ON THE RELATIONSHIP BETWEEN HUM CAPITAL AND FIRM PERFORMANCE*

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Abstract:

This paper applies the ordinary least square regression model to estimate the effects of the human capital on the business performance of small and medium enterprises (SMEs) in Vietnam, emphasizing on the human capital of the firm owner. We exploit the cross-sectional data of SMEs for the year 2009. The estimated results show that basic and professional education of the firm owner are important factors affecting the success of the firm. Further, experience in owning a business can help the firm owners enhance their performance. Finally, knowledge from learning is seen to have a strong effect on entrepreneurial performance.

Key words: *Human capital, firm performance, SMEs, Vietnam*

1. Introduction

Entrepreneurial literature has identified number of factors that determine the success of the small firms such as individual-specific characteristics, firm-specific characteristics and industry-specific characteristics. Among those factors, individual-characteristics has been indentified as the most prominent one. Pennings, Lee and Van Witteloostuijn (1998) emphasize that in a small and medium sized firm, the owner plays the strategic role. The human capital of the firm owner improves its chance to su v.v.... Mintzberg (1988) also shows that all the activities of a small firm revolves around the firm owner. Its goals are his goals , its strategy is his vision of its place in the world. The human capital of the founder may

therefore be a critical component of a small business firm's success.

When studying relationship between human capital and firm performance, most researchers analyze human capital at three aspects: education, experience and learning. Becker (1993) argues that individuals with advanced educational backgrounds develop

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more intellectual capability and knowledge that can aid them in making strategic choices which can lead to successful firm performance in any business environment. Empirical study of Sapienza and Grimm (1997) finds that firm founder's general educational level positively related to firm performance. The works of Storey (1994) and Colombo and Grilli (2005) confirm the positive effect of firm founders' experience in industry or management on firms' growth. Shane (2000) shows that knowledge from learning combined with experience in the past affects the owner's capacity to recognize and evaluate business opportunities and to develop the initial idea into a new product or service.

In this study, we apply the ordinary least square regression model to estimate the effects of human capital on the business performance of firms in Vietnam. For this purpose, the study exploits the cross-sectional data of Vietnamese small and medium enterprises (SMEs) for the year 2009. The dataset is extracted from the survey conducted by Central Institute for Economic Management (CIEM), Institute of Labor Science and Social Affairs (ILSSA) and Department of Economics, University of Copenhagen, Denmark (DOE) in 2009. The sample contains 2007 non-state manufacturing SMEs in ten cities and provinces in Vietnam and the respondents to the survey questionnaire are firm owners.

The estimated results of the study confirm the relationship between human capital and firm performance. In more details, the findings reveal that basic and professional education of the firm owner are important factors affecting his business success. Further, experience in owning a business before can help the firm owners enhance their performance. Finally, knowledge from learning is seen to have a strong effect on entrepreneurial performance.

The study is organized as follows. Section 2 reviews the literature on human capital from which hypotheses are proposed. Section 3 provides an overview of SMEs in Vietnam. Section 4 presents methodology and empirical results. The final section is devoted to conclusions.

2. Theoretical framework

Human capital is defined as "the knowledge, skills, competencies, and attributes embodied in individuals that facilitate the creation of personal, social and economic well-being" (Organization for Economic Cooperation and Development – OECD, 2001). Human capital attributes such as personal characteristics, age, years of education and training, management experience and industry specific experience etc. determine the level of success of the business (Becker, 1993). Human capital increases the owner's capacity of performing generic entrepreneurial tasks of discovering and exploiting business opportunities (Shane and Venkataraman, 2000). Human capital helps owners to plan for future goals (Frese et al., 2006), to acquire other resources such as physical and financial capital (Brush et al., 2001), and to facilitate the acquisition of new knowledge and skills (Cohen and Levinthal, 1990). Recently, human capital has been argued to play an even larger role because of increasing knowledge intensive activities, rapid change and new requirements in the work place (Sonnetag and Frese, 2002). Taken together, firms with higher human capital should be more efficient in running their business than those with lower human capital.

