

Performance Contrast and Its Determinants between Male and Female Headed Firms in Lao MSMEs

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Abstract

A number of previous studies have shown that male-headed firms outperform female-headed firms in developed countries. This present study investigates, examines and compares the performance contrast of male and female headed firms in Lao micro, small and medium sized enterprises (MSMEs) through the use of ordered probit models. The sample consists of 840 observations wherein 493 are male -headed firms and 347 are female-headed firms having 1 to 99 employees. We control the business characteristics as well as the entrepreneurs' characteristics. The results confirm previous studies that female entrepreneurs relatively underperform compared to male entrepreneurs. When the whole samples were divided between the male-and-female headed firms, the determinant factors showed contrasting results.

Keywords: MSMEs, Gender, Discrimination, Male and Female Entrepreneurs, Male and Female Headed Firms, Determinant Factors, Performance

1. Introduction

An increasing attention to gender entrepreneur issues has created a considerable amount of research regarding the differences between male-and-female headed firms in terms of their business performance. However, to date, most studies on the gender of entrepreneurs are from developed countries. Therefore, studying gender entrepreneurs in the least developed countries can be interesting and useful for policymakers to design programs for female-and-male headed firms.

In Lao People's Democratic Republic (Lao PDR), society has traditionally explicitly segregated the duties between females and males. It is often said that females are the back feet of the elephant while males are the front feet. This expression means that males are supposed to lead by nature and females are to take the backseat at all times. It has been very hard to change this kind of thinking among the people and so can waste female human resources. For example, in the home, males are the heads of the families and work outside to get financial support for their families. They also receive leading positions in the workplace. In contrast, females are cast in domestic role doing housework and taking care of family members. In the workplace, females seldom, receive leading positions both in the past and the present.

Recently, the government of the Lao PDR has gradually uplifted the roles of females by adopting the Law on the Development and Protection of Women No.08/National Assembly (NA) dated October 2004. This law included measures to protect the legitimate interests of females, with an emphasis on gender equality and the elimination of all forms of discrimination that against females.

Over the past five decades, the Lao Women's Union (LWU), a mass organization, has striven vigorously to unite and mobilize Lao women of all ethnic groups. To date, the LWU has made achievements in a number of areas that have uplifted the role of females and have gradually increased the realization of gender equality among the people.

In addition, the National Commission Advancement of Women that is part of the LWU, has actively contributed to raise the ratio of women in the political sphere and other leading positions. For example in the legislative organ, the number of female parliamentarians has increased by 25 percent in the current Sixth Legislature of the National Assembly; in the executive organ, there is an increase of women at the rank of Ministers and Vice Ministers in the Government Cabinet (Mounphoxay, 2006).

There is also an increase in the number of self-employed female entrepreneurs in micro, small and medium sized enterprises (MSMEs). The potential contribution of MSMEs to create employment opportunities and to generate income at the country level is very important to the economic mentioned development Lao PDR, particularly of the measures for poverty reduction. However, the above law does not deal directly with the business sector nor gender entrepreneur issues.

In the Lao PDR, gender disparities exist as males usually receive higher salaries than females. Onphanhdala and Suruga (2007) explain that gender disparities in Laos are derived from differences in expertise as well as differences in industries, which lead to difficulty in comparing the differences in males' and females' salaries. For example, females tend to work in retail and small-scale businesses, whereas males tend to work in the construction and transportation sectors, which usually pay 20 to 50 percent higher than their female counterparts working in the trade sector (*Ibid*).

Independent female entrepreneurs experience difficulties in which they need assistance from males, particularly from their husbands. Since the males, to some extent, tend to have better business networks as well as have better credit-worthiness with financial institutions, they can provide some advice to female entrepreneurs and support strategic business plans to obtain credits for business expansion.

The social structure in Lao PDR is that both husband and wife tend to work outside their home. The law for civil servants states that the couples are not allowed to register any business in their names if they are both civil servants. This is to avoid conflict of interests and corruption in the government. For example, in most of the cases wherein husbands are civil servants wives either own a business and are self-employed or work for non-governmental organizations to provide financial support for their families or vice versa.

The objectives of this paper are to examine if there are differences in gender-based performance in the Lao MSMEs, as well as to investigate if there are any differences among the determinant factors between male-headed firms (henceforth, MHFs) and female-headed firms (henceforth, FHF). The present paper is divided into five sections. Section one is the introduction. Section two presents the literature review and hypotheses development. Section three describes the research methodology, while, section four presents data analysis and discussion. Finally, section five provides the conclusion and implications of the present paper.

2. Literature Review and Hypotheses Development

2.1 Gender and firm performance

Previous studies suggest that there are a number of reasons why females and males perform differently in businesses. The majority of this literature generally found that MHFs performed better than FHF. Female entrepreneurs have been stereotyped as conservative and risk-averse, while male entrepreneurs are seen as taking more risks than female entrepreneurs (Meier & Masters, 1988).

On one hand, the liberal feminist theory asserts that SMEs operated by females prove to have poorer performance because females explicitly suffer discrimination by lenders and consultants or because of other systematic factors such as lack of relevant education and lack of experience that serve as barriers for females to access key resources (Fischer et al., 1993). According to Fischer et al. (1993), most studies seem to support the liberal feminist theory but they have not provided strong evidence that any systematic lack of access to resources can prevent FHF from succeed in the business. Coleman (2000) found that FHF paid higher interest rates than MHFs for their most recent loans, and female-headed service firms were more likely to require a collateral than male-headed service firms. This can be the reason why FHF may be reluctant to access more resources, which can lead to worse performance compared to their male counterparts.

