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Determinants of the Competitiveness of Women-Owned Small- and Medium-Sized Enterprises: An Empirical Study from Vietnam*

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Abstract

Guided by a resource-based theory, this study is the first one that takes a quantitative approach to identify determinants of competitiveness of women-owned small and medium enterprises (SMEs) in Vietnam. The study employs time series data of Vietnamese SMEs extracted from the Vietnam Small and Medium Enterprises Survey conducted biennially from 2005 to 2015 in ten Vietnamese provinces. Firm competitiveness hereby is indicated by revenue, market share, profitability, and export volume. The research reveals a number of determining factors, of all, research and development, labor skills, business environment, technology investment are the most important factors, followed by capital and headcount. It is indicated that the determining factors have different influences on competitiveness obtained by different measurements. Therefore, it is based on specific targets and situations to make wise business decisions. The authors also make comparisons among groups of women-owned enterprises divided by their firm age, location, ownership, export, age, and educational background of business owners. The findings serve as critical empirical evidence and provide policy recommendations for improving the competitiveness of women-owned SMEs in Vietnam. The recommendations range from technology support, education and professional support for female entrepreneurs, access to capital and human resources to business environment improvement.

Keywords: Competitiveness, SME, Women Entrepreneurs, Research and Development, Labor

JEL Classification Code: O38, O39, O47, O53

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1. Introduction

Firm competitiveness has always been among the most concerned issues of scholars globally. There are a number of existing studies on firm competitiveness, but their perspectives are varied. The competitiveness of an enterprise reflects its ability to combine resources to create competitive advantages (Sanchez & Heene, 1997). Or, competitiveness is the ability to maintain, deploy, and coordinate resources and capabilities in a way that helps the company achieve its goals (Sanchez & Heene, 1997). Thus, the resource-based approach is grounded on the enterprise's resource advantage over competitors, while the capacity-based approach takes into account the ability to combine resources to generate capacity - which requires enterprises to be dynamic, systematic, well aware, and comprehensive in strategic management (Sanchez, 2008). The nature of competitiveness has been shifted to focus on capabilities instead of resources (Sanchez & Heene, 1997; Freiling et al., 2008). From a capacity-based perspective, competence is

the key to maintaining a sustainable and highly effective competitive advantage (Grant, 1996; Jackson et al., 2003; Teece et al., 1997; Sanchez & Heene, 1997).

Determinants of firm competitiveness are also assessed based on different approaches. Nguyen and Khoa (2020) identify eleven determinants of competitiveness of Vietnamese firms including Vision and strategic leadership, Human resources management capability, Organization capability, Customer responsiveness capability, Relationship quality, Innovation technology capability, Competitor responsiveness capability, Responsiveness to the change of the macro environment, Financial capability, Innovation products-services capability, Organization service capability, Enterprise risk management, and Branding management. However, the results are not universal as it covers only seafood export firms in An Giang Province of Vietnam. Furthermore, Nguyen and Khoa (2020) discovered the impacts of distribution channels and strategic factors on firm performance. Nevertheless, similar studies touching upon SMEs owned by women are rare both worldwide and in Vietnam.

As can be seen in practice, SMEs play a particularly important role in promoting the socio-economic development of nations. Along with contributing a large amount of goods and employment, SMEs also create a stable source of income for a segment of the population, exploiting the local resources and potentials. On the other hand, SMEs play a supporting and complementary role for large enterprises establishing a network for cooperation, competition, and mutual development.

In Vietnam, SMEs account for over 95% of the registered enterprises, generating about 60% of national GDP, and creating more than 90% of jobs for workers (Ngai & Quynh, 2021). This confirms that SMEs are currently the key pillar of the national economy. However, these businesses often lack financial resources, human resources, have low labor productivity and technical level (Tuan et al., 2018).