To obtain a conclusive answer on whether human capital has a positive relationship with entrepreneurial performance, scholars take into account the effect of each of its sub-components on the overall firm-level

performance, particularly, education (referred to as prior knowledge), experience and learning (Cooper et al., 1994; Bruederl et al., 1992; Bosma et al., 2004).

According to Becker (1993), *education and training* is the most important investment in human capital. Individuals with advanced educational backgrounds develop more intellectual capability and knowledge that can aid them in making strategic choices which can lead firm performance in any business environment. Apparently, Shane (2000) emphasizes that education, as prior knowledge, increase a person's stock of information and skills useful for the pursuit of an entrepreneurial opportunity and improves entrepreneurial judgment. Pickles and O'Farrell (1987) find that Irish entrepreneurs are more highly educated than non-entrepreneurs, but that people with the highest levels of education are less likely to become entrepreneurs. Van der Sluis et al. (2003) perform a comprehensive meta analysis of 94 studies that estimate the relationship between schooling and entrepreneurial entry and performance. They conclude that schooling, irrespective of how it is measured, significantly and positively affects entrepreneurial performance. Focusing on start-up firms in Korea, Jo and Lee (1996) find that founder's level of education related to firm profitability. Similarly, Mengistae (2006) shows that founder's years of schooling related to small firms su v.v...l and growth.

In considering the effects of *experience* on firm performance, it is helpful to distinguish between three types of experience: industry experience, management experience and self-employed experience. It is argued that entrepreneurs will perform better if they have pre-existing knowledge of buyers and suppliers, and understand operational issues in their industry. Many empirical studies show that industry experience has a strongly positive effect on various measures of firm performance (Bosma et al., 2004; Bruderl et al., 1992; Bates and Servon, 2000). Batjargal (2005), in his research interviewing Russian entrepreneurs, finds that industry experience positively impacted firm revenue growth. Colombo and Grilli (2005) reveal that prior experience in the same industry of the new firm was positively associated with growth while prior experience in other industries was not.

In terms of management experience, scholars suggest that this experience should improve firm performance because management plays a core organization function (Cooper et al., 1994; Van Praag, 2005). Habar and Reichel (2007) study the role of physical, human and organizational capital in the performance of small tourism ventures and found that the human capital of entrepreneur, particularly management skills, were the greatest contributing factor. Steiner and Solem (1988) demonstrate that managerial background and experience of the owner/ entrepreneur or lack thereof as a cause or contributing cause for the success or failure of a small business. Furthermore, prior experience as an entrepreneur has been found to be a good predictor of re-venturing and can contribute to future success (Ronstadt, 1988; Vesper, 1980).

Finally, the effects of self-employed experience on firm performance are positive. While some of the information and skills necessary to exploit an opportunity can be learned through education or through management and industry experience, much of important information and knowledge about exploiting opportunities can only be learned

by doing. A review of the literature shows the importance of learning by doing with various scholars giving a slightly different emphasis to an essentially similar process (Young and Sexton, 1997; Jovanovic, 1982). Empirical studies generally support this positive relationship (Bosma et al., 2004; Beckman and Burton, 2005).

The third component of human capital – learning – is receiving growing attention of scholars. Learning is the continuous process that generates knowledge which is categorized into vicarious learning (learning by observing) and experiential learning (learning by doing). Shane (2000) emphasizes on the importance of vicarious learning to the extent that much of the information and skills necessary for the exploitation of entrepreneurial opportunity can be learned through observation of others. Besides, researchers also show the importance of learning by doing, giving a slightly different emphasis to an essentially similar process. Young and Sexton (1997) explicate trial and error. Deakins (1996) emphasizes problem solving. Gibb (1997) focuses on experimentation, copying and learning from mistakes. Knowledge from learning combined with experience in the past affects the owner's capacity to recognize and evaluate business opportunities and to develop the initial ideas into new products or services (Shane, 2000; Sullivan, 2000). Therefore, continuous learning appears to be important to the success of firms. Entrepreneurs need to engage in continuous learning, from incremental process innovation to product improvement to new product introduction, to be able to adapt to changing environments.