Also, the social feminist theory suggests that males and females are inherently different in nature (Fisher et al. 1993). However, the differences between male and female approaches to do businesses do not necessarily mean that male entrepreneurs are more effective than female entrepreneurs. The existing studies often compare differences between males and females characteristics and values. And the findings confirm that differences exist but may not have strong impact on firm performance (Fisher et al. 1993).

Several studies have shown that female entrepreneurs suffer from discrimination by banks. For example, higher interest rates and a requirement for high levels of collateral as well as for co-signers on loans and lines of credit

to FHF's (Stevenson, 1986). Riding and Swift (1990) also found that there was also a gender bias in Canadian banking practices in terms of interest rates on lines of credits and loans, requirements for loan collateral, rates of loan approvals, and co-signature requirements from spouses. These alone explained the differences in the characteristics of male-and female-headed businesses. A reason is that loan officers may not be familiar with applications from female entrepreneurs and so they seek security for their lending decisions over and above tangible securities of equity and fixed assets (Hoffman, 1972).

Fay and Williams (1993) observe that females can face gender discrimination when seeking start-up capital but such a behavior by loan officers may not be intentional. These authors believe that the social construction of differential gender roles in western culture causes sex-discrimination that is unconscious or unintentional and thus difficult to change. Female entrepreneurs who plan to obtain business capital need to be familiar with the requirements from the banks and seek appropriate advice if they have not had the skills to develop financial statements and business plans (Fay & Williams, 1993).

In fact, commercial banks are risk-averse in nature. Applications from borrowers with limited education and experience in the fields that they plan to operate in with low proposed personal equity, are often made by female entrepreneurs (Bowen & Hisrich, 1986; Humphries & McClung, 1981; Hisrich & Brush, 1986). This can lead to rejection of loans. Education levels of female entrepreneurs seem to be an additional intangible requirement in the form of loan security as one of the criteria to obtain the loans (Jankowicz & Hisrich, 1987).

Moreover, Fasci and Valdez (1998) found that MHF's outperformed FHF's in accounting practices. Based on the above mentioned difficulties, it is clear that there are many disadvantages that female entrepreneurs experience in running a business, which could lead to underperformance. However, the study of Du Rietz and Henreckson (2000) provides no support for female underperformance except for in terms of the sales of business. Looking from another perspective, gender can influence career choices. In the case of the US, a ninety percent of female entrepreneurs confirmed that they needed the support (especially emotional support) of their husbands and their families (Stevenson, 1986). In contrast, the majority of male entrepreneurs believed that their families had no influence on their decision-making in career choices in this same study. Husbands often obtained the loans for financing the small business of their wives. Therefore, the female entrepreneurs are not purely independent from their husbands in terms of making decisions on their careers and obtaining credits.

Furthermore, male entrepreneurs, tend to have stronger network ties, which have traditionally been viewed as a way of obtaining power that is seen as critical to a manager's success (Bacharach & Laurer, 1988; Kanter, 1977). This is often referred to as "Old Boy Networks (Smeltzer & Fann, 1989). External networks can enhance the power of entrepreneurs in MSMEs, for example, personal contact with partners, suppliers and customers, which can lead to develop valuable and new products. This can help achieve superior performance in business practices.

Even though this paper has not included financial and network factors in the analysis, it is necessary to emphasize that finance and network factors are behind the success of firms. Without obtaining sufficient finance and good networks with suppliers, customers and partners, firms could suffer inferior performance. These may be invisible factors that explain why FHF's have not performed as well as MHF's. Despite this, some factors that are adopted as independent variables in analysis have strong connections with the finance factor. As the finance factor is considered to be a crucial factor for firm success, this factor should be included in the future research.

As discussed earlier, the differences in gender-based performance are perceptible, therefore we can establish the first hypothesis:

H1: There are differences in gender-based performance in the Lao MSMEs.

2.2 Other determinant factors and firm performance

Aside from the gender-based factors, there are other factors that can impact firm performance, such as business characteristics and individual characteristics, which will be discussed in this section.

2.2.1 Business characteristics

Firm size can be a key factor that determines how firms are managed. It can be substantially correlated with the survival of firms (Mukhtar, 2002). Bigger firms can enjoy economies of scale not enjoyably smaller firm (Dass, 2000). Achieving economies of scale means that bigger firms can produce a larger quantity of output with lower fixed costs success, this factor should be included in the future research. They could have the capacity to access critical resources such as business finance (Penrose, 1995). In turn, these can lead to a competitive advantage and better performance. Ghemawat (1986) suggests that inimitable strategic positions are derived from size advantages such as accessing resources or customers, and/or restricting rivals' options. Firm size is also a key

factor in providing access to low cost of capital (Goerzen, 2007). Firm size is often used as a research variable as well as a control variable but the findings are not consistent. For example, one justification for the insignificance of firm size in relation to performance is that larger firms are less adaptive and flexible changing their resource base (Chandy & Tellis, 2000; Kanter, 1988). The other important issue of this variable is that we use sales as a performance indicator so that we need to control the firm size in order to avoid bias in the model.

