

# Financial Literacy, Asymmetric Information, and Credit Accessibility: Case Study of SMEs in the Lao PDR

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## Abstract

This study aims to investigate the impact of financial literacy, reduction in asymmetric information and credit access for SMEs in Lao PDR. The questionnaire used to survey the financial literacy is the combination of financial knowledge, financial behavior, financial attitude, and some advanced financial concepts. Besides that, to assess the level of asymmetric information, this study uses the satisfaction of both lender and borrower about the information that provided and received from both parties. The methodology used in this study is binary logistic regression and the SMEs owners who running their business in Vientiane were used as samples. The results reveal positive and significant relationship between financial literacy, reduction in asymmetric information and credit access for SMEs. Furthermore, we found that education level is positive and significantly related to financial literacy. Higher financial literacy then lowers the level of asymmetric information which in turn affects the credit access of SMEs.

**Keywords:** Asymmetric Information, Credit Access, Financial Literacy, Lao PDR, Small and Medium Enterprise

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# ทักษะทางการเงิน, ความไม่สมมาตรของข้อมูลข่าวสาร, และการเข้าถึงสินเชื่อ: กรณีศึกษาจาก SMEs ของ สาธารณรัฐประชาธิปไตยประชาชนลาว

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## บทคัดย่อ

การศึกษานี้มุ่งที่จะศึกษาผลกระทบของความรู้ทางการเงิน การลดความไม่สมมาตรของข้อมูลข่าวสาร และการเข้าถึงสินเชื่อสำหรับ SMEs ใน สปป. ลาว แบบสอบถามที่ใช้ในการสำรวจทักษะทางการเงิน เป็นการผสมผสานระหว่างความรู้ทางการเงิน พฤติกรรมทางการเงิน ทักษะคิดทางการเงิน และแนวคิดทางการเงินขั้นสูง นอกจากนี้ เพื่อประเมินระดับความไม่สมมาตรของข้อมูลข่าวสาร การศึกษานี้ใช้ความพึงพอใจของทั้งคู่ให้กับและผู้ที่ยืมที่มีต่อข้อมูลที่ให้และที่ได้รับจากทั้งสองฝ่าย วิธีที่ใช้ในการศึกษาคือ การถดถอยลอจิสติกส์แบบไบนารี และกลุ่มตัวอย่างเป็นเจ้าของ SMEs ที่มีธุรกิจในเวียงจันทน์ ผลการศึกษาแสดงให้เห็นความสัมพันธ์ที่เป็นบวกและมีนัยสำคัญระหว่างทักษะทางการเงิน การลดความไม่สมมาตรของข้อมูลข่าวสาร และการเข้าถึงสินเชื่อสำหรับ SMEs มีผลในเชิงบวกและมีนัยสำคัญ นอกจากนี้ ผลการศึกษายังพบว่าระดับการศึกษาเป็นปัจจัยหนึ่งที่ส่งผลบวกอย่างมีนัยสำคัญต่อทักษะทางการเงิน ซึ่งทักษะทางการเงินที่สูงขึ้น ทำให้ระดับความไม่สมมาตรของข้อมูลข่าวสารลดลง และส่งผลต่อการเข้าถึงสินเชื่อของ SMEs

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## 1. Introduction (บทนำ)

Small and Medium Enterprise (SMEs) is a fundamental part of economic growth worldwide, ensuring sustainable growth, job creation, reducing income inequality, poverty reduction and highly conducive to economic growth in the Lao PDR. In Asia nation, SMEs are the economic gearing which accounted for 98% of all business, 66% of labor force and contributed 38% of total gross domestic product on average during 2007-2012 and this contribution can be increase in the future (Yoshino & Farhad, 2016). World bank (2017) indicates that SMEs in the Lao PDR approximately accounted for more than 98% of total registered firm and 81% of total job creation but it is estimated that SMEs contribute only 16% of GDP.

Due to their significant contribution to economic growth, various governments and the government of Laos has adopted many action plans that aim to support SME competitiveness, make sound environment for SMEs especially on access to external credit (Onphanhdala & Suruga, 2010; Vixathep, 2014; Yoshino & Farhad, 2016). However, many studies found that SMEs both in developed and developing countries still confront with many obstacles that hindrance their potential growth and access to finance is one and place as top five major obstacles on their growth (Asian Development Bank, 2014; Kyophilavong, 2008; Mueller, 2012; Nguyen, 2014). In obtaining external credit, SMEs depend on informal lender who normally charge higher interest rate and this higher rate discourage them to take loan (Tong, 2013).

According to Asian Development Bank report, the proportion of SME loan portfolio in developing member countries of the ADB accounted only 18.7 % of total bank loan on average in 2014 and there are some decreasing trend in formal lending loan to SMEs in developing member countries (Asian Development Bank, 2015).

