

Re-Examining The Financial Literacy – SME Growth Nexus: Fresh Evidence from Causal Mediation Analysis

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Article Information:

Received: July 06, 2023, Accepted: August 01, 2023, Published: August 05, 2023

Abstract

The importance of SMEs to the growth of emerging economies cannot be overemphasized. SMEs remain an important source of employment and economic growth for most developing economies. However, it has been found that, most SMEs in developing countries are unable to survive even up to their fifth year of operation due to a multiplicity of factors including the level of financial literacy and risk attitude of SME owners. The current study aims to examine the effect of financial literacy on SME growth mediated by the risk attitude of SME owners. The study's data was collected from SME owners/managers in Ghana. 500 questionnaires were administered and out of the 432 retrieved, 400 were deemed useful for analysis using causal mediation. The study found a significantly positive association between financial literacy and SME growth in the main outcome model. Also, risk attitude was found to be positively related to financial literacy in the mediation model, whereas risk attitude further mediated the relationship between financial literacy and SME growth which demonstrates that risk attitude plays an intermediary role in the association between financial literacy and SME growth. Our results support the dual process theory of reasoning, according to which decisions made by entrepreneurs to improve the growth and sustainability of their businesses are influenced by two different systems of thought: the automatic unconscious system, which is based on their risk tolerance, and the intentional conscious system, which weighs numerous factors and models in light of their financial literacy.

Keywords: SME Growth, Financial Literacy, Risk Attitude, Causal Mediation Analysis, Ghana.

How to Cite:

Addo, S. D., Asante, J., Mensah, E. (2023). Re-Examining The Financial Literacy – SME Growth Nexus: Fresh Evidence from Causal Mediation Analysis. *International Journal of Business, Management, and Economics*, 4(3). 185 – 202. DOI: <https://doi.org/10.47747/ijbme.v4i3.1225>

1. Introduction

The importance of small and medium enterprises (SMEs) in most economies has been documented in prior literature. Because of their substantial contribution to economic growth and employment, SMEs are regarded as the foundation of most economies (Khan, 2022; Addo et al., 2022). According to the World Bank, SMEs significantly contribute to global economic growth and the creation of jobs. Also, they make up the majority of those who contribute to enterprises globally. SMEs play significant roles in Ghana's economic development and job creation. According to Amoah and Amoah (2018), SMEs account for almost 70% of Ghana's gross domestic product (GDP) and about 85% of the country's employment. They affect every sector of the economy, including the industrial, service, and agricultural ones.

Nonetheless, it has been noted that even though SMEs give several benefits for economic growth, they are not able to reach their full potential (Ackah & Vuvor, 2011; Khan, 2022), especially in the area of employment (Adomako et al., 2015). This is especially confirmed in many developing nations with high unemployment rates. For instance, SMEs in Ghana employ about 85% of the employment percentage in Ghana even though it faces so many challenges. This implies that with better conditions, SMEs are likely to do better and employ more to ease the high unemployment rates. Many factors have been attributed to this challenge and recommendations have been made to help reduce this challenge (Adomako et al., 2015; Buchdadi et al., 2020; Ye & Kulathunga, 2019). However, the problem is still persistent leading to high unemployment in many developing economies. In the World Bank's recent report, about 600 million jobs are needed to absorb the growing global workforce by 2030. SME growth and sustainability will aid in achieving this feat.

Financial literacy and its role in helping entrepreneurs make prudent financial decisions for the growth of their businesses have recently grown in importance (Potrich & Vieira, 2018). In developed and emerging countries, policymakers are increasingly paying attention to this field of study. Adomako et al. (2015) noted that the lack of financial management skills of SMEs is a major constraint to business success. Other prior studies have established the relevance of financial literacy in making sound financial decisions for business growth (Ye & Kulathunga, 2019; Buchdadi et al., 2020; Korkmaz et al., 2021).

Risk attitude recently has gained much recognition in academia. Several researchers are writing on the topic. In the area of SME development, scholars have been examining its effect on business growth and access to finance (Addo & Asantey, 2023; Buchdadi et al. 2020; Ye & Kulathunga, 2019). It has been released as a significant tool for SME development to which further attention should be accorded.