Based on the literature framework, the following hypotheses are advanced:

Main Hypothesis: *There is a positive relationship between human capital and the firm performance.*

Sub-Hypothesis 1: *There is a positive relationship between education of firm owners and firm performance.*

Sub-Hypothesis 2: *There is a positive relationship between experience of firm owners and firm performance*

Sub-Hypothesis 3: *There is a positive relationship between learning and firm performance.*

3. An overview of SMEs in Vietnam

The dataset that is used in this study is obtained from the survey of small and medium enterprises (SMEs) in Vietnam conducted by Central Institute for Economic Management (CIEM), Institute of Labor Science and Social Affairs (ILSSA) and University of Copenhagen, Denmark in 2009. The sample covered 2543 non-state manufacturing SMEs in 10 cities and provinces (Ha Noi, Phu Tho, Ha Tay, Hai Phong, Nghe An, Quang Nam, Khanh Hoa, Lam Dong, Ho Chi Minh City and Long An), taking account for 30% of manufacturing enterprises in Vietnam. The people answering the questionnaire are owners or managers of enterprises. The survey provides a wide range of information about enterprises as well as their founders such as general characteristics of firms, characteristics of firms' owners, innovative features and business performance of firms etc.

Table 1 documents the number of non-state manufacturing SMEs in each ownership form. We can see that most of them are households, accounting for 66% of the total SMEs sampled.

Table 1: Distribution of SMEs by location and ownership type in 2009

City/Province	Household Enterprises	Private/sole proprietorship	Partnership/ Collective/ Cooperative	Limited liability company	Joint Stock Company	Total
Ha Noi	108	24	21	106	24	283
Phu Tho	223	4	4	21	6	258
Ha Tay	309	11	4	47	5	376
Hai Phong	118	14	18	41	19	210
Nghe An	278	21	7	29	18	353
Quang Nam	122	9	4	21	2	15
Khanh Hoa	58	16	1	17	2	94
Lam Dong	53	8	0	6	1	68
Ho Chi Minh City	322	76	12	197	9	6
Long An	99	16	1	11	0	12
Total	1690	199	72	496	86	2543

(Source: Report on "Characteristics of the Vietnamese business environment: Evidence from a SME survey in 2009" published by CIEM, DOE and ILSSA in 2009)

Table 2: Distribution of SMEs by location and industry sectors in 2009

Industry Sector	Ha Noi	Phu Tho	Ha Tay	Hai Phong	Nghe An	Quang Nam	Khanh Hoa	Lam Dong	HCM	Long An	%
(1)	55	97	94	52	141	55	40	26	130	53	29.2
(2)	15	8	55	4	3	1	0		29	3	4.9
(3)	15	0	1	10	6	2	2	1	71	0	4.2
(4)	10	37	122	17	58	18	11	6	17	9	12.0
(5)	38	4	6	10	3	3	2		73	2	5.5
(6)	7	24	22	9	28	6	4	5	21	9	5.3
(7)	52	42	25	52	69	31	15	14	97	35	17.0
(8)	15	27	36	11	24	20			18	6	6.7

(Source: Report on "Characteristics of the Vietnamese business environment: Evidence from a SME survey in 2009" published by CIEM, DOE and ILSSA in 2009)

Note: (1) Food product and beverages; (2)Textiles; (3) Wearing apparel; (4) Wood and wood products; (5) Rubber and plastic products; (6) Non-metallic mineral products; (7) Fabricated metal products; (8) Medical equipment and Furniture.