Given the important role of SMEs in overall economic and the acknowledgment of their problem, various studies have been done to investigate the factor affected SME credit accessibility in any aspects. Some evidences reveal that limited access to finance can be occurred if there are a present of asymmetric information between lender and borrower, unequally information available for two parties lead to adverse selection and moral hazard problem (Berger & Scott, 2006; Fletschner, 2009; Moro, Fink, & Maresch, 2015; Motta, 2016; Stiglitz & Weiss, 1981). Moreover, the problem faced by SMEs when raising external finance is due to their limitation on owner characteristic, firm characteristic, creditworthiness and collateral, some studies indicate that financial literacy is a major variable that affect the financial

decision and higher level of financial literacy higher participate in financial service (Cole, Sampson, & Zia, 2009; Nkundabanyanga, Kasozi, Nalukenge, Tauringana, 2014; Wanjiku & Muturi, 2017).

Like any emerging countries, SMEs in Laos are mean to job creation, poverty reduction and mainly to economic development. However, consistently with other SMEs worldwide, SMEs in Laos are also confronting with many obstacles especially financial access (World bank, 2012). Bank of Laos report that, in 2016 only 20% of total loan goes to SMEs and credit that provided to SMEs by commercial bank mostly short-term period and it's also found that SMEs who got credit from commercial bank for long term investment (fixed asset) have declined by 5% compared to 2012 and this figure is lower the average percentage for other countries in the region (World bank, 2017).

Despite many studies have been done on SMEs credit access constrain, but few studied have addressed the problem of financial literacy, asymmetric information, and credit access in Laos. So, this work is to investigate the impact of financial literacy and reduction in asymmetric information on credit access of SMEs in the Lao PDR. Additionally, this study also identified the impact of lending conditions such as pledging of personal asset and other fix assets as collateral when those require for bank loan.

## **2. Literature Review (บททบทวรรณกรรม)**

### **2.1 Financial literacy**

Financial literacy is an ability to manage financial in any aspects, a person who literate in finance is one who proficiency of financial principles and lead to making proper financial choices that make positive consequences on financial well-being of an individuals. According to the Organization for Economic Cooperation Development (OECD, 2011) financial literacy can be defined as "A combination of awareness, knowledge, skill, attitude, and behavior that necessary to make sound financial decisions and ultimately achieve individual financial wellbeing."

Ramakrishnan (2012) define a financial literacy as a capability to know, productively use of financial resources to improve economic wellbeing, more financial literate person more poverty alleviation, community development and empowerment of proper financial judgment, in case

of financial literacy and financial inclusion; financial literacy is a ladder toward financial inclusion, financial literate person not only access to financial services but also creates an environments to raise a desired financial behavior.

Pearl and Eileen (2014) describes the financial literacy for business owner as the ability to understand and use of financial statements to generate key financial ratios and manage a business. Fernandes (2015) indicates that financial literacy for business owner is slightly difference from individual literates, the main distinction related with the understanding of information provided by financial statements. He pointed out that financial literacy for business owner should contemplate not only for the use of financial statements, but also financial behavior which concerned of the financial information and financial preference in the moment of making financial management.

In general, the survey on financial literacy has been conducted in the overall level, there exist very few surveys that provide information on financial literacy of business owner and financial decision making. Wachira and Kihiu (2012) studied the impact of financial literacy on access to financial services in Kenya, by using the 2009 National Financial Access survey data and multinomial logit approach to explain the access pattern and found that, financial literacy is positively correlate with access to financial service but not significant, it's also found that the respondents understood that access to informal financial services are cheaper than formal sources.

The result reveal that perception of household in Kenya on interest rate charge are incorrect and lower financial literate in Kenya, consort with van Rooij, Lusardi, and Alessie (2011) who studied the impact of financial literacy and stock market participation and found that few respondents understood the concept of advance financial like a complex of financial products, many of respondents do not understand the concept of those financial products which consistent with the report of OECD who pointed out that financial literacy remains low in most countries (OECD, 2017). Even through, mounting evidences suggest that financial literacy is a major variable that affect individual financial decision. Lusardi (2008) studied the household saving behavior in the role of financial literacy, information, and financial education program by using the model of consumption/saving decision to illustrate the rational to consume and saving over the lifetime, the result indicates that one-third of respondents do not plan for retirement, those who are more financial literates more likely to thought about their retirement

and very few of them rely on the help of experts or financial advisors. In studied of the impact of financial knowledge on individual behavior, Cole, Sampson, and Zia (2011) show that financial literacy is strongly persuades financial behavior, higher level of financial literacy higher used of bank services (Aussi, Erwin, & Robert, 2016). Beck (2007) explain that if people do not familiar with product, they will not demand them. People with low level of financial capability are likely to transact with higher cost when obtaining financial services especially high cost of borrowing (Lusardi & Tufano, 2009).

