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IMPROVING ACCESS TO BANK LOANS FOR SMALL AND MEDIUM-SIZED ENTERPRISES: AN EMPIRICAL EVIDENCE OF HO CHI MINH CITY, VIETNAM

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ABSTRACT: *Small and medium-sized enterprises (SMEs) are an essential part of the Enterprise sector in developing countries and play an important role in driving growth, creating jobs and contributing to national budgets. In the new period of international integration, SMEs are often small in terms of capital, low technology and low management level, making it difficult to compete with large enterprises, domestic production groups and multinational corporations. Without the support of the Government and world organizations such as the World Bank (WB), the International Monetary Fund (IMF), there will be a risk of bankruptcy. One of the important policies of the Government to support SMEs is access to credit. However, up to now, in fact, many small and medium enterprises still face many difficulties in accessing loans. With survey data of 320 SMEs in Ho Chi Minh City, through the Binary Logistic regression model, the study identifies groups of factors affecting loan access including: Characteristics of business owners; Enterprise characteristics; and Business environment characteristics.*

KEYWORDS: Loan access; Binary Logistic Regression Model; Ho Chi Minh City, Vietnam; Small and medium enterprises.

INTRODUCTION

Small and medium-sized enterprises (SMEs) are an essential part of the Enterprise sector in developing countries and play an important role in driving growth, creating jobs and contributing to national budgets (Marchesnay *et al*., 1998; Chen, 2006). In the new period of international integration, SMEs are often small in terms of capital, technology and management level, making it difficult to compete with large enterprises, domestic production and multinational corporations. Without the support of the Government and world organizations such as the World Bank and IMF, there will be a risk of bankruptcy. By the end of 2020, Vietnam has about 800,000 operating enterprises, of which 98% are small and medium-sized enterprises, attracting more than 5.6 million workers, contributing about 45% of the gross domestic product (GDP) and 31% to the total annual budget revenue. Ho Chi Minh City has

239,623 enterprises, accounting for 30% of the number of active enterprises in the country, in terms of business scale, large-scale enterprises account for only 1.37%, the rest are SMEs. The business performance of SMEs is still low, 37.8% of enterprises have profits, enterprises get losses, accounting for 56.49%; the rest are break-even businesses (*Vietnam Ministry of Planning and Investment*, 2020). Over the past time, the State has issued many mechanisms and policies to support SMEs to develop production and business, especially in accessing credit. The Law on Supporting SMEs in 2017 (Vietnam National Assembly, 2017) creates a legal framework to support the operation of SMEs. In which, SMEs participating in industrial clusters and value chains will be supported to access credit. However, in fact, many businesses, especially SMEs, still face many difficulties in accessing loans (Nam Son, 2021). Understanding loan access is a challenging issue for researchers and policymakers in Vietnam. This study focuses on: (i) Determining the factors affecting the accessibility of commercial bank loans of SMEs; (ii) Quantitative model for the relationship of loan access and affecting factors; (iii) and policy implications to improve loan access.

THEORY OVERVIEW

Concepts

Small and medium-sized enterprises: Small and medium enterprises are enterprises with small scales in terms of capital, labor or revenue. According to Word Bank (2001), criteria of the World Bank, SMEs (Small and Medium Enterprises) are enterprises with less than 200 employees, capital and revenue of 15 million USD or less. In Vietnam, Decree No. 39/2018/ND-CP (Nguyen Xuan Phuc, 2018), SMEs are defined according to the criteria of labor, capital and revenue according to different industries of production and business.

Table 1. Criteria for SMEs in Vietnam

Criteria for SMEs	Industries	
	Agriculture, Forestry, Fisheries and Industry, Construction	Trade and Services
Labor (person)	< 200	< 100
Capital (billion VND)	< 100	< 100
Revenue (billion VND)	< 200	< 300

Loans: Loans are capital that a business raises by borrowing money. It is a loan made to a company that is usually repaid at some future date. Borrowed capital is different from equity or equity because the person applying for a loan does not become the owner of the business, merely the creditor and provider of the loan, and usually receives contracted certain percentages of the loan (Nguyen Van Ngoc, 2016).