Global economic integration presents opportunities as well as problems for Vietnamese SMEs, including, but not limited to, increased competition in both domestic and foreign markets, as well as rapid changes in the business environment. Vietnamese SMEs, including those owned by women, must constantly improve their competitiveness to survive and thrive sustainably. By the end of 2020, the total number of women-owned SMEs had reached 45,721, accounting for 14.4% of active enterprises. Over the years, female entrepreneurs have been quick and proactive to seize opportunities to participate in global supply chains and business innovation. They are the pioneers of environmental-friendly, healthy, and human-centered production.

There have been many studies on women-owned SMEs conducted by reputable international and Vietnamese organizations. They have demonstrated the status quos and development trends, barriers, and international good practices in supporting and promoting the development of

women-owned SMEs in Vietnam. However, most of them are based on descriptive statistics, and none have discovered determinants of the competitiveness of women-owned SMEs in Vietnam.

This study aims to provide theoretical and empirical evidence on factors affecting the competitiveness of Vietnamese women-owned SMEs and propose measures to improve the competitiveness of women-owned SMEs. Thereby, it also contributes to strengthening the leadership role and economic empowerment of Vietnamese women.

2. Theoretical Framework

Since the 1990s, competitiveness theories have been booming with a large number of publications (Thorne et al., 2002; Thorne & Fingleton, 2006; Flanagan et al., 2007). The studies on competitiveness follow one of the five mainstreams: (1) Based on traditional competitiveness theories; (2) Based on value chain approach; (3) Based on market orientation approach; (4) Resource-based theories (5) Capacity-based theories.

This study is guided by a resource-based theory. The resources of an enterprise are the decisive factor to its competitiveness (Wernerfelt, 1984). When an enterprise effectively uses its resources such as physical capital resources including technology, facilities and tools, vehicles, and raw materials; human capital resources including experience, intelligence, relationships, internal characteristics of individuals as managers and employees; organizational capital resources including formal reporting structures, systems of planning, control and coordination, and relationships between groups within the enterprise and with the external environment (Barney, 1991), it can achieve the expected results.

In addition, within the scope of microeconomics, firm performance can reflect its competitiveness. It can be indicated by size, market share, revenue, profit, export, etc. On this basis, the research model is proposed to investigate determinants of competitiveness of women-owned enterprises based on the Cobb-Douglas Production Function model.

3. Methodology

3.1. Research Model

Cobb and Douglas (1928) proposed the production function theory about the relation between a set of inputs and a set of outputs. To investigate the factors affecting the competitiveness of women-owned SMEs, the authors adopt an extended Cobb-Douglas Production Function as below:

$$\text{Competitiveness}_{it} = b_1 + b_2K_{it} + b_3L_{it} + b_4T_{it} + b_5\text{PCI}_{it} + b_6Z_{it} + b_7C_{it} + u_{it}$$

In which,

Dependent variable proxies the competitiveness level of firm i in year t

Independent variables consist of:

- K_{it} is the financial capacity of firm i in year t .
- L_{it} is the labor capacity of firm i in year t .
- T_{it} denotes the technological capacity of firm i in year t .
- PCI_{it} reflects business environment quality of the province where firm i is located in year t .
- Z_{it} is a set of owner's/ manager's characteristics of firm i in year t , such as owner's/ manager's age, owner's/ manager's educational background.
- C_{it} refers to a vector of firm-specific variables including firm age, firm ownership, and operating sectors.
- u_{it} is a random error term.

Variable measurements

At micro-level analysis, the **dependent variable, competitiveness** of firm can be measured by:

- **Revenue:** This indicator reflects the performance and the output of firms. A significant and stable increase in revenue reflects a firm's ability to maintain and secure its market share.
- **Export:** This indicator reflects a firm's ability to maintain and expand its market.
- **Market share:** This evaluates the competitiveness of products or services as long as the market responds to a firm's offerings. Higher market share insinuates a better ability to satisfy customers' demands.
- **Profitability:** Profitability is computed as the ratio of net profit to total costs, total revenue, total assets, or capital. These profit-based measurements depict not only a firm's performance but also its competitiveness and market power in its operating sector.