Many researchers suggest that the likelihood of participation in financial products increased when financial literacy increase. Lubanga (2016) studied the relationship between financial literacy and access to credit among youth in rural areas, using the questionnaire survey and descriptive statistic and multilinear regression to assess the relationship between financial literacy and credit access, the result found that financial literacy and access to credit are positively correlated and significant, when the respondents can make sound financial management like pay their bill on time, control their spending, plan for their investment and making well with debt empower them to meet their financial credit easily and this studied also reveal that access to credit was limited by lack of collateral. To investigate the impact of financial literacy on loan repayment behavior, Wanjiku and Muturi (2017) used the financial literacy such as financial negotiation literacy, debt management literacy, budgeting literacy and bookkeeping literacy as independence variables whereas timely loan repayment were used as dependence variable and binary logistic model is formulated to deal with probability of a respondent delaying in loan repayment. The result concludes that there are positively correlated and significant of all independents variables. Individuals whose financial literate can make proper consideration of the available of financial products that assist to create wealth and avoid chances of failure to pay loans and enhance their creditworthiness that further increase a chance of access to credit in the future, this result consistent with (Nkundabanyanga et al., 2014) who convey that there are positive and significant between financial literacy and formal credit access. Wise (2013) found that increase in financial literacy led to more production of financial tools (financial statement and financial ratios) which in turn increase the likelihood of loan repayment and lower probability new venture failure and further positive effects on new credit appraisal (Nyamboga, Nyamweya, Abdi, Njeru, & George, 2014; Ripain, Amirul, & Mail, 2017). Mutegi, Njeru, and Ongesa (2015) found that business owners/manager who are financially literate tend to use and analyses the data from financial statements and work on the information to make decision related to their firm.

The literatures demonstrate that individual who are not well educated less likely to make sound financial decisions. In general, if we have more information about different sources of fund meaning that we have more chance of success in loan requirement. To summarize this issue, following hypothesis state that:

*H<sub>1</sub>: there are positive and significant relationship between financial literacy and credit access.*

Financial literacy is rapidly recognized as a main skill and very useful in the modern complex of financial landscape. Regarding to a problem that there are not universal accepted about the definition of financial literacy, so the method uses to measure financial literacy also vary and lack of uniformity. According to the questionnaire and guidance notes for conducting an internationally comparable survey of financial literacy (OECD, 2011), survey method were used to test the level of financial literacy, their questionnaire used to evaluate the financial knowledge cover a mixture of attitudes and knowledge as well as capturing behavior of individual; the result found that all of these variables affect to the financial being and financial health. Moreover many studies also found that the demographic characteristics is a factor effects on financial literacy. Lusardi and Mitchell (2011) suggest that, to design a question in financial literacy assessment, the researcher must ensure that their wording of the questions should be simply to understand, but it must contain of basic financial concept, it had to relate to day-to-day financial decision and could be differentiate between individual financial knowledge level.

To assess the level of financial education in Asia, Yoshino, Morgan, and Wignaraja (2015) used the same questionnaires and methodologies for all participants countries, the overall question used in a survey concentrate on three areas of financial aspects like the understanding of interest compounding rate, impact of inflation which directly have an effect on day to day purchasing power and the understanding about risk diversification and the result reveals that financial education program and financial literacy still lower in the region.

However, complexity in financial sector and limitation of empirical assessment on financial capability in Asia, the methodologies and results of existed studies are not consistent because of very few numbers of Asian countries had been survey. Like individuals' financial literacy, there are not concrete measurement in the context of SMEs financial literacy. Musie (2016) using the borrowing or financing literacy, budgeting literacy and investing literacy in the measurement of financial literacy for SMEs owner in Mpumalanga province (South Africa) and

the result shows the positive relationship between the use of those financial concepts and economic success of SMEs. Nyamboga et al. (2014) used the bookkeeping skill, credit management and budgeting skills as the key factors in an assessment of financial literacy on loan repayment by SMEs. Ripain et al. (2017) adopt ANZ framework which divides keys knowledge for business owner into four categories: mathematical literacy and standard literacy, financial understanding, financial competence, and financial responsibility to investigate the level of financial literacy among the participants of the business owner in Malaysia.

In summarize of previously literatures review. Financial literacy can have different dimensions, it's necessarily to made sure that the question used in the study process is cover the commonly accepted of three areas of concern such as: basic financial knowledge, attitude and behavior. Despite there are the same concept of concern, but each questionnaire will be differences through its specific detail of interest. So that, questionnaire used in this research will base on three basic concepts and due to the intention of this research that we focus on SMEs, this study will add some advanced financial questions which focus on the consequences of business finance.