Foundation theory

The theory of equilibrium credit rationing: According to Hodgeman (1960), Equilibrium Credit Rating represents a credit allocation based on default risk. Credit allocation as a situation in which all or some loan applicants are not given the full loan amount they applied at prevailing interest rates. In this model, the lender evaluates the borrower's potential on the basis of the loan's expected loss rate, which limits the amount the lender will provide the borrower regardless of interest rates. Because of credit market information asymmetry, it is not possible to distinguish between safe borrowers and risky borrowers.

Theory of information asymmetry: The concept of asymmetric information was first introduced by Akerlof (1970). Imperfect information occurs when one party to a transaction has more information than the other. This imbalance can cause one party to the transaction or the party making the decisions to lose. Information asymmetry is common in any market, and at the time of making a loan decision, borrowers know more than lenders about their creditworthiness. This theory assumes that banks cannot perfectly distinguish between high-risk and low-risk borrowers. Therefore, the lender offers a limit on the loan amount to the borrower.

Pecking order theory: Myers & Majluf (1984) completed Donaldson's Pecking theory (1961) with the assumption that firms follow a financial hierarchy and that financing is internal or external and that preference is given to internal funds than external funds. The Pecking order theory states that firms only seek external funding when internal resources are exhausted. External resources must be absolutely necessary, more secure, and free of control restrictions on the business. As a result, business owners prefer to borrow with little or no collateral security. This explains why SME owners often prefer internal sources of funds to other sources of finance.

The underlying theories above are relevant to this study in explaining the reasons why SMEs want to access and have difficulty in accessing loans from commercial banks.

Empirical studies related to factors affecting to loan access

Research on SMEs in Kenya reveals three groups of factors affecting loan access: Enterprise characteristics (size of business and age of business owners); Financial characteristics (lack of appropriate bookkeeping system, lack of collateral security of financial performance of enterprises, geographical location of enterprises; Business characteristics: Education level, previous management experience and the ability of the business owner to link and cooperate (Kung'u, 2011; Mole & Namusonge, 2016). Research on SMEs in Sri Lanka shows that the factors affecting loan access to include: Type of business ownership, Age of the business, Geographical location of the business, Production and business industry, Audited financial statements, Ratio of fixed assets to capital, Sales growth and Gender of the owner (Gamage, 2013).

Studies on SMEs in many countries (Kenya; Bangladesh; Turkey; Uganda; Ethiopia) show that factors affecting loan access to include: Profitability of enterprises, Relationships of enterprises with banks, Industry in which the business operates, Age of the business, Volume sales, Education level of the owner, Information asymmetry between the creditor and the borrower;

and Business risk (Mole & Namusonge, 2016; Chowdhury & Alam, 2017; Erdogan, 2018; Buyinza *et al*., 2018; Mutinda *et al.*, 2019; Meressa, 2020).

Research results by Ajam & Tijani (2009) in Nigeria show that participation in networks or associations has a positive impact on loan access. Studies on loan access of SMEs in Vietnam also show that important factors affect loan access, including: Collateral security, Financial statements, Financial-business plan, Size of enterprise, Qualification of business owner, Characteristics of business; Credit level of enterprises; Administrative procedures and processes from credit institutions and SMEs (Nguyen Thi Nhung *et al*., 2015; Phung The Dong & Nguyen Thi Hong Nham, 2019).

From the 2010s to now, a synthesis of empirical studies shows that there are three groups of factors affecting access to commercial bank loans, including:
Business owner characteristics: Qualification and Gender of business owner.
Enterprise characteristics: Age of the business; Return on sales; and Sale growth.
Business environment: Social capital; Information asymmetry; Collateral security; and Business risk.