Independent variables

- K_{it} is the financial capacity calculated by total capital and debt-to-assets ratio (leverage).
- L_{it} is the labor capacity measured by the total number of employees, and skills of labors.
- T_{it} is the technological capacity calculated by R&D and technological expenditure of firm i in year t .
- PCI_{it} indicates the business environment quality of the province where the firm is located, measured by the Vietnam Provincial Competitiveness Index prepared by VCCI and USAID.
- Z_{it} is a set of owner's/ manager's characteristics such as age and educational background.
- C_{it} refers to a vector of firm-specific variables including firm age, firm ownership, and operating sectors.

Control variable

Firm age; area; firm ownership; enterprise size; the age of business owner/manager; education level of the business owner/manager.

Details of the variables in the proposed model are described in Table 1.

3.2. Estimation Strategies

Random effects models

By virtue of longitudinal data, this research considers utilizing methods that are unique to panel data processing. This study employs a random effects model to estimate Eq 1, because our data is unbalanced with small T ($T = 6$) and large N (more than 1000 firms per year), and N individuals are randomly drawn from a large population (Baltagi et al., 2005). It is normally believed that a universal procedure to choose between fixed effects and random effects models is to carry out the Hausman test. However, in the case of panel data in which N is usually large, a fixed effects model would lead to an enormous loss of degrees of freedom (Baltagi et al., 2005). Moreover, according to Judge et al. (1980) and Taylor (1980), an unbalanced panel data with "small T " usually renders Hausman test results unreliable due to insufficient variance in the change of independent variables. In the Breusch and Pagan Lagrangian multiplier test, we select a random effects model to estimate our baseline equation. Random effects models are estimated based on the assumption that the existence of unobserved time-invariant factors is not correlated with any independent variables. The Generalized Least Squares method is used to estimate random effects models. Random effects estimation is also provided with firm-level clustered standard errors to correct for possible problems of heteroscedasticity and autocorrelation (Panel A).

Endogeneity treatment

The endogeneity issue is believed to contaminate the causal impact of technology investment and innovation on competitiveness. For example, according to Harrison et al. (2014) and Crespi and Guarascio (2019), endogeneity is a matter of concern when there exist unobserved factors that can simultaneously affect a firm's decision to innovate and invest in technology and its competitiveness. We, therefore, carry out additional estimation using two-stage least squares (2SLS) to address this problem. In terms of technology investment, we use IV to reflect bandwagon effects, which implies that a firm's decision to purchase technology is influenced by its direct competitors. We use the rate of technological expenditure of firms in the peer group, defined over geographical (based on location, i.e., province) and occupational (industry) proximity.

Table 1: Definitions of Variables

Variable Name	Definition/Measurement	Abbreviation
Dependent Variable		
Revenue	Annual gross revenue of a firm in the year surveyed in thousand VND. This variable is taken from natural logarithms.	$\log \log (\text{Revenue})_{i,t}$
ROA	Profit/ total assets	$\text{ROA}_{i,t}$
Export	Annual gross export of a firm in the year surveyed in thousand VND. This variable is taken from natural logarithms.	$\log \log (\text{Export})_{i,t}$
Market_share		$\text{Market_share}_{i,t}$
Independent Variables		
Financial capacity	Firm's total assets end-year in thousand VND, equal to the sum of physical assets (e.g. land, buildings, equipment/ machinery) and financial assets (e.g. cash and deposits, outstanding credits). This variable is taken from natural logarithms.	$\text{Capital}_{i,t}$
Number of employees	The number of workers of the firm. This variable is taken from natural logarithms.	$\text{Labor}_{i,t}$
Skills of labor	This variable is measured by the percentage of employees that have a university or a college degree in each firm. This is an input indicator that proxies the human capital of firms. It will be interacted with each of the Internationalization variables to create instrumental variables in this research.	$\text{Skill}_{i,t}$
Technological expenditure	Firm's total investment in technology end-year in thousand VND. This variable is taken from natural logarithms.	$\log \log (\text{Tech_inves})_{i,t}$
Business environment quality	This variable is deemed as a categorical variable in this study. This variable shows the ranking of the Provincial Competitiveness Index of each surveyed province in each year. It will be used in the proxy business environment	PCI_RANK
R&D	This is a dummy variable. It is encoded "1" if the answer to the question: " Does your enterprise R&D " is "Yes" and encoded "0" if otherwise.	$R_D_{i,t}$
Firm-Level Control Variables		
Age	Firm's years of operation. This variable is measured as the year when the survey was released subtracting the year of establishment of the firm. It is taken from natural logarithms.	$F_Age_{i,t}$
Area	The main area of business and production activity Code: (List only one according to the GSO product list given in the manual).	$\text{Area}_{i,t}$
Ownership	Firm ownership dummies, including state-owned enterprise, non-state enterprise, and foreign-owned enterprise.	$\text{Ownership}_{i,t}$
Manager-Level Control Variables		
Age	Manager's age. It is taken from natural logarithms.	$\text{age}_{i,t}$
Educational level	This is a dummy variable. It is encoded for the answer to the question What was the highest general educational level completed? Code: (1) Not yet finished upper secondary (5) Finished upper secondary (5)	$\text{Edulevel}_{i,t}$