## **2.2 Asymmetric information**

Asymmetric information or information failure is a situation that one party can get enough relevant information while the opponent cannot or a chance to achieve the information is less than the one has. It is indicated that an imbalance in access to information induces a problem in financial market on two ways: ex-ante and ex-post problems (Cheng, Ya, & Zhifei, 2016; Hainz, 2011). The ex-ante problem created by an inequality of information before transaction occurred called adverse selection. Adverse selection occurs when the borrower has more relevant information about their project risk or benefit than financial institutions. This means the borrower has relative information advantage whereas financial institution is relative disadvantage position. Whenever this situation has occurred, due to the disadvantage of the principal part, most of the lender would probably end up with decide not to make any loans even they are some good opportunities exist in the investment. The ex-post problem is created by asymmetric information after transaction occur called moral hazard. Moral hazard is a situation that one party (borrower) gets into any activities that are undesirable or involved in risky investment that increase a likelihood of losing principal. This problem arises when two parties have inadequate information about each other, in this case the borrower does not provide sufficient information to its lender. When the lender parties are unable to obtain



sufficient information about their clients, to deal with this problem and make sure that there is no unprofitable lending in their portfolios, banking or financial institutions reduce lending to the borrower who do not provide adequate information.

The presence of adverse selection and moral hazard not only make many numbers of investors who have a good potential of benefit not achieved in loans requirement, but also causes to the banks and other financial institutions to be reluctant to lend to the borrower who get productive investment opportunities. In financial market, the problem of asymmetric information between lender and borrower has been recognized as a major obstacle in credit access. Moro et al. (2015) examined the impact of reducing in asymmetric information and credit access for small and medium enterprise, ordinary least square was employed and the result found that reduction in asymmetric information is associated with more credit, individuals or borrower who provides a good quality, quantity, completeness and timely information required by bank access more finance, this result is consistent with (Bushee & Leuz, 2005; Hainz, 2011; Zecchini & Ventura, 2009). Kasekende and Opondo (2003) studied of the financing pattern of SMEs in Uganda and found that sufficient financial information is important for bank and borrower; higher cost of debt associated with information disclosed, higher volatility in asymmetric information hinders the lender parties to calculate the risk and hesitated to make any loan. Whenever the bank is unable to obtain any information, they need to measure SMEs' financial position, opportunities to access to formal finance is hampered. Higher quality of information disclosed by SMEs higher access to formal credit (Mary, Venancio, Nixon, & Stephen, 2014). Mounting evidence on credit market indicates that, to compensate inequality information problem, before the lender parties provide credit to their clients, they need to guarantee the feasibility of their loan applicants and seeing financial statement is comprehensive tools to know applicant's financial position. Standardize and completeness financial statements increases probability of access to credit, extensiveness financial statements and information provided by financial statements is related to credit access by alleviate in asymmetric information (Caneghem & Campenhout, 2012).

Mary et al. (2014) found that there is positively and significant between financial statements and access to credit and significant but negative relationship between reduction in asymmetric information and credit access. Elsas and Krahnen (1998) support that exhaustive and timely information obtained by banks increase a chance of granting more credit. Previous studies on lending connection suggest that stronger relationship make it more difficult for borrower to

hide their undesired information and simply for the lender parties to get more extra information about their clients and its credible enough to reduce a moral hazard problem (Cheng et al., 2016). Petersen and Rajan (1994) indicates that good relationship with a credit provider increases a chance of access to credit, but smaller effect on cost of borrowing. In study of the determinant of credit approval for new SMEs, Fatoki and Odeyemi (2010) found that networking which represented by relationship with bank and business information represented by the existence of a business plan are significant determinant of credit approve.

The empirical evidence indicate that, problem in credit market occurred by the imperfect of information availability to economic transaction. This study focuses on how reduction in asymmetric information affects SMEs financing in Laos, so the following hypothesis state that:

*H<sub>2</sub>: Reduction in asymmetric information is positive and significant on credit access.*

A present of asymmetric information is inherent and subjective, to gauge the level of this imbalance information is depended on individual aspects and there are not universal accepted on the measurement of asymmetric information. Moro and Fink (2013) uses a relationship between financial institutions and borrower as a proxy's measurement of asymmetric information. A relationship is assumed to increase the ability of banks to monitor, gather more information about their clients and evaluates the borrower riskiness, stronger relationship makes is possible for financial institutions to recognize the present of adverse selection and moral hazard. The level of asymmetric information is reduced by lending relationship which in turn increase the credit availability for borrower (Cheng et al., 2016; Petersen & Rajan, 1994). Moro et al. (2015) used the quality, quantity, completeness, and timeliness of information obtain by loan managers as proxies of reduction in the present of asymmetric information. Throughout literatures above, it is incredible to exactly measure the level of asymmetric information, the level of satisfaction depends on the willingness to provide any information by SMEs. So, this study will base on the assumption that reduction in the magnitude of asymmetric information occur by exhaustive information provided by SMEs. To construct the questionnaire of asymmetric information, it will cover the range of lending relationship, adequate and timeliness of information. Higher satisfaction on information prepared by borrower and lender lower the level of asymmetric information and more adequate and timely information greater decrease the level of asymmetric information level.