The inability of SMEs to reach their full potential has been attributed to a myriad of factors including, the level of financial literacy of SME owners (Potrich & Vieira, 2018) and their risk attitude (Buchdadi et al., 2020), both of which are noted to aid in making sound decisions and judgments for growth and sustainability of businesses. We examine the effect of financial literacy on SME growth and introduce risk attitude as a possible intermediary in the link between financial literacy and SME growth. We argue from a developing market perspective that, financial literacy acts as a strategically significant resource SMEs can use to attain competitive advantage in the marketplace, and mediated by risk attitude, SME managers are better placed to navigate their way

through business uncertainties and ensure the growth and success of their enterprises thereby contributing to economic growth.

Substantively, the current study seeks to examine the direct association between financial literacy and SME growth and the indirect path in which risk attitude is a mediating variable that is influenced by financial literacy and that in turn influences SME growth using firm samples from an African context, Ghana. The study will contribute to the dual process theory of reasoning in that financial literacy affects the entrepreneur's risk-taking attitude and encourage the practices of taking on available business opportunities as and when they arise so as to improve performance. It will further enlighten the policymaker on the need for relevant policies such as compulsory risk management and financial literacy training for all owners/managers of SMEs during business registration. It will also serve to improve SMEs' understanding of financial knowledge and risk management practices.

The rest of the study is arranged as follows: a review of the study's literature, methodology, discussion of findings, conclusions, and recommendations.

2. Literature Review

2.1. Theoretical Review

The study draws on the dual process theory to assess the mediating influence of risk attitude in the nexus between financial literacy and firm growth. We contend that the financial literacy-firm growth relationship is mediated by the risk attitude exhibited by owners/managers of SMEs. The dual process theory according to Kvaran et al. (2013) postulates that moral decisions are a result of two opposing processes: a quick, reflexive, affect-driven process and a measured, deliberate, reason-based process. The main idea is that the entrepreneur's decision-making for the enhancement of business is based on two systems of reasoning, the first has to do with an automatic and unconscious way of reasoning which is based on their risk attitude, and the second is a deliberate mindful system which involves the weighing of different options and models based on their financial knowledge. Therefore, the financial literacy of the owner/manager can affect the unconscious system of thinking which relates to risk attitude, and make it conscious so as to take certain models and considerations into account before taking decisions that can impact the growth of the firm. Financial literacy, therefore, has significant importance for both risk attitude and the growth of a firm. This point is well-stressed in the extant literature (Addo et al. 2022; Dahmen & Rodríguez, 2014; Korkmaz et al., 2021). Thus, using the dual process theory we examine the influence of financial literacy on the risk attitude of owners/managers and its effect on the growth of SMEs in Ghana.

2.2. Financial Literacy and Growth of SMEs

Recently, there is an agreement in entrepreneurship works that financial knowledge is a challenge for SMEs, especially for those in developing economies due to the lack of education and poverty which makes people turn to open survival businesses (Addo et al., 2022; Addo & Asantey, 2023; Adomako et al., 2015). Without proper financial knowledge, both financial decisions and firm management are at risk. The growth and sustainability of a business are largely dependent on the financial decisions it takes (Buchdadi et al., 2020; Ye & Kulathunga, 2019).

Scholarly development advocates that financial literacy is necessary so as to make wise financial choices (Fatoki, 2021; Molchan, 2022). However, SMEs in developing economies mostly lack education (Adomako et al, 2015; World Bank, 2009), especially financial education. This has been reflected in their inability to acquire financial assistance due to lacking certain requirements such as proper book-keeping in place (Nkuah et al., 2013), and lack of assets to use as collateral (Addo & Asantey, 2023). Also, an illiterate owner/manager managing a new start-up may lack the ability to understand financial statements, prepare financial records, budget, invest in certain financial instruments or avoid certain financial decisions with growth potentials due to lack of financial knowledge (Molchan, 2022; Nkuah et al., 2013). Financial illiterates are the most likely to have challenges making the right judgments for business success. Therefore, being financially literate has the advantage of keeping one above the competition and eventually leading to growth (Addo & Asantey, 2023).

There is scholarly evidence suggesting that financial literacy enhances SMEs' ability to overcome information asymmetry, thereby, enabling them to overcome challenges in accessing finance for operational functions (Ye & Kulathunga, 2019), and also make wise decisions on available business opportunities based on their knowledge of available opportunities (Buchdadi et al., 2020). Financial literacy, therefore, plays a dual role in providing information on available business opportunities that can be tapped into for growth, while at the same time ensuring growth through the knowledge of different financing hierarchies, sources and requirements for accessing formal credit. Given this importance, we analyze the relationship between financial literacy and the growth of SMEs in Ghana via means of the following hypothesis.