Our chosen IVs are reasonably valid and adequate to fully explain endogenous variables, according to diagnostic tests of under-identification (Kleibergen-Paap rk LM statistics), weak identification (Kleibergen-Paap rank F statistics), and over-identifying restriction (Hansen J test). In particular, we can reject the null hypothesis of an under-identification test across the models, which means our specifications are not under-identified. Following the “rule of thumb” of Staiger and Stock (1997), all Kleibergen-Paap rank F statistics are greater than 10, which indicates that our selected IVs are not considered weak. Finally, the null hypothesis of over identifying restrictions (Hansen J test) cannot be rejected, confirming the validity of our subset of IVs (i.e., uncorrelated with the error term). With such reliability of our IVs, we conduct the IV regression (Panel B).

3.3. Data Source

Our main source of data is the Vietnam Small and Medium Enterprises (VSMES) Survey conducted biennially from 2005 to 2015 in ten provinces: Hanoi, Ha Tay, Hai Phong, Ho Chi Minh City, Phu Tho, Nghe An, Quang Nam, Khanh Hoa, Lam Dong, and Long An. VSMES survey is collaboratively carried out by the Central Institute for Economic Management (CIEM), the Institute of Labor Science and Social Affairs (ILSSA), the Development Economics Research Group (DERG) at the University of Copenhagen, and the World Institute for Development Economics Research at the United Nations University (UNU-WIDER).

Although the data survey was discontinued in 2015, this has no bearing on the significance of our findings regarding the factors that determine the competitiveness of women-owned SMEs. This is because the goal of quantitative research is to determine the nature of a problem by testing scientific hypotheses.

4. Results and Discussion

The research results are shown in Table 2, the results show that:

The number of employees has a positive impact on the competitiveness of women-owned SMEs. For every 1% increase in the number of employees, the average revenue, ROA, average export revenue, and market share will increase by 0.125%; 0.103%; 0.12%, and 0.124%, respectively. Human resources are the most important factors determining the competitive advantage of enterprises (Rowden, 1995; Hornsby & Kuratko, 1990). An enterprise with an abundant and well-trained labor force will have higher labor productivity, thereby improving its competitiveness in the market.

Labor skills have a positive impact on the competitiveness of women-owned SMEs. If the ratio of trained workers

to total employees of the enterprise increases by 1%, the competitiveness of the enterprise (revenue, export revenue, and market share) will increase by about 3%. The quality of human resources is the core factor to promote the growth of enterprises.

Research and development have a positive impact on the competitiveness of women-owned SMEs. Enterprises that invest in research and development will be more competitive than those that do not. The larger ratio for revenue is 19% ($\exp(0.1802) = 1.19$), for ROA is 0.12%, for export revenue is 20%, for market share is 0.13%.

Investment in technology, access to, and technology innovation have a positive influence on the competitiveness of enterprises. For every 1% increase in technology investment, average revenue increases by 0.14%, average ROA by 0.136%, average export revenue by 0.21%, and average market share by 0.14%. Regularly improving technology helps businesses increase labor productivity, lower input costs, improve quality, and reduce prices of goods and services. Therefore, increasing investment in technology helps improve the competitiveness of businesses. Businesses that want to maintain and improve their position in the market need new technology lines.