RESEARCH MODEL & HYPOTHESIS

Theoretical reviews and empirical studies are needed for further research to extend the theory, provide more empirical evidence and policy implications related to the factors influencing loan access. Previous studies highlight insights into the impact of factors influencing loan access and measure relationships using different and independent quantitative models such as statistical tests, linear regression, Logit model or exploratory factor analysis, but do not provide an adequate basis for a comprehensive analysis on such factors. Therefore, the aim of this study was to extend the findings from previous studies and integrate analysis of the relationships in the Binary Logistic Regression model. This study selected the research model for Ho Chi Minh City in Vietnam as follows:

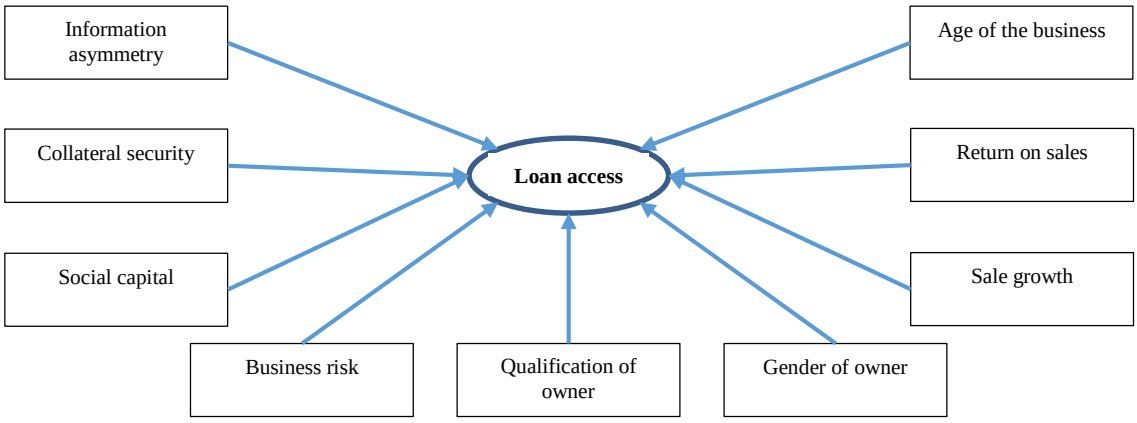


Fig. 1: Research model

Hypotheses: Based on empirical studies, the study proposes the following hypothesis:
H1: Qualification of the business owner affects positively the ability to borrow from banks.
H2: Gender of the business owner affects positively the ability to borrow from banks.

H3: Age of the business has a positive effect on the ability to borrow from banks.
H4: Return on sale has a positive impact on the ability to borrow from banks.
H5: Sale growth has a positive impact on the ability to borrow from banks.
H6: Social capital has a positive effect on the ability to borrow from banks.
H7: Information asymmetry has a negative impact on the ability to borrow from banks.
H8: Collateral security has a positive impact on the ability to borrow from banks.
H9: Business risk has a negative impact on the ability to borrow from banks.

Table 1. Definitions of variables and expectations

No	Variables	CODE	Units	Expectation
I	Dependent variable			
	Loan access	Y	Yes = 1; No = 0	
II	Independent variables			
Business owner characteristics	Qualification of owner	X1	Elementary = 1; Intermediate = 2; College = 3; Bachelor and post graduate = 4	+
	Gender of the business owner	X2	Male = 1; Female = 0	+
Enterprise characteristics	Age of the business	X3	Years	+
	Return on sale	X4	%	+
	Sale growth	X5	%	+
Business environment	The social capital (good relationship with bank associations, social associations, credit institutions	X6	Yes = 1; No = 1	+
	Information asymmetry	X7	* Likert scale with 5 degree	-
	Collateral security (Total assets that the business can mortgage)	X8	Million VND	+
	Business risk	X9	* Likert scale with 5 degree	-

Note *: Likert scale in Appendix

Research Design

Quantitative model

Form of the research model: Y = f(X1, X2,…,X9)

General form of the linear regression model:

$$Y = B_0 + \sum_{i=1}^{n} B_i X_i + u$$

X*i*: Independent variables; Y: Dependent variable; *u*: Residuals.

According to Howitt & Cramer (2011), when the dependent variable is a dummy variable (Dummy variable: Y = 1; Y = 0), the appropriate model is the Binary Logistic regression model. In this study, the dependent variable is a dummy variable, the Binary Logistic regression model is applied in this study.

