment=112, n.control=387 formal enterprises; n.treatment=40, n.control=323 business households

with Kernel matching & Bootstrapped SE, n.treatment=112, n.control=386 formal enterprises; n.treatment=48, n.control=276 business households ; t-statistics in [ ]

Labor productivity level as well as the number of employees in formal enterprise is much higher than those in household enterprises. The impact of training activities on productivity for the case of formal enterprises is more difficult to work than that for the case of household enterprise

5 CONCLUSION, POLICY IMPLICATIONS, AND FURTHUR STUDY

5.1 Conclusion

This research applied the data on training activity of SMEs in the survey on SMEs in 2009. The enterprises who answered that they often organize short-term (less than 6 month) training programs for their current employees, or new employees in the survey SMEs2008 stated that they have stable and clear training policies. The training activities used for analysis might be conducted in the beginning of 2009, 2008, or before 2008, but mainly in 2008.

There is no statistical evidence to conclude that, for the case of the formal enterprises, training activities has significant impact on firms' labor productivity, firms' performance (revenue, profit), workers' wage in short term (in 2008), or in the near future (in 2009 and 2010); however, training activity improve firms' ROA in short term, or in the near future (in 2008) from 9.3 to 9.7 percentage point. The impact of training on household business is more obvious than that on formal enterprises: It leads to a remarkable improvement in labor productivity (VA per capita increases from 32 percent to 40 percent).

By applying PSM method, this paper indicated that the investment in human capital (training) for the case of formal enterprises does not significantly increase their productivity. This result is consistent with findings by Storey (2002) for the case of SMEs in UK, and by Black and Lynch (2001); however, this result is inconsistent with the research by Nguyen, Ngo & Buyens (2008) for the case of firms in Vietnam. The insignificant impact of training on productivity in this paper does not support the universalistic perspective in SHRM theoretical model.

5.2 Policy implication

SMEs Assistance Center of the Ministry of Planning & Investment as well as Organizations with the function of supporting SMEs in Provinces and Cities, the Vietnam Chamber of Commerce and Industry (VCCI) should pay more attention on the policies of encouraging the

mangers at SMEs to conduct training activities on modern labor force management as well as other management skills (they currently focus on such activities as business start-up, business registration). The forums and conferences should be held in other for concerning parties to share their experience. Thenceforth, SMEs can design and conduct their training program more effectively.

Universities, colleges, vocational training schools as well as teaching staff need to improve the quality of training linking between theory and practice; improve their marketing activities, and have good connection with the enterprises for receiving more practical and efficient support via such contracts as consultancy, training, scientific research and technology transfer as well as providing good-quality labor force to the enterprises.

In the household business sector, the proportion of enterprises with training programs is not high (6.3 percent), however the supporting policies of the Government for SMEs have positive impacts on the performance of household enterprises with training programs. Therefore, the supporting policies of the Government need to more serve household enterprises, especially the household enterprises with official registration. This sector also accounts for a large proportion in the economy.

Short-term formal training has positive impact on firms' ROA only in short term, but there is no positive impact on firms' performance, labor productivity, financial outcome and wage in the near future. Therefore, training activity should be conducted regularly and the managers in firms need to support and encourage their staff to apply knowledge, skills as well as have good working incentive after training. The enterprises also need to pay attention on determining demands for training, planning training schedule, design training program, selecting trainers, selecting appropriate employees for each course, organizing training courses, evaluating the training process, or cooperating with experts and universities in order to have better training activities.

The effectiveness of training activities regarding the improvement in productivity is insignificant. It may come from the fact that the SMEs do not pay much attention to training activities as well as their effectiveness; only few firms have obvious training plans, and most of the firms have not established an appropriate connection between these plans with human resource management (recruitment, training, wage, motivation, work allocation, etc.,) as well as the administration activities of the firms. Some firms do not consider training activities as an opportunity to improve firm's effectiveness and productivity, but as a chance to get disbursement, enjoy some free tours, and obtain personal benefits.

The group of qualified organizations, experts, instructors, and trainers that meet requirements of the firms will also make a remarkable contribution to the increase in the effectiveness of training activities. Training program and training contents closely connected with each specific job or situation of each firm will enable their workers to apply new knowledge quickly. In addition to on-the-job or off-the-job training activities held by the firms, the firms can coordinate with training organizations/ institutions to establish a specific and appropriate training program rather than an unspecific one.