Controlling the *firm age* is also important because to some extent, firm age can influence a firm's performance. Young firms tend to have lower sales and, thus, lower profits (Watson, 2002). On the other hand, older firms tend to have a larger sales turnover, number of employees and capital assets (Rosa et al., 1996). Older firms also tend to build good networking with business partners and customers, have a good relationship with financial institutions, as well as have an established reputation in the market. Therefore, firm age often represents the experience of the firms in the industry, which can be an influential factor for firm success. In this paper, sales are used as the dependent variable so we control the age of the firms (Chandler & Hanks, 1993).

Operation months indicate the time entrepreneurs have spent on their business activities. This can measure inputs of entrepreneurs to business that can lead to influence performance. Fasci and Valdez (1998) confirm that hours spent to the business on a weekly basis which is a measure of input to the business, contributed significantly to earnings. This can provide some control over potentially important individuals' efforts of entrepreneurs in the form of human capital.

Premises for businesses asserts whether entrepreneurs are operating a home-based business or office-based business. Collins-Dodd et al. (2004) found that home-based businesses compared to offices outside the home are much more productive for females, as it can allow them to allocate time for business as well as time for domestic roles such as childcare responsibilities, which provides flexibility in work-time and work-place (Faci & Valez, 1998; Lustgarten, 1995; Kallenberg & Leicht, 1991). Home-based businesses can be more economical than renting commercial buildings and can be more beneficial if the location is a good site for trading as well as if it has easy access to external parties such as customers, suppliers and partners. Thus, the premises for businesses are crucial for firm performance.

Presence of competitiveness has been included as a variable, since it is part of the demography of business (Singh et al., 2001). The presence of competitiveness can be seen as both a threat and an opportunity for firms, relate to their external environment. Threats can be seen as a signal for firms to minimize the potential risks in order to achieve better performance. Opportunities are external conditions that firms can exploit consider in analyzing the market conditions, which they can be maintain superior performance. When competitiveness exists, firms may need to seek alternative strategies in order to improve performance.

Training for employees builds the human capital of a firm at the practical level, which is expected to favorably impact performance. When employees' skills are required for specific tasks, products and projects, they become 'dedicated skills' through learning in different forms, and strategic combinations of dedicated skills eventually become 'core skills' (Kamoche, 1996). Core skills can be used in developing new products, markets, and innovation.

Training was traditionally emphasized in human capital theory (Schultz, 1960). This theory suggests that the investment of firms in skill development can improve productivity and efficiency of employees, wherein the costs of training, such as paying an instructor, buying materials and downtime, can be offset. Training is a crucial factor to improve the skills and knowledge of the employees.

In addition, building employees' know-how has been ranked by chief executives as one of the most crucial contributors to business success (Hall, 1993). Thus, human resource management strategy aims to develop employees through training in order to realize the potential skills and knowledge of its employees.

Business development services (BDSs) for entrepreneurs can be obtained through professional advisors such as lawyers, bankers and accountants. The aim is to improve business performance, particularly to support MSMEs at start-up businesses. Management know-how may be also obtained through receiving professional advisors (Cooper et al., 1994). Business service providers can provide different forms of services including business support centers, mentoring, clusters and networks, business incubators, training, consultancy and advisory services, marketing assistance, information, technology development and transfer, and business linkage promotion, which are expected to affect the business performance (Kennedy, 2000; Tanburn et al., 2001).

BDSs consist of two types: the operational and strategic services (Tanburn et al., 2001). Operational services are involved with routine business operations such as information and communications, management of accounts and tax records, compliance with labor laws and other regulations. Unlike strategic services, operational services

are not difficult to work out the demand and willingness to pay for goods and services, which firms can base on the existent market. However, strategic services serve firms to address short-term and long-term issues in order to improve the performance of the firms through access to markets and improving competitiveness. Strategic services can provide a critical guidance for long-term sustainable performance because they can identify and service markets, design products, establish facilities and seek sources of financing. In the long-term, markets for strategic services are a more critical factor to maintain superior performance of firms.

Although, BDSs are very important for MSMEs; in a least developed country such as the Lao PDR, not all firms can obtain BDSs. Thus, the government and aid donors often provide BDSs to firms. Firms benefit from various forms of professional assistance as examined in a number of studies. For example, one of the studies proved that acting on the advice given by accountants (including useful advice related to strategic decisions) has been positively associated with performance (O'Neill & Duker, 1986).

2.2.2 Individual characteristics of entrepreneurs

Education of entrepreneurs is one of the most popular entrepreneurial variables in previous studies. Education of entrepreneurs can impact the path to business success because this is a process of building the absorptive capacity of managers such as confidence, psychology, knowledge and skills. An absorptive capacity can also accumulate within firms as it is a function of the level of the firm's prior related knowledge (Danneels, 2008, p.525). A number of previous studies suggest that years of formal education of entrepreneurs before establishing business were associated with firm performance (Brush & Hisrich, 1991). Box et al. (1993) also found that there was a positively associated relationship between high education levels of entrepreneurs and performance for manufacturing firms in Oklahoma. Additionally, Yusuf (1995) reported that one of the success factors in small businesses was the education levels of the owner/managers, which can assist firms to survive and manage in a complex environment and can keep the business profitable.

Furthermore, Schutjens and Wever (2000) observe that business managers who have a reasonably good education can handle complicated business activities. The managers' skills and competencies obtained from education is associated with business success (Casson, 1982). The collection of knowledge and prior-qualification can also increase psychological confidence of owner/managers. Particularly important skills for entrepreneurs are the capacity to predict and make decisions under conditions of uncertainty. One of several reasons for changes in sales value in the past is resulted by change in human performance (Steffy & Maurer, 1988, p.280). Therefore, specific features that can be realized from the education of entrepreneurs can have an impact on firm performance.