### 2.3 The relationship between financial literacy and asymmetric information

Depend on the literature above, both financial literacy and asymmetric information affected on credit access. Some studies proved that, financial literacy mitigates the problem of asymmetric information by embed a good financial practices such as regularly record, timely, effectively use and provide the accurate financial information to stakeholder especially for external lender, adequate and timely information provided by SMEs enable the lenders to evaluate the reliability of SMEs when making lending decision (Adomako, Danso, & Damoah, 2015; Hussain, Salia, & Karim, 2018). Financial literacy is an essential skill that enhances the understanding of financial statement, assists in the preparation and usable of financial information that mitigate the level of asymmetric information and in turn increase the possibility of access to credit.

## 3. Research Methodology (ระเบียบวิธีวิจัย)

### 3.1 Questionnaire construction

#### 3.1.1 Financial literacy

The questionnaires used in study of Financial Literacy level will bases on the guideline by Atkinson and Messy (2012) which covered financial knowledge, attitude and behavior. Furthermore, to assess the financial literacy level of business owner, this study will add some questions that focus on the components of business finance such as the understanding of information provided by financial statements, the understanding of sources of finance that available for starting business and its operation, behavior and preference toward the sources of finance. The details of the questionnaire are shown in Table 1.

**Table 1: Key Component of Financial Literacy Included in Questionnaire**

Basic financial knowledge	key financial concept and ability to apply numeracy skills in financial situations. The detail of questions will cover the concept of simple and compound interest rate, inflation, risk, and return
Advanced financial knowledge	understanding of information provided by financial statements and sources of finance
Financial behavior	focus on a wide range of behavior that enhance or reduce financial wellbeing as well as financial access
Financial attitude	attitude towards moneys and particularly towards planning for future as well as attitude towards the risk due to the investment in uncertainly outcome

### 3.1.2 Asymmetric information

To study the existing of asymmetric information is to measure the opinion or attitude of someone. Likert-scale questionnaires were use and questionnaire designed directly investigate whether and how reduction in asymmetric information affect credit access for SMEs (Mary et al., 2014; Moro et al., 2015). To assess this problem, SMEs owner were asked about their satisfaction on the information they receive and information they provide when seeking for external finance. The questionnaire will cover the range of lending relationship, adequate and frequency of disclosed information by their firm. Higher score or higher satisfaction on information sharing from both lender and borrower lower the level of asymmetric information.

### 3.2 Data collection procedure

The target population of this study are SMEs owner in Laos and their criteria definition will base on the Prime Minister Decree No.42. Registered SME in Vientiane was chosen, because of the large number of SMEs in the city will make it easier to approach the target respondents (according to the data from Small and Medium Enterprise Promotion and Development Office, there are 6,848 SMEs in Vientiane) accounted for nearly 25% of total SMEs national wide. According to the data from the department of SMEs promotion, the nationwide SMEs structure in 2018 based on three sector that include with: production industry, trade and services, accounting for 14.96%, 49.78% and 35.26%, respectively. So that, to gather a representative sample of the entire population. The selected respondents are business owner who is running their business base on three sectors as indicated above. The total number of sample size is 81 and fall into: 32 from services sector, 27 from trade sector, 22 from manufacturer sector.

### 3.3. Data transform

**Table 2: Score for Overall Financial Literacy and Reduction in Asymmetric Information**

Category	Section in questionnaire	Question No.	Score	Total	
				Maximum	Minimum
Financial knowledge	B	9 to 21	1 for correct response. 0 for other cases	13	0
Financial behavior	C	22 to 27	1 for respondents who put themselves at 4 or 5 scales. 0 for other cases	6	0
Financial attitude	C	28 to 30	Adding together the responses from each of three questions and then dividing by three	5	1
Total score for overall level of financial literacy			Sum the three scores reported above for knowledge, behavior, and attitude	24	1
Reduction in asymmetric information	C	31 to 36	respondents' mean rank of the information included in the questionnaire on five Likert scale	5	1

### 3.4 Model specification for credit access

SMEs credit accessibility in this study is measured bases on the sources of finance available for them. Based on the knowledge of the researcher, the availably sources of credit in Laos are formal financing (borrowed from banks, microfinance institutions) and informal financing (borrowed from informal sources that include any of private money lender, friends/relative). This study is formulated by using the binary logistic model. Let access to credit (ATF) as a discrete choice variable which take the value of 1 if any firm has access to credit and 0 for any firm who has not access to any credit.