The support from the government in verification of and improvement in quality of training courses supplied by educational organizations/ institutions, colleges, or universities will establish an efficient labor market, and a high-quality short-term training services, from which the firms can easily recruit and train labor force with high skill, good knowledge and appropriate attitude, thereby saving training cost and increasing labor productivity.

5.3 Further study

The research will be improved if it conducts the impact evaluation of the most recent training activity (in the survey of 2011) on the productivity and then compares with the results from training activities in the survey of 2009, using DID with PSM in order to reap the better results. Qualitative information should be applied to explain and reinforce the results.

References:

1. Acemoglu, D., & Pischke, J. S. (1999). The structure of wages and investment in general investment. *Journal of political Economy,* 107 (3)*,* 539-572.

2. Central Institute for Economic Management - CIEM (2012). *The Survey data of SMEs in 2011.*

3. Central Institute for Economic Management - CIEM (2010). *The Survey data of SMEs in 2009.*

4. Central Institute for Economic Management - CIEM (2010). *Characteristics of the Vietnamese business climate: Evidence from a SME survey in 2009.* Tai Chanh Publisher.

5. Ballot, G., Fathi, F., & Taymaz, E. (2001). Firms' Human Capital, R&D and Performance: A Study on French and Swedish Firm. *Labour Economics*, 8, 443-462.

6. Barney, J. B., & Wright, P. M. (1998). On Becoming a Strategic Partner. *Human Resource Management*, 37, 31-46.

7. Baron, I. N., & Kreps, D. M. (1999). Consistent Human Resource Practices. *California Management*, 41, 29-53.

8. Black, S.E., & Lynch, L. M. (2001). How to Compete: The Impact of Workplace Practices and Information Technology on Productivity. *The Review of Economies and Statistics*, 83 (3), 434-445.

9. Castrillón, I. D., & Cantorna, A. I. S. (2005). The Effect of the Implementation of Advanced Manufacturing Technologies on Training in the Manufacturing Sector. *Journal of European Industrial Training*, 29 (4), 268-280.

10. Dearden, L., Reed, H., & Reenen, J. V. (2006). The Impact of Training on Productivity and Wages: Evidence from British Panel Data. *Oxford Bulletin of Economics and Statistics,* 68 (4), 397-421.

11. Dumas, A., & Hanchane, S. (2010). How Does Job-Training Increase Firm Performance? The Case of Morocco. *International Journal of Manpower*, 31 (5), 585-602.

12. Delery, J. E., & Doty, D. H. (1996). Modes of Theorizing in Strategic Human Resource Management. *Academy of Management Journal*, 39, 802-835.

13. Forrier, A., & Sels, L. (2003). Flexibility, Turnover and Training. *International Journal of Manpower*, 24 (2), 148-168.

14. GSO (2012). *Report on Labor Force Survey in 2011.*

15. Guidetti, G. & Mazzanti, M. (2007). Firm-Level Training in Local Economic Systems Complementarities in Production and Firm Innovation Strategies. *The journal of Socio-Economics*, 36, 875-894.

16. Hansson, B. (2007). Company-Based Determinants of Training and the Impact of Training on Company Performance: Results from an International HRM Survey. *Personnel Reviews*, 36 (2), 311-331.

17. Hellerstein, J. K., Neumark, D., & Troske, K. R. (1999). Wages , productivity and worker charateristics: Evidence from plant level production functions and wage equations. *International Economics Review,* 40 (1), 95.

18. Jones, J. T. (2005). The Determinants of Training in Australian Manufacturing SMEs. *Education and training*, 47 (8), 605-615.

19. Khandker, S. R., Koolwal, G. B. & Samad, H. A. (2010), *Handbook on Impact Evaluation – Quantitative Methods and Practices*. The World Bank.

20. Konings, J., & Vanormelingen, S. (2011). *The Impact of Training on Productivity and Wages: Firm Level Evidence* (Working paper). IESE Business School and HU Brussels. Retrieved from: http://ftp.iza.org/dp4731.pdf.