Table 2 presents the location-sector distribution of SMEs. Three largest sectors in terms of number of SMEs are food and beverages (29.2%), fabricated metal products (17%) and wood and wood products (12%).

Table 3 shows the distribution of SMEs by location and size. The survey used the definition of the World Bank to define the type of enterprises by size. Micro enterprises has from 1 to nine employees, small enterprises has from 9 to 49 employees and medium enterprises has from 50 to 299 employees. In general, micro enterprises account for the majority of the total sample. However, compared with other cities and provinces, Hanoi and Ho Chi Minh city have a larger share of medium enterprises.

Table 4 documents the distribution of SMEs by gender of the firm owner and firm size. Male entrepreneurs account for more than 70% of the total sample. They also take a similar share in the total in each size category, a little bit higher for the small-sized enterprises.

4. Methodology and empirical results

4.1. Statistical model and variables

The literature shows that the most widely used measures for firm performance are accounting and growth measures such as profit, sale growth, and employment growth (Bosma et al., 2000; Cooper et al., 1997). In this paper, we use net profit (profit after interests and taxes) to measure the accounting performance of SMEs and then we take logarithm of net

Table 3: Distribution of SMEs by location and size

City/ Province	Micro Enterprise	Small Enterprise	Medium Enterprise	Total	Percent
Ha Noi	123 (43.5)	127 (44.9)	33 (11.7)	283	(11.1)
Phu Tho	215 (83.3)	30 (11.6)	13 (5.0)	258	(10.1)
Ha Tay	271 (72.1)	93 (24.7)	12 (3.2)	376	(14.8)
Hai Phong	136 (64.8)	53 (25.2)	21 (10.0)	210	(8.3)
Nghe An	279 (79.0)	62 (17.6)	12 (3.4)	353	(13.9)
Quang Nam	134 (84.8)	21 (13.3)	3 (1.9)	158	(6.2)
Khanh Hoa	67 (71.3)	20 (21.3)	7 (7.4)	94	(3.7)
Lam Dong	53 (77.9)	13 (19.1)	2 (2.9)	68	(2.7)
Ho Chi Minh City	321 (52.1)	234 (38.0)	61 (9.9)	616	(24.2)
Long An	105 (82.7)	20 (15.7)	2 (1.6)	127	(5.0)
Total	1704 (67.0)	673 (26.5)	166 (6.5)	2543	(100.0)

(Source: Report on "Characteristics of the Vietnamese business environment: Evidence from a SME survey in 2009" published by CIEM, DOE and ILSSA in 2009)

Note: Percentages are in parentheses. Micro: 1-9 employees; Small: 10-49 employees; Medium: 50-299 employees (World Bank).

Table 4: Distribution of SMEs by gender of the firm owner and firm size

Gender	Micro-sized	Small-sized	Medium-sized	Total
Male	988 (72.3)	413 (77.3)	80 (73.3)	1481 (100)
Female	376 (27.7)	121 (22.7)	29 (26.7)	526 (100)
Total	1365	534	109	2007

(Source: Calculations of the authors based on the data of SME survey 2009)

Note: Percentages are in parentheses. Micro: 1-9 employees; Small: 10-49 employees; Medium: 50-299 employees (World Bank). The observations with respondents to the questionnaire being managers are deleted from the sample.

profit to obtain the elasticity between firm performance and independent variables. As the dependent variable (logarithm of net profit) is a continuous outcome, the ordinary least square (OLS) regression with robust standard errors is a suitable choice to estimate the effects of human capital on firm performance.

$$\ln \pi_i = y_i = \beta_1 + \beta_2 x_{2i} + \ldots + \beta_k x_{ki} + u_i$$

π_i: net profit of firm *i* at the end of 2008

x_{2i}..., x_{ki}: values of human capital determinants and control varibales in 2008

u_i: error term with the assumption E(u/x) = 0

As presented in part 2, the theoretical framework, human capital determinants include education, experience and learning. It is important to note that subjects answering the questionnaire of the survey are owners or managers of SMEs. As this study focuses on the human capital of the firms' founders, we delete all the observations if the respondents to the questionnaire are managers. Finally, there are 2007 observations.