Thus, the appropriate model is the Binary Logistic regression:

$$Ln\left[\frac{\mathrm{P}(Y=1)}{\mathrm{P}(Y=0)}\right] = B_0 + B_1X_1 + B_2X_2 + B_3X_3 + .. + B_9X_9 \qquad (1)$$

Of which:

P(Y=1) = P_0: The probability of SMEs' loan access.

P(Y = 0) = 1 - P_0: The probability of SMEs did not have loan access.

X*i*: Independent variables (*i*: from 1 to 11); Ln: Log of base *e* (*e* = 2,714).

Odds coefficient (O_0):

$$O_0 = \frac{P_0}{1-P_0} = \frac{P(\text{Access to loans})}{P(\text{No access to loans})}$$ (O_0: Odds Coefficient)

Substitute O_0 into the equation (1):

$$LnO_0 = B_0 + B_1X_1 + .. + B_9X_9 \qquad (2)$$

The Odds log is a linear function with the independent variables X*i* (Cox, 1958).

Equation (2) has the form of a Logit function, estimating the regression coefficients by the Maximum Likelihood (ML) method.

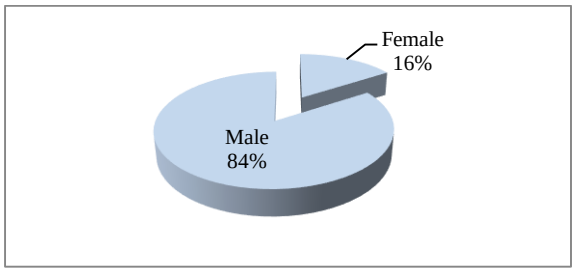
Data collection and processing

We conducted a survey of 350 observations in Ho Chi Minh City. All respondents were identified as business owners or Board of Directors, with convenient stratified sampling method, conducted from March 2018 to March 2019. After data processing, 320 observations were ensured for data analysis. All data processing was carried out based on SPSS version 21.0 software. Data were collected through direct interviews with detailed questionnaires to test the research model and hypotheses.

RESULT

Describe the characteristics of the survey object

Gender and marital status: In 320 surveyed enterprises, the majority of business owners are male (84%). The marital status of the business owner is married to a male (78%).



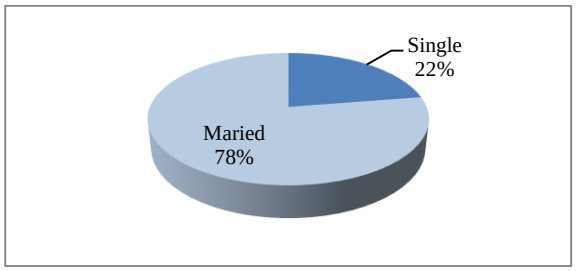


Fig.e 2: Gender of head of household (%) **Fig. 3:** Marital status (%)

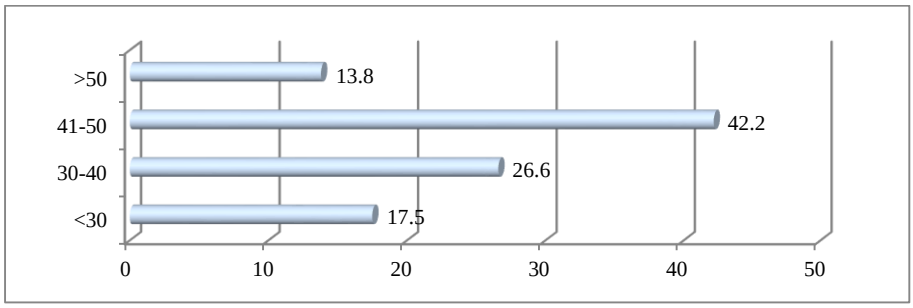


Fig. 4: Age of business owner (Years, %)

Business owners are mainly aged 41–50 (42%).