21. Lepak, D. P., & Snell, S. A. (1999). The Human Resource Architecture. *Academy of Management Review*, 24, 31-48.

22. Le Thi My Linh (2009). *Human resource development in small and medium enterprises in Vietnam in the process of economic integration* (Unpublished doctoral dissertation). National University of Economics.

23. Lucas, R. E. (1988). On the Mechanics of Economic Development. *Journal of Monetary Economics*, 22 (1), 3-42.

24. Nguyen, N. T., Ngo, V. T., & Buyens, D. (2008). The Impact of Training on Firm Performance: Case of Vietnam (Working paper). In 7th International Conference of the Academy of Human Resource Development. Bangkok (Thailand). Retrieved from: http://www.feb.ugent.be/nl/Ondz/wp/Papers/wp_08_538.pdf.

25. Ostroff, C., & Bowen, D. E. (2000). Moving HR to a Higher Level: HR Practices and Organizational Effectiveness. in K.J.Klein, & S.W. Kozlowski (Eds.), Multilevel Theory, Research, and Methods in Organizations (pp.211-266). San Francisco, CA: Jossey-Bass.

26. Rosholm, M., Nielsen, H. S., & Dabalen, A. (2005). Evaluation of Training in African Enterprises. *Journal of Development Economics*, 84, 310-329.

27. Salas, E., & Canon-Bowers, J. A. (2011). The Science of Training: A Decade of Progress. *Annual Review of Psychology*, 52, 471-499.

28. Schuler, R. S. (1989). Strategic Human Resource Management and Industrial Relations. *Human Relations*, 42, 157 -184.

29. Storey, D. J. (2002). Education, Training and Development Policies and Practices in Medium-Size Companies in UK: Do They Really Influence Firm Performance? *Omega - The International Journal of Management Science*, 30, 249-264.

30. Tharenou, P., Saks, A.M., & Moore, C. (2007). A Review and Critique of Research on Training and Organizational-Level Outcomes. *Human Resource Management Review*, 17, 251-273.

31. Wright, P. M., & McMahan, G. C. (1992). Theoretical Perspectives for Strategic Human Resource Management. *Journal of Management*, 18, 295-320.

32. Xuan Ngoc (2012). The enterprise has spent more money for training. Retrieved June 25, 2012, from http://vnexpress.net/gl/kinh-doanh/2012/04/doanh-nghiep-do-tien-cho-dao-tao-noi-bo/.

Contact information

Nguyen Khanh Duy
University of Economics, Hochiminh City
1A Hoang Dieu, Ward 10, Phu Nhuan District, Hochiminh City
Email: khanhduy@ueh.edu.vn

Nguyen Thi Hoang Oanh
University of Economics, Hochiminh City
1A Hoang Dieu, Ward 10, Phu Nhuan District, Hochiminh City
Email: oanhvang.nguyen@gmail.com

Nguyen Duy Tam
Institute of Development Economics Research, UEH
279 Nguyen Tri Phuong, District 10, Hochiminh City
Email: nguyenduytam@ueh.edu.vn

Pham Tien thanh
Ton Duc Thang University
Room B101, No. 19, Nguyen Huu Tho, Tan Phong, District 7, Hochiminh City
Email: phamtienthanh@tdt.edu.vn

Truong Thanh Vu
Development Strategy Institute, MPI
Email: truongthanhvu@yahoo.com

Appendix

Appendix 1 - Probit Model on the Determinants on Investment in Human Capital. Source: Calculated from CIEM data (2010, 2012).