The prior knowledge of the firm founder is proxied by two education variables: basic education and professional education. The *basic education* is a dummy variable that equals 1 if the owner of the firm finishes lower or upper secondary school and equals 0 if s/he had no basic education, did not finish or finished primary school. The *professional education* is also a dummy variable, differentiating the high-educated business founders (post-graduate/ university/college and technical high school) from the less educated ones (vocational training or unskilled).

The dummy variables reflecting the experience of the business founder are measured in different dimensions: *self-employed experience* (self-employed in manufacturing, service; own or collective farm); *management experience* (experience in owing an enterprise before); and industry experience (working with similar products/services prior to establishing the present enterprise). As there is a lot of missing information about industry experience, we do not include this variable in the model.

Three variables *new product introduction*, *product improvement* and *process innovation* present the effects of knowledge from learning

are proxied by the ability to conduct innovation activities. They are equivalent to 1 if since 2007 to the time of survey 2009 the firm had introduced new products or made major improvements of existing products or introduced new production processes/new technology. Otherwise, these variables equals to zero. Indeed, the questionnaire only mentioned generally that if the firm had made all the above activities. But we supposed that if in the case a SMEs has any new product or new technology introduction or product improvement, the owner of the firm must be the key person in making these kinds of innovation.

We also include some control variables in the model. These variables reflect individual characteristics of firm's owner (*age* and *gender* of the owner), characteristics of the firm (*age*, *size* and *ownership type* of the firm), and environmental characterist ics of the firm (equals 1 if firm is located in Hanoi or Ho Chi Minh city, otherwise equals zero). Table 5 and Table 6 present the descriptive statistics and the correlations of variables used in the study.

4. Estimation Results

Table 7 presents the effects of human capital on firm performance estimated by the OLS regression (see Column 3). Parameters on the main human capital inputs except self-employed experience are positive and significant different from zero, confirming the conclusion raised in our main hypothesis that human capital positively influences the firm performance.

Table 5: Descriptive statistics

No.	Variable	Description	Obs	Mean	Std. Dev.	Min	Max
1.	Ln(net profit)	Logarithm of total net profit in 2008	1904	4.515	1.277	0.095	9.941
2.	Basic education	Basic education of the firm owner 0: no basic education or did not finish primary school 1: finished lower/ upper secondary	2007	0.859	0.348	0	
3.	Professional education	Professional education of the firm owner 0: Unskilled or Elementary worker 1: Technical worker or College/ Uni/Post-graduate	2007	0.622	0.48		
4.	Self-employed experience	Self-employed experience of the firm owner 1: Self-employed in manufacturing, service; own or collective farm 0: Wage employee in state enterprise or non-state enterprise and others	2007	0.414	0.493	0	1
5.	Management experience	Management experience of the firm owner 0: No 1: Yes	2007	0.046	0.20		