Working experience of entrepreneurs can be derived from path dependency and past investment in human resources. The influence of previous experiences of entrepreneurs has been examined by several previous studies. These experiences can be a source of sustainable competitive advantage, in turn, leading to better performance for the firms. This is one of several factors for the success of firms (Yusuf, 1995). Box et al. (1993) reported that prior years of experience of entrepreneurs were significantly associated with performance in a study of 300 manufacturing firms in Tulsa Oklahoma.

Increasing the stock of know-how through on-the-job training and 'learning by doing' play crucial roles to firm performance. Firm specific skills actually develop through on-the-job training, which it related to high economic returns (Bishop, 1991; Castanias & Helfat, 1991). The benefits of on-the-job training include low cost, minimal training time, immediate productivity and concurrent trial period. On-the-job training can be the most beneficial way it requiring basic skills (Snell & Dean, 1992).

The age of entrepreneurs can represent life experience and years in business practices, which captures expertise (Collins-Dodd et al., 2004). Experience of entrepreneurs leads to accumulation of various skills and credentials (Ng Wai-Kit et al., 2007). These accumulated knowledge and skills may not be easily imitated by competitors. Examples of these experiences may be in management, teamwork, sales, cooperation and industrialization. Entrepreneurs with longer experience can have a potential impact on firm performance.

Hatch and Dyer (2004) suggest that the value of experienced human resources cannot be imitated for some time and the dynamic adjustment costs of training and using new human resources can lead to continual differences in performance. Steiner and Solem (1988) observe that successful firms utilize the prior experience of entrepreneurs. Working experience in management is one of the successful factors for firms (Schutjens & Wever, 2000).

Training for entrepreneurs in the form of off-the-job training after starting a business is essential to firm performance. On-the-job training is not sufficient, it tends to be seen as fragmented, not really systematic and not

enough to update, knowledge and skills from outside the firms.

As it is evident that non firm specific training influences performance, firms continuously invest in training. Firms with accumulated knowledge realize 'strategic asset' (Winter, 1987) that can have an impact on the production process. Training is part of path dependency because the benefits of training have accumulated over time, which creates 'bundles' of routines that are not easy to understand and imitate (Koch & McGrath, 1996). The resource based view (RBV) suggests that creating bundles of routines are the main driver for superior performance. In addition, skills and capabilities of entrepreneurs that are gained from training can improve productivity and efficiency in firms.

Prior to investigating whether firms owned by male and female entrepreneurs differ in terms of performance, in practice because the individual characteristics of male and female entrepreneurs and the business characteristics cause variance in business performance. We control the individual characteristics and the business characteristics in our study as has been used in previous literature by Lustgarten (1995) and Fasci & Valdez (1998). The conclusions from previous literature are that males are more achievement-motivated, capable of managing risk and employing systematic planning (Stevenson, 1986; Vespec, 1980). In contrast, Kalleberg and Leicht (1991) found that female entrepreneurs are just as successful as male entrepreneurs.

This paper examines the performance of male-and-female headed firms on different dimensions including the characteristics of business and characteristics of entrepreneurs. The existing literature- has identified the characteristics of businesses, which include business income, profit margin, firm age, firm size and firm location whether it is home-based or business office based (Fasci & Valdez, 1998; Lustgarten, 1995; Kallenberg & Leicht, 1991). A number of individual characteristics also include education, age, experience, marital status and the amount of time devoted to business (Stevenson, 1986, Lustgarten, 1995, cited in Fasci & Valdez, 1998).

The rationale of the second hypothesis is to confirm whether or not there are different factors that determine the performance between male and female headed firms in the Lao MSMEs. We compare determinant factors, mainly the business characteristics and individual characteristics of male and female entrepreneurs, on whether they have a similar impact on firm performance or not. Therefore, the following hypothesis can be established:

H2: Differences exist between male and female headed firms in terms of the determinant factors (business and individual characteristics) of firm performance.

2.3 Firm performance

To measure firm performance, reliable financial data are preferably but firms are not often willing to disclose confidential financial data unless laws require them to disclose it to the public. Hence, the subjective performance measures have been widely used in strategy related research (Dess & Robinson, 1984; Robinson & Pearce, 1988; Venkatraman & Ramanujam, 1986; Spanos & Lioukas, 2001). Financial data are also criticized for being unreliable and subject to inconsistent accounting practices among the firms or even to managerial manipulation for different reasons, which include avoiding corporate income taxes or personal income taxes (Dess & Robinson, 1984; Sapienza et al., 1988; Powell & Dent-Micallef, 1997). Therefore, subjective measures have been widely acceptable in organizational research (Lawrence & Lorsch, 1967; Dess, 1987; Powell, 1992a; Powell & Dent-Micallef, 1997). This paper is using the annual sales turnover as the performance indicator, through questionnaires as used by a number of previous studies (Rosa et al., 1996; Du Rietz, 2000; Anna et al., 1999).