	Formal enterprises					Household business			
	Coef.	z	Marginal Effects	Mean		Coef.	z	Marginal Effects	Mean
lnassets	0.039	0.53	0.00745	7.304		0.022	0.22	0.00036	5.445
firmage	-0.035***	-2.91	-0.00680	10.729		-0.009	-0.72	-0.00015	15.762
industrialpark	-0.233	-0.99	-0.04023	0.120		-0.370	-0.55	-0.00400	0.018
Cooperative	0.218	0.70	0.04663	0.090					
Limited_Jointstock	-0.654***	-3.40	-0.14571	0.692					
officeworkers	-0.317	-0.52	-0.06110	0.247		-2.377*	-1.93	-0.03950	0.266
casuallabour	0.367	0.98	0.07063	0.112		-1.313	-1.64	-0.02182	0.110
turnover	-0.003	-0.57	-0.00048	-1.318		0.005	0.62	0.00009	-0.714
restructure	0.555**	2.43	0.13448	0.122		0.280	0.62	0.00646	0.045
businessplan	0.319	0.55	0.05077	0.973		0.861	1.47	0.00702	0.896
crisis	0.003	0.02	0.00061	0.805		0.404	1.58	0.00610	0.631
constrains	-0.584**	-2.37	-0.14620	0.917		-0.283	-0.93	-0.00600	0.821
govassistance	-0.024	-0.14	-0.00451	0.376		0.449**	2.02	0.00936	0.334
foreigndonors	-0.031	-0.14	-0.00589	0.147		0.608	1.10	0.02116	0.030
association	0.166	0.90	0.03374	0.240		0.326	0.73	0.00792	0.050
network	-0.071	-0.41	-0.01394	0.721		-0.581***	-2.61	-0.01102	0.541
union	0.382**	2.08	0.08136	0.272		-0.464	-0.52	-0.00447	0.008
shorttermcon	0.006**	2.01	0.00112	13.533		0.011***	3.67	0.00019	28.203
R&D	-6.191	-1.38	-1.19137	0.005		8.434	1.46	0.14015	0.001
moderntechnology	-0.586**	-2.08	-0.11271	0.258		0.443	1.18	0.00736	0.235
newspaperad	0.315	1.58	0.06864	0.156					
localauthorities	0.428	1.08	0.10289	0.029					
emcenter	-0.08	-0.31	-0.01484	0.086		0.89*	1.65	0.04426	0.016
diffrecruiting	0.505***	3.14	0.11017	0.288		0.492**	2.00	0.01286	0.158
healthsocialins	0.402**	2.16	0.07558	0.553		0.403	0.89	0.01094	0.030
etrading	-0.201	-0.85	-0.03514	0.120		0.105	0.14	0.00199	0.011
computer	0.063***	3.41	0.01204	3.376		0.157	0.96	0.00261	0.263
jobrotation	0.479**	2.35	0.11160	0.144		1.076***	3.18	0.06052	0.061
servoutside	0.603***	2.59	0.08998	0.841		-0.206	-0.78	-0.00380	0.683
inventory	-0.011	-0.21	-0.00215	3.827		-0.010	-0.13	-0.00016	3.415
improveproducts	-0.049	-0.32	-0.00944	0.587		-0.245	-1.04	-0.00401	0.457

envstandard	0.406**	2.38	0.08763	0.261	-0.156	-0.42	-0.00222	0.088
industry1	0.038	0.14	0.00739	0.152	-0.580	-1.31	-0.00749	0.277
industry3	-0.562**	-2.01	-0.08493	0.154	-0.799	-1.27	-0.00757	0.156
industry4	-0.297	-1.22	-0.05254	0.267	0.052	0.14	0.00088	0.348
industry5	-0.211	-0.75	-0.03671	0.120	0.539	1.16	0.01706	0.039
industry6	0.035	0.11	0.00692	0.073				
industry7	-0.223	-0.54	-0.03799	0.056	0.171	0.35	0.00339	0.101
industry8	0.479	1.35	0.11723	0.044	1.397**	2.05	0.12202	0.009
hhformal					1.360***	2.92	0.02065	0.641
cons	-1.482*	-1.69			-3.378***	-2.91		
Mean VIF	1.37				1.46			
VIF max	2.46				4.34			
Pseudo R2	0.30				0.47			
Count R square	0.84				0.95			
Balancing property	Satisfied				Satisfied			
n	569				739			

Notes: Dependent variable is training in SMEs2009 (1: Yes ; 0: No). Italic variables are dummies;

* P<0.1 , ** P<0.05 , *** P<0.01

PROCEEDINGS OF THE
1ST INTERNATIONAL CONFERENCE ON FINANCE AND ECONOMICS 2014

Vietnam, Ho Chi Minh City
June 2nd – 4th, 2014

Published by:
Tomas Bata University in Zlín (Czech Republic)

In cooperation with:
Ton Duc Thang University (Vietnam) and Corvinus University of
Budapest (Hungary)

1st Issue
Year: 2014

This publication has not been linguistically corrected.
The authors are responsible for substantive, professional level and
linguistic accuracy of papers.