No.	Variable	Description	Obs	Mean	Std. Dev.	Min	Max
6.	New product introduction	New product introduction of the firm since 2007 to the time of survey 0: No 1: Yes	2006	0.025	0.		
7.	Product improvement	Product improvement of the firm since 2007 to the time of survey 0: No 1: Yes	2006	0.385	0.487	0	1
8.	Process innovation	New production processes/ technology introduction since 2007 to the time of survey 0: No 1: Yes	2006	0.123	0.32		
9.	Owner's age	Age of the firm's owner	2007	46.095	9.983	21	89
10.	Owner's gender	Gender of the firm's owner: 0: Female 1: Male	2007	0.737	0.		
11.	Firm size	Number of employees (full-time, part-time and seasonal employees)	2007	13.075	23.249	1	25
12.	Private	Ownership/ Legal status: 0: Non-Private/sole proprietorship 1: Private/sole proprietorship	2007	0.068	0.252	0	1
13.	Collective	Ownership/ Legal status: 0: Non-Collective/Cooperative or Non-Partnership 1: Collective/Cooperative or Partnership	2007	0.031	0.173	0	1
14.	Limited liability	Ownership/ Legal status: 0: Non-Limited liability company 1: Limited liability company	2007	0.158	0.365	0	1
15.	Joint stock	Ownership/ Legal status: 0: Non-Joint stock company 1: Joint stock company	2007	0.023	0.150		
16.	Big city	Firm's location 0: Other provinces 1: Hanoi or Hochiminh city	2007	0.298	0.457		
17.	Firm age	Age of the firm	2007	13.876	11.429	1	5

Table 6: Correlations in the dataset

Variables	1	2	3	4	5	6	7	8	9	10	11	13	14	15	16	17	18
1. ln(netprofit)	1																
2. Basic education	0.16	1															
3. Professional education	0.24	0.1	1														
4. Self-employed experience	-0.09	-0.13	-0.2														
5. Management experience	0.16	0.01	0.11	0.15	1												
6. New product introduction	0.09	0.03	0.01	0.02	-0.02	1											
7. Product improvement	0.27	0.1	0.17	-0.08	0.08												
8. Process innovation	0.26	0.1	0.12	-0.00	0.1	0.07	0.29	1									
9. Owner's age	-0.02	-0.12	0.03	-0.06	-0.01	-0.02	-0.11	-0.07	1								
10. Owner's gender	0.02	0.1	0.18	-0.05	0.06	0.05	0.1	0.03	0.04								
11. Firm size	0.53	0.11	0.16	-0.04	0.11	0.07	0.18	0.20	0.02	-0.01							
12. Private	0.15	0.07	0.09	-0.05	-0.00	0.04	0.07	0.07	0.08	-0.02	0.13	1					
13. Collective	0.12	0.04	0.06	-0.04	0.04	0.01	0.04	0.00	0.17	0.05	0.1	-0.					
14. Limited liability	0.43	0.15	0.17	-0.04	0.18	0.03	0.14	0.18	-0.08	-0.02	0.39	-0.11	-0.07	1			
15. Joint stock	0.14	0.06	0.06	-0.05	0.01	0.00	0.07	0.12	-0.04	0.03	0.13	-0.04	-0.02	-0.06	1		
16. Big city	0.38	0.01	0.14	-0.11	0.11	0.01	0.08	0.10	-0.01	-0.07	0.11	0.07	0.05	0.25	0		
17. Firm age	-0.18	-0.14	-0.04	0.01	-0.09	0.00	-0.14	-0.09	0.34	0.02	-0.11	-0.14	0.11	-0.23	-0.1		

In more details, *basic education* and *professional education* of the firm's owner are both significant greater than zero. Entrepreneurs obtaining basic education and professional education are able to make approximately 19% and 17% respectively more profit than lower educated ones do. Therefore, hypothesis 1 – positive relationship between firm founder's education and firm performance – is strongly supported.

The *experience in management* of the business founder is also estimated to improve net profit of the firm, confirming hypothesis 2. *Ceteris paribus*, the firm owner who used to own a business is likely to generate 18% profit higher than ones did not have this kind of experience. The estimated result of self-educated experience is not statistically significant, showing that working by himself or working as a wage employee before could not help the firm owner differentiated in making profit for his business.