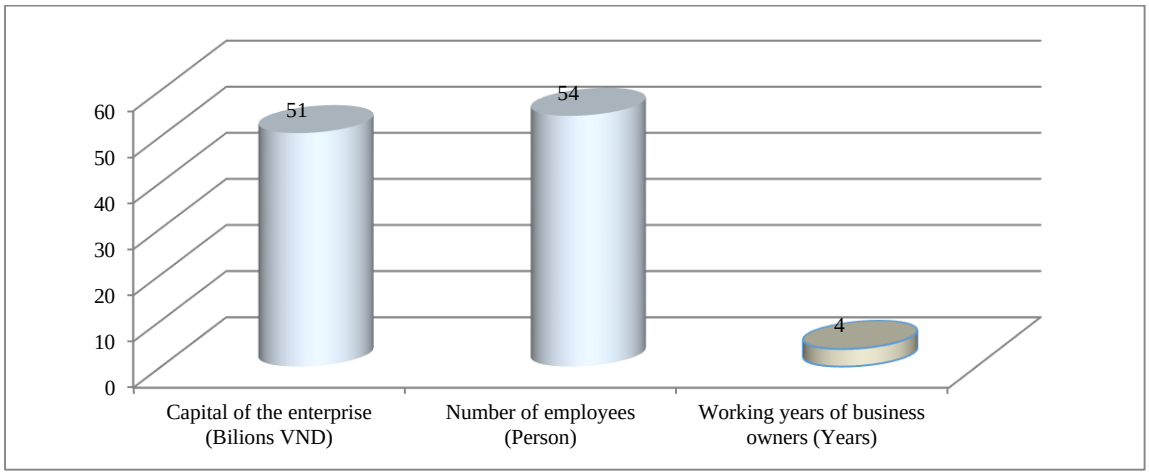


Fig. 5: Average scale of capital

Fig. 5 shows the capital scale is 51 billions VND; the scale of labor, 54 people and number of years of business operation, 4 years.

Regression results

Table 2. Variables in the equation

	B	S.E.	Wald	Sig.	Exp(B)	95% C.I.for EXP(B)	
						Lower	Upper
X1	3.237	0.973	11.075	0.001	25.460	3.783	171.326
X2	1.926	0.911	4.471	0.034	6.859	1.151	40.873
X3	1.044	0.366	8.139	0.004	2.840	1.386	5.816
X4	0.161	0.042	14.713	0.000	1.175	1.082	1.275
X5	0.549	0.194	7.979	0.005	1.732	1.183	2.535
X6	9.171	2.411	14.467	0.000	9613.043	85.217	1084416.95
X7	-1.036	0.342	9.168	0.002	0.355	0.181	0.694
X8	0.002	0.001	7.845	0.005	1.002	1.001	1.003
X9	-2.017	0.706	8.171	0.004	0.133	0.033	0.530
Constant	-28.531	7.671	13.835	0.000	0.000		
R^2 Nagelkerke	0.908						
Omnibus Tests	0.000						

Wald's test shows that all variables have Sig. ≤ 0.05. The sign of the regression coefficients is consistent with the hypothesis. R^2 Nagelkerke = 0.908, so 90,8% of the change in the dependent variable is explained by the independent variables of the model. Omnibus testing with Sig. ≤ 0.05, overall, the independent variables are linearly correlated with the dependent variable. Thus, the independent variables that have a statistically significant impact on the Y variable "Loan access" include: X1, X2, X3, X4, X5, X6, X7, X8, and X9.

Table 3. Level of impact of factors affecting loan access

				Initial probability P_0 = 10%	
	B	e^B	Pi (%)	Probability change (Absolute value)	Position
X1	3.237	25.46	73.88	63.88	2
X2	1.926	6.859	43.25	33.25	3
X3	1.044	2.84	23.99	13.99	4
X4	0.161	1.175	11.55	1.55	8
X5	0.549	1.732	16.14	6.14	7
X6	9.171	9613.043	99.91	89.91	1
X7	-1.036	0.355	3.79	6.27	6
X8	0.002	1.002	10.02	0.02	9
X9	-2.017	0.133	1.46	7.85	5

Note: How to calculate P*i* in Appendix.