$$ATF = \begin{cases} 1 & \text{if firm } i \text{ has access to credit} \\ 0 & \text{if firm } i \text{ don't have access to any credit} \end{cases}$$

#### 4. Results (ผลการศึกษา)

##### 4.1 An overview of respondents' characteristic

**Table 3: Demographical Profiles of the Respondents**

	Demographical Variables	Frequency	Percentages
Gender	Male	39	48.1
	Female	42	51.9
Ages	18 - 25	5	6.2
	26 - 35	25	30.9
	36 - 45	18	22.2
	Over 45	33	40.7
Education	Primary School	1	1.2
	Secondary School	33	40.7
	Bachelor's Degree	43	53.1
	Master' Degree	4	4.9
Business Sector	Manufacturer (Food processing, timber products...)	22	27.2
	Trade (Wholesale, Retailor and Automobile repairs shop...)	27	33.3
	Services (Hotel and Restaurants...)	32	39.5
Years of its operation	Less than 1 year	6	7.4
	2 – 5 years	15	18.5
	6 – 10 years	30	37.0
	More than 10 years	30	37.0
Total asset	0 – 70.000.000 LAK	9	11.1
	70.000.001 – 250.000.000 LAK	19	23.5
	250.000.001 – 1.200.000.000 LAK	49	60.5
	More than 1.200.000.000 LAK	4	4.9
Number of employees	1 – 4 people	14	17.3
	5 – 9 people	62	76.5
	20 – 29 people	5	6.2
Annual income	1 – 100.000.000 LAK	16	19.8
	100.000.001 – 400.000.000 LAK	30	37.0
	400.000.001 – 1.200.000.000 LAK	35	43.2

The Table above show that 51.9% of respondents were female and 48.1 % male. The age group are distributed between the age of 18 and above 45 and the highest proportion of respondents represented in the age group above 45 account for 40.7 %, 30.9% for 25 – 35

and 22.2% for the age group between 26 – 35 years old. In term of education, 53.1% of respondents have completed bachelor's degree, 40.7% for secondary school and only 4.9% of the respondents who have completed master's degree. Due to this proportions, the second highest of respondents are represented in secondary level that fall under the category of low level of education which further affect the financial literacy knowledge. In term of the business sector, the highest proportion is service sector, trade and manufacture accounted for 39.5%, 33.3% and 27.2 % respectively. In term of their operation, most of the respondents running their business over five years. The highest proportion of respondents' total asset is fall under category three (250.000.001 – 1.200.000.000 LAK) account for 60.50%, the second highest is fall under category two (75.000.001 – 250.000.000 LAK) which account for 23.5%, and 11.1% for the respondents who has asset value between 0 – 70.000.000 LAK and 4.9% for other. In term of total number of its employees, they almost employ 5 – 9 people for running their business and account for 76.5%, 17.30% for 1 – 4 and 6.2% for 20 – 99 people. The interviewees were asked to place their annual income and the result found that, the highest proportion is 43.2% for income between 400.000.001 – 1.200.000.000 LAK, 37.0% for 100.000.001 – 400.000.000 LAK and 19.8% for earning between 1 – 100.000.000 LAK.

#### 4.2 Descriptive statistics

The descriptive statistics of main variables employed in this study are shown in Table 4.

**Table 4: Descriptive Statistics of Main Variables**

Variables	Mean	STD Deviation	Minimum	Maximum
Financial Knowledge	7.58	2.529	3	13
Financial Behavior	3.7531	1.1568	0	6
Financial Attitude	3.7005	0.6458	2	4.66
Financial Literacy	15.0338	3.7521	7.66	23.66
Reduction in Asymmetric Information	3.4601	0.4875	1.83	5

The average financial knowledge score of our respondents is 7.58 out of total 13, mean score of financial behavior is 3.7531 out of total 6, financial attitude is 3.7005 out of total 5 and the average financial literacy score of our respondents is 15.0338 out of total 24. In term of reduction in asymmetric information, average score is 3.4601 out of total 5. Among the major subcategory of financial literacy, the highest score is financial attitude, financial behavior and financial knowledge and account for 74.01%, 62.55%, and 58.31 % respectively. Depend on

the result above, financial behavior is supposedly the most significant to financial literacy, because financial behavior that refer to the ability to understand and normally applies the knowledge of financial concepts or information provided from financial statements to make any decision that related to their firm will increase the likelihood of loan repayment on time and also financial wellbeing.

### 4.3 The determinants of financial literacy

This study dawns the equation for factor that determine financial literacy as:

$$FL_i = \alpha_0 + \alpha_i X_i + \epsilon_i$$

where FL is financial literacy which computed by the combination of financial knowledge, financial behavior, and financial attitude of each respondent. The demographical characteristic factors such as gender, age, education, and income were used as a control variable to predict the level of FL.