The estimated results also show that knowledge from *learning* is very important in enhancing firm performance. Positive and highly statistically values of *new product introduction*, *product improvement* and *process innovation* strongly support our hypothesis 3 (positive relationship between learning and firm performance). Among the components of learning, new product introduction appears to have the strongest effect. Everything else equals,

Table 7: Relationship between human capital and firm performance

Variables	(1)	(2)
Education		
Basic education	0.286*** (0.065)	0.188*** (0.063)
Professional education	0.231*** (0.049)	0.167*** (0.047)
Experience		
Self-employed experience	-0.008 (0.047)	-0.007 (0.046)
Management experience	0.296*** (0.114)	0.183* (0.111)
Learning		
New product introduction	0.319** (0.143)	0.303** (0.139)
Product improvement	0.296*** (0.048)	0.247*** (0.047)
Processes innovation	0.337*** (0.072)	0.263*** (0.07)
Owner's age	0.003 (0.002)	0.001 (0.002)
Owner's gender (male)	0.005 (0.051)	0.021 (0.05)
Firm size	0.023*** (0.001)	0.019*** (0.001)
The type of ownership		
Private/ sole proprietorship		0.473*** (0.09)
Collective		0.641*** (0.134)
Limited liability company		0.729*** (0.073)
Joint stock company		0.763*** (0.156)
Big city	0.787*** (0.05)	0.678*** (0.049)
Firm age	-0.006*** (0.002)	-0.001 (0.002)
R-squared	0.4401	0.4747

*Note: - *** Significant at 1% level, ** significant at 5% level, * significant at 10% level. Standard errors are in the parentheses.*

Based group of ownership type: household enterprise.

the firm having introduction of new products is estimated to get 30% more profit than one having no new product introduction.

In terms of control variables, the following results are worth mentioning (model 2):

Both firm's age and firm owner's age have no statistic significance on business performance.

There is no significant divergence in entrepreneurial performance between males and females.

Firms located in big cities (Hanoi and Ho Chi Minh city) have better performance than firms in smaller places. The divergence in performance between firms in big and small location is large. Given other things equal, firms in Hanoi and Ho Chi Minh city gain nearly 68% more profit than firms in other cities or provinces.

The size of the firm has statistically positive effect on business performance but the magnitude of the effect is quite small (approximately 1.9%).

On average, household enterprises earn less profit than firms with other types of ownership.

Notably, when we do not control for the effect of ownership types, the magnitudes of the human capital variables reflecting the effects of education, experience, learning on firm performance increase (see Column 1 of Table 7). It appears that net profits are divergent partly due to specific features of the firm's ownership types. Similar things also happen to the control variables.

5. Conclusions

This paper studies the relationship between human capital and firm performance, emphasizing on the human capital of the firm owner. The estimated results show that basic and professional education of the firm owner are important factors affecting the success of the firm. In addition, experience in owning a business before can help the firm owners enhance their performance. With respect to learning effects, new product introduction, product improvement and process or technology introduction can help firms to enhance their profit. These findings are consistent with the empirical results of Storey (1994), Bosma et. Al (2004), Hultink and Robbeb (1995), etc.

In terms of policy implication, the study suggests that if the firm owners have good investments in basic and professional education, experience and learning, their firms will have higher probability to succeed in the market. However, our findings have the potential limitation that without further research, we cannot be sure whether the positive effect of human capital is solely due to the investment itself or whether it is partly due to the fact that more talented firm founders invest more in there human capital. In the latter case of endogenous human capital variables, it would be incorrect to assign the credit for better performance solely to the human capital investment. In other words, the reported effect would be upwardly biased. Moreover, the higher estimated result of *basic education* compared with *professional education* implies that the government should invest more in basic education so that the citizens can have a better chance to be successful in carreer.

The study has some other limitations. First, the dataset is used for analysis is cross-sectional. In the future, a longitudinal study should be conducted. Second, the sample includes only existing business firms. This can make the research suffer from selection bias.

Despite some limitations, this study, in our opinion, provides interesting and worthwhile results that fill a void in the literature. As much of the business environment relies on the achievements of entrepreneurs, better understanding of the importance of a founder's human capital can be useful for our knowledge on entrepreneurship.❑

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