3. Research Methodology

3.1 Sample and data collection

The present paper uses unbalanced panel data that was collected in 2005 and 2007 by the Enterprises Baseline Survey (EBS) from the German Agency for Technical Cooperation (GTZ). The GTZ conducts the EBS every two years. And it was at this same time that this paper was written. We could only collect two surveys in EBS 2005 and EBS 2007, and by doing so, we could increase the sample size. The sample selected only enterprises that were formally registered. It analyzed questionnaires, which sought responses from entrepreneurs. The survey in 2005 included 370 companies that covered four Lao provinces namely, Vientiane capital, Champasack, Luang Prabang, and Luang Namtha. The first three provinces belong to the economically dynamic provinces and the fourth is a rural province. For the 2007 survey, the sample size was 470 Lao MSMEs that covered five Lao provinces namely, Vientiane capital, Champasack, Luang Prabang, Luang Namtha and Savanakheth. The fifth province is a new sample. The sample consisted of 840 observations wherein 493 were male firms and 347 were female firms, with 1 to 99 employees.

3.2 Measurement

3.2.1 Gender

This refers to the sex of entrepreneurs. Male entrepreneur is given 1 while female entrepreneur is 0.

3.2.2 Personal characteristics

Education of entrepreneurs. This is measured by ordinal numbers from 1 to 9 corresponding to the level of education of owner/managers. From the lowest to the highest level these are: no schooling; some primary school; completed primary school; lower secondary school; upper secondary school; vocational school; technical school; higher (undergraduate); and post graduate.

Working experience. This is measured by the age of owner/managers, from which the total years spent in education is subtracted. Because of a limitation on the data set, a more comprehensive measure of experience cannot be specified.

Training of entrepreneurs. This question is whether or not any training was received since the business was started. If the respondent chose 'yes', then the next question asked was to describe the kind of management training they have had, whether it be on: health and safety, cost calculation, business management, accounting, marketing, law and regulations, quality management, business finance and others. Therefore, this variable is measured as a dummy variable.

3.2.3 Business characteristics

Firm age. This is the number of years the MSMEs had been established, which is taken to represent industry experience for the firm.

Firm size. This is measured by the total number of current full-time employees. According to Prime Ministerial Decree No.42 (2004), the Lao PDR defines a micro firm consisting of 1 to 2 employees; a small firm having 3 to 19 employees, a medium firm with 20 to 99 employees and a large firm with 100 employees or more.

Premises for businesses. This question is whether the place of business is a home-based office or an outside based office. If the business uses the home as the office, it is given 1. If the business uses other places as an office, it is given 0.

Operation months. This question indicates the amount of time that the entrepreneurs have put in the business (part-time/full-time).

Presence of competitiveness. This question is whether or not the owner/managers have any problems with competitiveness. This variable is measured as a dummy variable.

Training for employees. This question is whether or not the employees received any training at the start of business. If the respondent chose 'yes', then the next question asked was to describe the kind of management training they have had, whether it was on: customer services, accounting, record booking, operation of machinery and tools, computer, documentation and filing and others. Thus, this variable is measured as a dummy variable.

Business development services for entrepreneurs. This question is whether or not the owner/managers of a firm received any advice for the development of his/her business. This variable is measured as a dummy variable.

3.2.4 Performance

Performance is the dependent variable in this study, which is measured by ordinal numbers from 1 to 5 corresponding to a level of annual turnover or sales (as stated in the national tax office). From the lowest to the highest level: these are less than 200 Million Kip; 200-400 Million Kip; 401-700 Million Kip; 701-1,000 Million Kip; and more than 1,000 Million Kip. At the time of survey, one US dollar was approximately equivalent to 9,696 Lao Kip.

4. Data Analysis and Discussion

4.1 Ordered Probit models

The dependent variable was measured using ordinal measures from 1 to 5. Therefore, an ordered probit model (Long, 1997; Godfrey 1988; Davidson & MacKinnon, 1993) was used in the analysis to investigate the impact of its determinant factors on firm performance among male and female headed MSMEs in Lao PDR. The objective of the model was to determine the probability if there are differences in gender-based performance in the Lao MSMEs, as well as to investigate if there are any differences among the determinant factors between MHFs and FHF, wherein the firm performance were ordinal numbers from 1 to 5 corresponding to a level of annual

turnover or sales. Let us assume that y_i depends on the value of a latent variable y_i^* , which in turn depends on a set of observables: 1= less than 200 Million Kip; 2= 200-400 Million Kip; 3= 401-700 Million Kip; 4= 701-1,000 Million Kip; 5= more than 1,000 Million Kip. Therefore, we can derive the specifics for the first model, a latent variable y_i^* can be estimated as follows:

$$y_i^* = \beta_1 GD_i + e_i \quad [1]$$

We regress the latent variables on one independent variable (GD_i).

$$y_i^* = \beta_1 GD_i + \sum_{k=1}^3 \gamma_k x_k + \sum_{m=1}^4 \varphi_m z_m + e_i \quad [2]$$

We regress the latent variables on independent and control variables. Independent variable is gender (GD_i). We control the individual characteristics (x_i) of education (EDU), working experience (WEXP) and training for entrepreneurs (TRNFE) as well as control the business characteristics (z_i) such as firm age (FA), premises for businesses (PB), operation months (OPM), firm size (FS), presence of competitiveness (CT), training for employees (TRNE) and business development services (BDS).