In Table 3, the order of impact on "Loan access" is strongest to lowest: X6 (Social capital); X1 (Qualification of owner); X2 (Gender of the business owner); X3 (Age of the business); X9 (Business risk); X7 (Information asymmetry); X5 (Sale growth); X4 (Return on sale); and X8 (Collateral security).

Table 4. Hypothetical results

Hypothesis	Impact			Estimate	S.E.	Sig.	Decision
H1	Y	<---	X1	3.237	0.973	0.001	Fit
H2	Y	<---	X2	1.926	0.911	0.034	Fit
H3	Y	<---	X3	1.044	0.366	0.004	Fit
H4	Y	<---	X4	0.161	0.042	0.000	Fit
H5	Y	<---	X5	0.549	0.194	0.005	Fit
H6	Y	<---	X6	9.171	2.411	0.000	Fit
H7	Y	<---	X7	-1.036	0.342	0.002	Fit
H8	Y	<---	X8	0.002	0.001	0.005	Fit
H9	Y	<---	X9	-2.017	0.706	0.004	Fit

The results presented in Table 4 show that: All hypotheses are accepted at a confidence level of over 95%.

Predicted scenario for a change of accessing to loans

The model's regression equation:

LogOdds = -28.531 + 3.273X1 + 1.926X2 + 1.044X3 + 0.161X4 + 0.549X5 + 9.171X6-1.036X7 + 0.002X8 - 2.017X9 (3)

Table 5. Statistical value of variables and scenarios

	Minimum	Maximum	SCE1	SCE2
X1	1	4	1	4
X2	0	1	0	1
X3	5	10	5	10
X4	2	70	2	70
X5	5	61	5	61
X6	0	1	0	1
X7	1	5	5	1
X8	150	9000	150	9000
X9	1	5	5	1

Scenario 1 (SCE1): X*i* are independent variables with the lowest values according to the theoretical model expectations.

Scenario 2 (SCE2): X*i* are independent variables with the highest values according to theoretical model expectations.

Table 6. Forecast with scenario of impacting factors

No	Variables	Regression coefficient (B)	Values of variables	
			SCE 1	SCE 2
1	X1	1.859	1	4
2	X2	1.534	0	1
3	X3	1.05	5	10
4	X4	0.026	2	70
5	X5	0.369	5	61
6	X6	5.059	0	1
7	X7	-1.054	5	1
9	X8	0.001	150	9000
10	X9	-1.619	5	1
	Constant	-17.74		
	logOdds		-15.763	85.243
	$e^{logOdds}$		-410.486	1.05E+37
	1+elogOdds		12934.3	1.05E+37
	* E(Y/Xi): Probability that Y = 1 occurs is when the independent variable X has a specific value X*i* (%).		0	100

See Appendix: * How to calculate E(Y/Xi).

Substitute the **SCE1** values into equation (3), resulting in LogOdds. If the SME has the following conditions, this SME has a probability of "Loan access" of 0%.

X1 = 1 (Qualification of owner); X2 = 0 (Gender of the business owner); X3 = 5 (Age of the business); X4 = 2 (Return on sale); X5 = 5 (Sale growth); X6 = 0 (Social capital); X7 = 5 (Information asymmetry); X8 = 150 (Collateral security); and X9 = 5 (Business risk).

Substitute the **SCE2** values into equation (3), resulting in LogOdds. If the SME has the following conditions, this SME has a probability of "Loan access" of 100%.

X1 = 4 (Qualification of owner); X2 = 1 (Gender of the business owner); X3 = 10 (Age of the business); X4 = 70 (Return on sale); X5 = 61 (Sale growth); X6 = 1 (Social capital); X7 = 1 (Information asymmetry); X8 = 9000 (Collateral security); and X9 = 1 (Business risk).

DISCUSSION AND POCY IMPLICATIONS

Firstly, the study has identified three groups with nine factors affecting access to bank loans: (i) Characteristics of business owners; (ii) Enterprise characteristics; (iii) Business environment.