Capital has a positive impact on the competitiveness of enterprises. Specifically, a 1% increase in the capital of an enterprise will increase the average revenue by 0.164%, average ROA by 0.123%, export revenue by 0.165%, and market share by 0.165%. Financial capacity is an important factor to consider when evaluating an enterprise’s potential. The competitiveness of enterprises increases when they have abundant financial resources.

Improving the business environment contributes to enhancing the competitiveness of women-owned enterprises. If the business environment ranking increases by one rank, the competitiveness of enterprises will increase revenue by 0.7%, ROA by 0.4%, export revenue by 0.2%, and market share by 0.4%. Vietnam’s strong reform efforts since 2014 have helped to raise Vietnam’s ranking on global competitiveness rankings such as those of the World Bank and the World Monetary Fund (VCCI, 2021). However, there are still many barriers in Vietnam’s business environment, and the pace of improvement and problem-solving for businesses is slower than before. This requires continuous improvement, especially with regards to the inclusion of gender perspectives in resolutions and guidelines.

Thus, different factors affect each indicator differently. Therefore, it is subject to a firm’s specific goals and strategies to decide how and which indicator to be targeted. In general, it can be seen that research and development, labor skills, business environment, and technology investment are the most significant factors, followed by capital and number of employees.

Table 2: Regression Results

	Panel A: Random Effects			Panel B: Two-Stage Least Squares				
	LnRev	ROA _{it}	LnExport	Market_share _{it}	LnRev	ROA _{it}	Lnexport	Market_share _{it}
Diagnostics tests of IV regression								
Labor	0.125*** (0.0043)	0.103*** (0.0062)	0.1201*** (0.0180)	0.1241*** (0.0354)	0.0146*** (0.0043)	0.0212*** (0.0063)	0.2212*** (0.0180)	0.2212*** (0.0354)
Capital	0.164** (0.0082)	0.123*** (0.0086)	0.165*** (0.0102)	0.165*** (0.0114)	0.0053*** (0.0013)	0.0047*** (0.0013)	0.0024* (0.0014)	0.0024* (0.0014)
Skill	0.0306*** (0.0107)	0.0304** (0.0122)	0.026* (0.0145)	0.0312* (0.0171)	0.0295*** (0.0107)	0.0301** (0.0122)	0.030*** (0.0145)	0.030*** (0.0140)
R_D	0.1802*** (0.021)	0.1272*** (0.025)	0.181*** (0.0102)	0.1281*** (0.0175)	0.1611*** (0.023)	0.185*** (0.0301)	0.1262*** (0.0105)	0.1262*** (0.0182)
PCI_Rank	0.143*** (0.0044)	0.136*** (0.0046)	0.2121*** (0.0053)	0.141*** (0.0056)	0.149*** (0.0088)	0.1882*** (0.0092)	0.2023*** (0.0107)	0.2021*** (0.0116)
F_Age	0.0070*** (0.0015)	0.0040* (0.0022)	0.0017*** (0.004)	0.0080*** (0.0010)	0.0092*** (0.0026)	0.0051*** (0.0025)	0.0024* (0.0014)	0.0024* (0.0013)
age	0.0045** (0.0009)	0.0015*** (0.0007)	0.0170*** (0.0016)	0.0077*** (0.0012)	0.0015** (0.0007)	0.0046*** (0.0009)	0.0169*** (0.0016)	0.0169*** (0.0021)
Edulevel	-0.0110** (0.0047)	-0.0095* (0.0048)	-0.0032*** (0.0015)	-0.0132*** (0.0016)	-0.0116** (0.0045)	-0.0097** (0.0047)	-0.0046** (0.0024)	-0.0046* (0.0026)
Intercept	0.0013*** (0.0004)	0.0030*** (0.0016)	0.0046* (0.0028)	0.0014*** (0.0027)	0.0027* (0.0014)	0.0024* (0.0015)	0.0050*** (0.0024)	0.0050* (0.0028)
Ownership dummies	0.5688*** (0.0223)	0.8174*** (0.0300)	2.2427*** (0.1032)	2.2427*** (0.1884)	0.5596*** (0.0227)	0.8067*** (0.0304)	2.2419*** (0.1038)	2.2419*** (0.1888)
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Area dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5.616	5.775	3.825	5.641	5.616	5.775	3.825	5.641
R ²	0.703	0.719	0.723	0.740	0.621	0.652	0.731	0.737
Kleibergen-Paap Wald rk F statistic					49.213	16.271	32.231	35.125
Kleibergen-Paap rk LM statistic (p-value)					0.000**	0.000**	0.000**	0.000**
Hansen's J test (p-value)					0.432	0.431	0.474	0.836