In the second and third models, the whole samples were divided into the male and female headed firms to compare the determinant factors that influence both firms in the Lao MSMEs. In equation [3] and [4], they are used to answer hypothesis 2 on whether or not there is an existent differing performance between male and female entrepreneurs in the Lao MSMEs. The purpose is to confirm the results on whether there are existent differences in gender-based performance. Ordered probit models are specified in the equation [3] and [4] below:

$$y_m^* = \sum_{i=1}^3 \beta_i x_m + \sum_{j=1}^4 \gamma_j z_m + \sum_{k=1}^3 \varphi_k c_m + e_m \quad [3]$$

Where, in equation [3] is a latent variable for MHFs and x_m are the independent variables, which are classified into two groups: (1) individual characteristics: education (EDU), working experience (WEXP) and training for entrepreneurs (TRNFE) and (2) business characteristics (z_m): premises for businesses (PB), operation months (OPM), presence of competitiveness (CT), and business development services (BDS). We control firm size (FS), firm age (FA) and training for employees (TRNE) and thus (c_m) are control variables.

$$y_f^* = \sum_{i=1}^3 \beta_i x_f + \sum_{j=1}^4 \gamma_j z_f + \sum_{k=1}^3 \varphi_k c_f + e_f \quad [4]$$

Where, in equation [4] is a latent variable for FHFf and x_f are the independent variables, which are classified into two groups: (1) individual characteristics: education (EDU), working experience (WEXP) and training for entrepreneurs (TRNFE) and (2) business characteristics (z_f): premises for businesses (PB), operation months (OPM), presence of competitiveness (CT), and business development services (BDS). We control firm size (FS), firm age (FA) and training for employees (TRNE) and thus (z_f) are control variables.

4.2 Analysis results

It is important to note the differences in characteristics of male and female entrepreneurs as well as differences in business characteristics, which can lead to differences in business performance, as shown in Table 1. The share of male entrepreneurs is 59 percent versus 41 percent of female entrepreneurs.

In terms of years in business, the samples tended to be young male and female headed firms. Seventy percent of FHFf in the sample were under 10 years while 68 percent of MHFf fell in the group. Overall, the proportion of both gender headed firms shows similarity in the age of businesses from 11 to 60 years old.

The differences in firm size in gender-based performance are important to acknowledge as it can explain the differences in performance. In this sample, firm size among gender headed firms is different. The similarity in the firm size between gender headed firms fell in the micro-firms. However, MHFf in medium-sized businesses indicate more than two folds of FHFf. For small-firm size, FHFf represent almost 69 percent, which is higher than male counterparts in this category.

Education levels of male and female entrepreneurs show significant differences. Male entrepreneurs appeared to hold a relatively higher education level from vocational school up to post graduated degree. However, the share of female entrepreneurs who completed primary school up to upper secondary school was relatively higher in proportion than male entrepreneurs.

Place table 1 here

Table 2 presents the means of independent samples t-test for male and female headed firms, which can explain the reasons behind the differences in gender-based performance. MHFs are found to have higher mean scores and statistical significance in most variables such as the presence of competitiveness, training for entrepreneurs, business development services, working experience, education and firm size; compared to FHF. In contrast, FHF were found to have a higher mean score and it was statistically significant on operation months. FHF tend to spend longer times in their businesses but fail to contribute to their performance. For MHFs, they were found to be older, invested higher in training for employees and tended to use home as offices compared to FHF but the magnitude of differences was insignificant from that of FHF.

Place table 2 here

The findings confirm that there are differences in gender-based performance in the Lao MSMEs, as shown in the regression results in Table 3. The overall model shows that MHFs perform better than FHF at a statistically significant 1 percent level. Even though we control the business and individual characteristics, the results still confirm that MHFs outperform FHF at a statistically significant 5 percent level in a model with control variables. To some extent, a model with control variables can better explain latent dependent variable with Pseudo $R^2=0.17$ compared with the overall model with Pseudo $R^2=0.02$. One possible interpretation is that males are risk takers by nature and/or socially, while female counterparts are risk adverse (Meier & Masters, 1988). It could be that MHFs employ different strategies to achieve better performance. For example, MHFs may obtain credits to finance strategic business activities. They also spend less time for domestic roles at home so that they can concentrate on their business practices. Male entrepreneurs are more advantages in terms of credit and networking with external partners (Smeltzer & Fann, 1989), while female entrepreneurs are disadvantages in many ways. Examples are discrimination from banking practices as well as overwhelming responsibilities for families, which means they spend less time taking care of the businesses.

Additional explanations displayed in Table 2 shows that MHFs not only have higher mean scores for most variables but also the gaps of gender are found to be statistically significant in education, training for entrepreneurs, business development services and working experience and firm size. In general, MHFs tend to have entrepreneurs with higher education levels, increased investment in training, obtaining business development services, longer working experience in their business, and, are bigger in terms of firm size. As illustrated in Table 2, the results are consistent with the liberal feminist theory, which states that female entrepreneurs have lower education levels; shorter working experience; and insufficient investment in training for entrepreneurs and obtaining business development services; and smaller firm size, compared with male counterparts (Fischer et al., 1993). Lower education levels of female entrepreneurs lead to lack fundamental skills and knowledge. In addition, insufficient investment in training for female entrepreneurs and obtaining useful business development services may lead to becoming less competitive. Also, the shorter working experience of female entrepreneurs means they may not inherit sufficient skills and knowledge in business. Lastly, smaller firm size of FHF may limit important resources.

To sum up, the findings show the persistent constraints of FHF in many areas, which could be the underlying reasons for the underperformance of FHF in the Lao MSMEs compared to MHFs. Hypothesis 1, then, received support.