The group of factors "Characteristics of business owners" includes: Qualification of the business owner, Gender of the business owner. This result is similar to the results of Erdogan's study on SMEs in Turkey and Uganda by Erdogan (2018) and Buyinza *et al.* (2018).

Group of factors "Enterprise characteristics" includes: Age of the business, Return on sale, and Sale growth. This result is similar to the research results on SMEs in Sri Lanka by Gamage (2013).

Group of factors "Business environment" includes: Social capital; Information asymmetry; Collateral security; and Business risk. This result is similar to the research results on SMEs in Kenya by Mutinda *et al.* (2019) and in Ethiopia by Meressa (2020).

Second, the study determined the level of impact of each factor from strong to weak levels: Social capital; Qualification of business owner; Gender of the business owner; Age of the business; Business risk; Information asymmetry; Sale growth; Return on sale; and Collateral security.

This result implies that, in order to improve access to bank loans, SMEs need to pay attention to: (i) "Characteristics of business owners": Business owners and managers should pay attention to participating in short-term training programs organized by international organizations and the Government on leadership skills, business strategic planning, approach skills and information technology application in management; (ii) "Business characteristics": Paying attention to enhancing the value of enterprises' brand names, diversifying business products and services associated with industries and products that are encouraged by government programs to expand businesses; and (iii) "Business environment": Enterprises should pay attention to join associations and social organizations in order to improve the image of enterprises and increase their credit score in relation to the system of commercial banks. To overcome the difficulty of lack of collateral security and information asymmetry, banks can lend along the supply chain based on the reputation and risk level of a central agent in the chain.

CONCLUSIONS AND RESEARCH LIMITATIONS

The present study aims to expand the theoretical framework and provide evidence in empirical results on loan access with evidence from Ho Chi Minh City (HCMC) in Vietnam. The findings highlight the strong role of factors influencing loan access through Binary Logistic regression analysis model.

The study has certain limitations. The survey subjects were only taken from HCMC in Vietnam which limits the generalizability of the study. Future research should examine different provinces and regions in Vietnam and make comparisons to improve the generalizability of the findings. Moreover, this study only considers nine factors affecting on loan access, there are other factors that influence this study has not mentioned.

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PHỤ LỤC

Calculate P*i*:

Assuming the initial probability of a household decides to participate cooperative is (P_0), the probability that this household will be P*i* due to the effect of the variable X*i*. According to Agresti (2007), P*i* is defined as follows:

e^{Bi}: Impact coefficient of X*i*

Predicted scenario for a change of poor households:

According to Agresti (2007), the predictive form of the model:

$$P_i = \frac{P_0 \times e^{B_i}}{1 - P_0(1 - e^{B_i})}$$

$$E(Y / Xi) = \frac{e^{LnOdds}}{1 + e^{LnOdds}}$$

E (Y/X*i*): The probability that Y = 1 occurs when the independent variable X has a specific value X*i*

$$LnOdds = B_0 + B_1X_1 + B_2X_2 + B_3X_3 + .. + B_9X_9$$

$$E(Y / Xi) = \frac{e^{B0+B1X1+B2X2+B3X3+..+B9X9}}{1 + e^{B0+B1X1+B2X2+B3X3+..+B9X}}$$

Scale (X9): Business Risk

RIST1	There is competition from large enterprises and SMEs
RIST2	Most business expansion activities of SMEs are considered risky
RIST3	New technology favors SMEs less than large enterprises
RIST4	Funding for business expansion is inadequate in most cases
RIST5	Price volatility affects negatively profitability in most cases

Scale (X7): Information Asymmetry

ASY1	There are hidden fees on loans
ASY2	There are complicated application procedures and restrictive rules for specific credit purposes that discourage borrowing
ASY3	It is really difficult to comply with the credit conditions related to the provision of financial information of the business
ASY4	It is difficult to assess the cost of credit due to unreliable financial information
ASY5	It is not easy to distinguish between a risk and a safe project

Source: Mutinda *et al.* (2019)