**Table 5: Determinants of Financial Literacy**

Variables	Beta	Std.Error
Constant	12.376 <sup>***</sup>	0.755
Age	-0.662	0.421
Female	-0.663 <sup>*</sup>	0.350
Bachelor	1.258 <sup>***</sup>	0.229
Master	2.384 <sup>***</sup>	0.398
Less than 1.200	0.673 <sup>***</sup>	0.240

Note: \*\*\*, \*\*, and \* indicate the significant level at 0.01, 0.05, and 0.10, respectively.

Table 5 shows that, female is lower financial literate as comeare to male and the respondents who have comepleted bachelor and master degree are more financial literate as comeare to other who have complettd only primary school, given other factor constan the repondents who got bachelor and master degree will got more financial literacy score by 1.258 and 2.384, respectively as comeare to the base group and income has also positive and signifiacntly to the financial literacy level. Beside that, the repondents ages do not significant to the level of financial literacy.



#### 4.4 Effect of major subcategories of financial literacy on credit access

According to the results in Table 6, financial knowledge and financial behavior are positive but not significant for credit access. In the other hand, financial attitude is positive and significantly to credit access, the respondents who always plan for their financial goals, saving and spending, more likely to taking financial courses and make decision not only for their day to day but also for long term goals for their business will increase the likelihood of access to external credit by if one-point increase in financial attitude the odd ratio of having loan by 3.980 compare to other who does not plan towards financial matter.

**Table 6: Effect of Major Subcategories of Financial Literacy on Credit Access**

Variables	Beta	Exp(B)
Constant	-6.712	0.001 <sup>***</sup>
Financial Knowledge	0.165	1.179
Financial Behavior	0.250	1.284
Financial Attitude	1.381	3.980 <sup>***</sup>

Note: \*\*\*, \*\*, and \* indicate the significant level at 0.01, 0.05, and 0.10, respectively.

#### 4.5 Effect of financial literacy and reduction in asymmetric information on credit access

With regards to literature reviews, the demographical variables such as gender, education, business sector, total asset and annual income are also effects on credit access for SMEs in many countries. To deal with the problem of small sample size, backward Wald elimination method were used to select and remove some variables as follows:

**Table 7: Rank of Variables computed by Backward Elimination Method**

Variables	Score
Reduction in asymmetric information	20.854 <sup>***</sup>
Financial Literacy	17.803 <sup>***</sup>
Total Asset	16.611 <sup>***</sup>
Annual Income	16.019 <sup>***</sup>
Gender	3.226 <sup>*</sup>
Business Sector	2.201
Education	0.003

Note: \*\*\*, \*\*, and \* indicate the significant level at 0.01, 0.05, and 0.10, respectively.

The data from Table 7 reveals the significant highest score in reduction in asymmetric information, financial literacy, total asset, and annual income, respectively. On the other hand, gender, business sector, and education have lower score and not significant so eliminated by this study.

The effect of financial literacy, reduction in asymmetric information on credit access by SMEs are tested by the binary logistic regression model and the results are shown in Table 8.

**Table 8: Empirical Result by Binary Logistic Model**

Independents Variables	Beta	Exp(B)
Reduction in Asymmetric Information	2.978	19.647 <sup>**</sup>
Financial Literacy	0.280	1.322 <sup>**</sup>
Total asset less than 70 M (LAK)		
Over 70 M but under 250 M	4.203	66.890 <sup>**</sup>
Over 250 M but under 1,200 M	7.208	1,350.400 <sup>***</sup>
Over 1,200 M	25.825	0.000
Annual income between 1 – 100.000.000 LAK		
Annual income between 100.000.001 – 400.000.000 LAK	-3.043	0.048 <sup>**</sup>
Annual income between 400.000.001 – 1.200.000.000 LAK	-2.720	0.066 <sup>*</sup>
Constant	-17.234	0.000 <sup>***</sup>
Overall Correct	84%	

Note: \*\*\*, \*\*, and \* indicate the significant level at 0.01, 0.05, and 0.10, respectively.

The estimate result by binary logistic regression shows that, reduction in asymmetric information is positive and significant to credit access. Regarding to this variable that we used as a proxy measurement of asymmetric information, higher score lowers the level of asymmetric information, so we can interpret that when one-point increase in reduction in asymmetric information the odd ratio of access to credit by SMEs increase by 19.647. More and reliable of quality and quantity information that provided and received by both lender and borrower increase the likelihood of access to external credit. In addition, disclosed more and timely information about their financial positions can help the lender to evaluates their ability to repay the loan and produces the creditworthiness so increase the probability of credit access for SMEs.