For control variables, business characteristics such as firm size, training for employees and business development services are significant to firm performance. Overall, the findings are evident in showing that larger firm size has some impact on firm success. To invest in training at practical levels (i.e. employees) and obtain business development services, they are crucial factors to achieve better performance. However, the premises of businesses (particularly home-based businesses) were found to be insignificant. Perhaps, home-based businesses are not a good location for the business even though they do not have to pay for rent. Other factors such as operation months, presence of competitiveness and firm age were found to be insignificant to firm performance. For the individual characteristics of entrepreneurs, all variables such as the education level of entrepreneurs, and their working experience and training are significant to firm success..

Place table 3 here

Hypothesis 2 was found partially supported. The findings have shown that there are similarities and differences in terms of influential factors to the firm performance between male and female headed firms in the Lao MSMEs, as illustrated in Tables 2 and 4.

The results show that similar results for both gender headed firms in training, working experience and education of entrepreneurs were statistically significant, as illustrated in Table 4. For both, investments in training for entrepreneurship and longer working experience can obtain and accumulate important capabilities, skills and knowledge, which are evidently critical factors to their performance. Education levels of both male and female entrepreneurs were also found to be significant to firm performance (Box et al., 1993; Brush & Hisrich, 1991). In addition, for both gender headed firms premises for businesses or home-based businesses found to have an insignificant impact on performance, which could explain that having a home based business for both firms is not good for the business. Operation months were found to be insignificant to firm performance for both gender headed firms but for MHFs it was found to be negative to their performance, which is probably because they may be inefficient in terms of using their additional time. FHF's appear to spend longer operation months than MHFs (in Table 2) but surprisingly the amount of time FHF's spending in their businesses had no impact on performance. This could be an inefficiency matter for FHF's.

The findings show that in the presence of competitiveness and having business development services, there were significant differences on both firms. For FHF's, presence of competitiveness was found to be statistically significant. The presence of competitiveness may be a cause for alarm among FHF's so that they may put effort to cope with the competitiveness, and consequently influence their performance. On the other hand, male counterparts did not have significant differences in performance. MHFs have a higher presence of competitiveness (in Table 2). This means that they may be at a relatively better position than female ones so that MHFs may emphasize other influential factors to their performance. For MHFs, business development services were found to be an important factor to their performance because these services may provide useful advice that can increase skills and knowledge to improve their performance. However, obtaining business development services for FHF's had a weak impact on performance, which could be the types of business development services that may not fit with entrepreneurs' needs. Another possible reason is that female entrepreneurs may be less capable to utilize business development services compared to male entrepreneurs. Overall, it can be concluded that hypothesis 2 is partially supported.

Firm size which was a control variable had a significant impact on firm performance for both gender headed firms. The larger sized firms perform better than the smaller ones because firms with a larger size may have an advantage of controlling important resources.

A surprising result indicated that older firms may not necessarily outperform young firms. One possible interpretation for this is the insignificant relationship between firm age and firm performance which may be less adaptable and flexible in a dynamic business environment. For MHFs, the training of employees contributes to better performance in the practical levels, whereas for FHF's, training the employees is insignificant, having a weak impact on their performance. This may be due to inappropriate or unrelated contents of the training that are not in line with the needs of the firms.

Place table 4 here

5. Conclusion

5.1 Findings and conclusion

The findings indicate that there are differences in gender-based performance in Lao MSMEs (H1). MHFs outperform FHF's. MHFs tend to engage in strategic business activities in order to improve their performance. They seem to take more risk and have better networks with external stakeholders such as suppliers, customers and banks, while FHF's tend to be risk adverse, conservative and may not establish good external networks. In addition, MHFs were found to have higher capabilities to adapt with competitiveness; invest higher in training; obtain business development services; have longer working experience; higher education; and have bigger sizes of businesses. The overall problems were associated with individual characteristics and the business practices for FHF's, which could be the underlying reasons why FHF's underperform MHFs in the Lao MSMEs.

ForH2, the findings on whether the differences exist between male and female headed firms in terms of determinant factors of firm performance show mixed results since both similarities and differences are shown. The similarities for both gender headed firms found that training, working experience and education for entrepreneurs were significant to firm performance. In contrast, the significant differences are the presence of competitiveness and business development services. For FHF's, presence of competitiveness was found to be

statistically significant whereas male counterparts did not have significant differences in performance. For MHFs, business development services were found to be an important factor to their performance because these services may provide useful advices to improve their performance. However, obtaining business development services for FHF's had a weak impact on their performance, which could be the types of business development services that may not fit the entrepreneurs' needs.

5.2 Policy implications

The present paper expects to have implications for both the government (policymakers) and the business sector (implementers). Policymakers should encourage having a good business climate for the business sector, particularly for the Lao MSMEs. The findings can be useful for policymakers to implement policy that matches the needs of both gender headed firms. The different backgrounds of both firms lead to different outcomes, thus policies for FHF's should consider gender differences. The government should be more careful with FHF's because they have just entered the economy and are not as mature as MHFs. Thus, FHF's should have more support from the government in order to improve their performance. The government may assist the FHF's to reflect on gender-based differences so that it can mitigate such differences. The government may remove gender discrimination in banking practices so that FHF's may have better access to credit. The government can help both firms by providing training, improving the educational system and having useful business development services in order to produce the qualified entrepreneurs for private firms. These policies can reduce the difference gaps in terms of the performance of male and female headed firms.

For the MSMEs, they need to emphasize determinant factors which can help them to maintain superior performance. Investment in training for entrepreneurs needs to be done continuously in order to improve skills and knowledge at the leadership levels for both gender headed firms. In addition, working experience and education impart important capabilities, skills and knowledge, which are critical to firm performance. For MHFs, obtaining useful business development services seems to be critical to business success. For FHF's, the presence and continuous existence of competitiveness needs to be paid attention to because this can serve as an opportunity for them in their business.