Notes: Se-Stand. Error is put in parentheses under each coefficient. Clustered standard errors are estimated to control for heteroskedasticity and autocorrelation. *p-value < 0.10; **p-value < 0.05; ***p-value < 0.0.

Besides, certain other factors can have influences on the competitiveness of women-owned enterprises.

First, the firm age has a positive impact on competitiveness.

Second, women-owned enterprises in the Red River Delta and Southeast regions have greater competitiveness than women-owned enterprises in the Mekong River Delta. These are key economic zones, regions with favorable business environments facilitating the operation and growth of their firms. On the contrary, women-owned enterprises in the Northern Mountains and Central Highlands regions have lower competitiveness than women-owned enterprises in the Mekong Delta. The competitiveness of women-owned enterprises in the North Central and Coastal regions and the Mekong Delta region is the same since the regression coefficients in this region are not statistically significant.

Third, regarding ownership, the competitiveness of FDI enterprises is higher than that of state-owned enterprises and the competitiveness of non-state enterprises is lower than that of state-owned enterprises. Thus, the competitiveness of FDI enterprises is the strongest.

Fourth, the competitiveness of women-owned SMEs with export activities is higher than that of non-exporting groups.

Fifth, the higher the education level of the business owner, the better the business's competitiveness. Managers' qualifications and capacity have a direct and significant impact on a firm's competitiveness, as evidenced by their strategic planning and implementation, management styles, and motivation. All these factors influence not only the survival and development of products, but also the productivity, quality, price, and reputation of businesses.

Finally, the age of the business owner has a negative effect on the competitiveness of the enterprise. Many studies have looked into the relationship between age and entrepreneurship but none have come to a unified conclusion. While the willingness and intention to start a business decrease (Levesque & Minniti, 2006), the opportunity to do so gradually increases (Lee & Vouchilas, 2016). According to quantitative studies, the rate of entrepreneurship can gradually increase as one's age increase or decrease gradually (Fairlie et al., 2016). Azoulay et al. (2020) suggested that the golden age for starting a business is 40. There are currently no studies related to the start-up age specifically for women.

5. Conclusion

The article assessed the factors affecting the competitiveness of women-owned SMEs in Vietnam. The findings of the study reveal that the factors have varied effects on competitiveness obtained by different measurements. Overall, the most important factors were identified to be research and development, labor skills, business environment,

and technological investment, followed by capital and the number of people. Accordingly, the authors bring forward some recommendations for improving the competitiveness of women-owned SMEs.

First, firms must be assisted in gaining access to technology and expanding their markets. To be more specific, the firms should be consulted and guided on the implementation of research and development, R&D process design, technology search and evaluation, new products and services generation, collaboration in technology, standards, technical regulations, and quality measurement.

Second, the educational and professional capacity of female business owners, as well as the skills of their employees, need to be raised.

Third, women-owned enterprises need to have better capital access which can be done by being connected to and consulting advisors who are experienced in raising capital.

Fourth, high-quality human resources play a significant role in the competitiveness of women-owned enterprises. The quality of firms' human resources can be enhanced by recruiting MBA graduates to practice and work in specific areas such as strategy, operations, finance, marketing, and business expansion.

Fifth, improving the business environment is a key step that paves the way for the development of women-owned enterprises.

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