In case of financial literacy variable, the result from Table above shows that there is positive and significant to credit access as expected. By given other variables constant, when one-point increase in financial literacy the odd ratio or probability of credit access will increase by 1.322. Imply that, the respondents who understand and properly apply various of financial skills that include not only basic skills but also the ability of makes and use of the information from other financial statements on their decision making, financial literacy enhance the individual to become self – sufficient that in turn increase the likelihood of access to credit.

For control variables, the total asset that viewed as collateral is significantly and has the expected sign, higher value of the collateral higher probability of access to credit. In fact, before provide credit to SMEs, financial institutions are incentives to collateral base lending because of collateral from the borrower are used as a protection of loan loss or credit default. In addition, annual income variable is varied depend on their own subgroup, as much as their annual income increase the likelihood of access to external credit decrease and it can assume that when their income increases, their retain earnings also increase that in turn lower the probability of rely on external sources of fund.

According to the result above, the analysis is supporting both of our hypothesis: when the respondents are financial literate the probability of access to external finance is increase and when both lender and borrower are provided and receive the quality and adequate information from each other the level of asymmetric information is reduced and in turn increase the likelihood of access to external finance.

#### **4.6 Effect of financial literacy on reduction in asymmetric information**

To find out this relationship, the OLS lease square are use and financial literacy is used as independent variable and reduction in asymmetric information is defined as dependent variable and the result found that:

**Table 9: Impact of Financial Literacy on Reduction in Asymmetric Information**

Variables	Beta	Std.Error
Constant	2.359 <sup>***</sup>	0.187
Financial Literacy	0.073 <sup>***</sup>	0.012

Note: \*\*\*, \*\*, and \* indicate the significant level at 0.01, 0.05, and 0.10, respectively.

The results reveal that financial literacy is positive and significant with reduction in asymmetric information, and we can show the equation as  $Asym = 2.359 + 0.073 \cdot FL$ , when one-point increase in financial literacy, the reduction in asymmetric information is increased by 0.073 or the magnitude of asymmetric information reduce by 0.073. this result supports our conceptual framework that higher level of financial literacy lowers the level of asymmetric information.

## 5. Conclusion and Recommendations (บทสรุปและข้อเสนอแนะ)

### 5.1 Conclusions

This study aims to investigate the impact of financial literacy, reduction in asymmetric information and credit access for SMEs in Lao PDR. The results show that female is lower financial literate as compared to the male, level of education and income is positive and significant to financial literacy and it is also found that there are positive and significant relationships between financial literacy, reduction in asymmetric information, and credit access for SMEs. Financial literate individuals who have capabilities with financial concept, ability to understand and apply various aspects of financial skills will increase the possibility of credit access. Higher satisfaction on information provided and received from lender and borrower will reduce the magnitude of asymmetric information which further increase the likelihood of credit access.

In addition, this study points out that financial literacy could reduce the level of asymmetric information. Individuals who have higher level of financial literacy with some basic and advance skills of financial statements and capability of understanding credit sources and knowledgeable on the benefit of information sharing for each party will help both lender and borrower with the problem of adverse and moral hazard selections and in turn increase the probability of credit access of their businesses.

## 5.2 Recommendations

The study suggests that to facilitate access to finance for SMEs, both lender and borrower must ensure that the information sharing between them must be reliable and completeness. If so, the level of asymmetric information will be reduced and further increase the possibility of credit access. Besides that, it would be more favorable if the authority can make systematic information that available and costless to them, because timely and adequate information sharing reduce the problem of adverse selection and moral hazard which in turn increase the likelihood of access to finance for SMEs. Moreover, to improve financial access of SMEs, the indirect way like enhancing the level of financial literacy should be one of concern. Financial literate does not only for individual who capable with numerical skill but also behavior and attitude, SME owner who literate in finance will understand and asses their financial needed, make sound decision for their business not only for day to day but also long-term goal and business performance which further improve their creditworthy and in turn increase the probability of access to credit. In addition, this study recommend that policy maker should design the program that include financial education for SME training or the financial education program in lower or high school should be conducted because if you are favorable or make a better financial decision when you were young, you will be able to be better when you are adult.

## 5.3 Limitation

Although this study got a desire result, but there will be some naturally limitation on study. The objective is to find out the representative result for overall nationwide, but since the sampling frame is only SMEs located in Vientiane and small sample size. So that, the result may bias due to the benefit or opportunity imbalance between SMEs owner who located in urban and rural areas. The rural once may face the shortage of training program that might be helpful for their business, and it is reasonable to believe that lower education in rural communities could be further reduce financial literacy.

Finally, this study is one side research that only analyze the data from the borrower or demand side. Thereby, to improve the result that helpful to improve the SMEs credit access, it would be better if the future research could be done from both supply and demand together.

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