5.3 Research limitations and future research

In this study, using secondary data provides limited choices for selecting theoretically meaningful variables. Therefore, future studies in conducting surveys are encouraged in order to provide important variables. Apart from the limitation of secondary data for selecting meaningful variables in this study, the authors realize that other factors could also affect business performance in the Lao MSMEs. Future research can consider both economic and non-economic performance indicators, particularly FHF's, which could provide more meaningful empirical studies.

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Table 1. Differences between characteristics of male and female headed firms

	Male (n=493)		Female (n=347)	
	Frequency	Percentage	Frequency	Percentage
Gender	493	59	347	41
Education				
No schooling (0 year)	7	1	7	2
Some primary school (2.5 years)	11	2	14	4
Completed primary school (5 years)	51	10	52	15
Some lower secondary school (1.5 years)	41	8	41	12
Completed lower secondary School (3 years)	77	16	55	16
Some upper secondary school (1.5 years)	25	5	24	7
Completed upper secondary school (3 years)	53	11	43	12
Vocational (2 years)	105	21	69	20
Technical (3 years)	34	7	8	2
Higher (Under graduated) (4 years)	69	14	31	9
Post graduated (2 years)	20	4	3	1
Firm Age				
01 -10 years old	340	69	242	70
11-20 years old	133	27	94	27
21-30 years old	12	2	8	2
31-40 years old	5	1	2	1
41-50 years old	0	0	0	0
51-60 years old	3	1	1	0
Firm Size (No. of Employees)				
Micro: 1-2	97	20	78	22
Small: 3-19	290	59	238	69
Medium: 20-99	106	22	31	9

Table 2. Means for independent samples t-test for male and female headed firms

	MHFs Mean	FHFs Mean	Sig.	Mean Difference
Premises for businesses (PB)	1.655	1.648	0.96	0.01
Operation Months (OPM)	11.659	11.865	0.01**	-0.21
Presence of Competitiveness (CT)	0.655	0.588	0.05**	0.07
Training for Entrepreneurs (TRNFE)	0.497	0.378	0.00***	0.12
Business Development Services (BDS)	0.673	0.550	0.00***	0.12
Working Experience (WEXP)	33.198	30.287	0.00***	2.91
Education of Entrepreneurs (EDU)	6.710	5.885	0.00***	0.83
Firm Age (FA)	8.740	8.686	0.91	0.05
Firm Size (FS)	13.722	8.415	0.00***	5.31
Training for Employees (TRNE)	0.691	0.669	0.49	0.02
N	493	347		

*** Significant at $\leq 1\%$; ** $\leq 5\%$ (2-tailed)

Table 3. Regression results

	Performance				
	Overall Model	Model with Control Variables			
	z	Coefficient	Std.Err.	z	P> z
Gender (GD)	5.98***	0.204	0.097	2.10	0.035**
<i>Business Characteristics:</i>					
Firm Age (FA)		0.111	0.007	1.56	0.118
Premises for businesses (PB)		0.030	0.026	1.13	0.258
Operation Months (OPM)		0.002	0.038	0.04	0.966
Firm Size (FS)		0.041	0.004	10.66	0.000***
Presence of Competitiveness (CT)		0.102	0.094	1.08	0.278
Training for Employees (TRNE)		0.255	0.110	2.31	0.021**
Business Development Services (BDS)		0.218	0.099	2.20	0.028**
<i>Individual Characteristics:</i>					
Education of Entrepreneurs (EDU)		0.083	0.022	3.69	0.000***
Working Experience (WEXP)		0.013	0.004	2.86	0.004***
Training for Entrepreneurs (TRNFE)		0.283	0.096	2.94	0.003***
Pseudo R ²	0.02	0.17			
LR Statistic	36.27***	334.76***			
Log likelihood	-946.08	-804.09			
N	837	837			

*** Significant at $\leq 1\%$; ** $\leq 5\%$

Table 4. Regression results for male and female headed firms

	MHFs			FHFfs		
	Coefficient	z	P> z	Coefficient	z	P> z
Premises for businesses (PB)	0.034	1.04	0.298	0.013	0.28	0.776
Operation Months (OPM)	-0.010	-0.23	0.815	0.029	0.30	0.767
Presence of Competitiveness (CT)	-0.034	-0.28	0.776	0.383	2.44	0.015**
Training for Entrepreneurs (TRNFE)	0.215	1.78	0.074*	0.593	3.70	0.000***
Business Development Services (BDS)	0.255	2.00	0.046**	0.254	1.59	0.112
Working Experience (WEXP)	0.012	2.09	0.037**	0.015	2.11	0.035**
Education of Entrepreneurs (EDU)	0.090	3.21	0.001***	0.085	2.30	0.021**
<i>Control Variables</i>						
Firm Age (FA)	0.012	1.46	0.144	0.008	0.69	0.493
Firm Size (FS)	0.037	8.56	0.000***	0.025	4.30	0.000***
Training for Employees (TRNE)	0.281	2.02	0.044**	0.229	1.25	0.211
Pseudo R ²	0.15			0.13		
LR Statistic	189.59***			89.45***		
Log likelihood	-519.73			-288.82		
N	491			346		

*** Significant at $\leq 1\%$; ** $\leq 5\%$; * $\leq 10\%$