H1: A significant relationship exists between financial literacy and SME growth

2.3. The Mediating Role of Risk Attitude

Led by the dual process theory, and the understanding of the financial access and risk attitude construct, the study argues how financial literacy can affect the risk attitude of owners/managers in order to cause a firm's growth. The study enhances the benefit of financial literacy through the address of the question, is the influence of financial literacy on business growth mediated by the risk attitude shown by SME owners/managers in a less advanced market environment? There has indeed been an increase in studies on financial knowledge and risk attitude in recent times (Addo et al., 2023; Addo & Asantey, 2023; Aren & Zengin, 2016; Korkmaz et al., 2021; Han et al., 2018; Mudzingiri, 2021). The results from most of these works suggest a strong connection between financial literacy and risk attitude. Suggesting that individuals who are financially literate are more likely to take on certain business opportunities that will help to attain business success, financial knowledge can thus be said to be important for exhibiting the right attitude (Addo & Asantey, 2023). According to Ye and Kulathunga (2019), financial knowledge assists in managing risk associated with doing business through strategies such as diversification, insurance, saving a portion of annual earnings for future expansion, and saving for emergency purposes.

The many challenges associated with developing economies expose businesses to several difficulties which hinder their progress (Oláh et al., 2019). SMEs in Ghana, for instance, face challenges such as unreliable and expensive electricity cost which tends to increase the cost of operations, high fuel prices, high inflation, high tax rates, informal competition, and depreciation

of the country's currency against other major currencies which results in making importation very expensive. These among other challenges require the average entrepreneur to be able to manage such challenges which pose a serious financial and economic risk to a firm's survival and have led to the collapse of several businesses over the years while some of those around are barely surviving (Asare, 2014; Attrams & Tshehla, 2022). Studies have shown that the attitude exhibited toward managing these challenges in business affects the growth outcome of the business since each business decision is linked with risk (Oláh et al., 2019). Prior studies have done an extensive assessment of the relationship between risk attitude and business growth and have mostly found a significant correlation between risk attitude and firm growth. The study by Cucculelli and Ermini (2012) reported a negative association between the growth of a firm and risk aversion. In a working paper by Söderbom and Pattillo (2000), it was found out that, managers of firms in Ghana's manufacturing sector who are risk-averse turn to face very high risk and also end up with low-profit margins. Buchdadi et al. (2020) also realized a positive significant link between a company's performance and the risk attitude of its leaders while Ye and Kulathunga (2019) found that the right attitude towards risks can assist firms to sustain their business.

These results highlight the need for the owner/manager to possess the right attitude towards risk to succeed in business. However, the high collapse rate of firms (Addo & Asantey, 2023) confirms the risk behavior of most of these SMEs. A study by Mthiyane et al. (2022), found out that most SMEs in developing economies have poor risk management skills. This may be a result of the poor educational level of most SMEs in developing economies. According to the dual process theory, financial decisions are based on two systems of thinking, the automatic and unconscious way of reasoning and the deliberate mindful system. Therefore, financial literateness affects cognitive processes and intuition and causes people to have a deliberate mindful system of reasoning which can lead to growth. The study by Widdowson and Hailwood (2007) posited that those with financial literacy can take advantage of increased competition in the financial market through the application of risk management skills. Based on this, we examine the indirect effect of financial literacy on SME success through the risk attitude of owners/managers via means of the following hypothesis.

H2: Financial literacy indirectly affects the growth of SMEs through risk attitude

3. Research Method

3.1. Data and Method

The study's data was collected from SME owners/managers in Ghana, a sub-Saharan African country. Data for the study was collected from medium-size business owners/managers with the Ghana Enterprise Agency in five regional capitals, which accounted for more than 75% of the total number of medium-size firms in Ghana (Accra, Kumasi, Koforidua, Sekondi-Takoradi, and Cape Coast). The sample size was determined using Slovin's formula. The population in the 5 capitals was 7,169 per the Ghana statistical service Integrated Business Establishment Survey report (GSS-IBES, 2015). $n = N / (1 + N \cdot e^2)$, where; n is the sample size. N is the population size. e = the margin of error. Thus, $N = 7,169$ $e = 0.05$, therefore $7,169 / (1 + 7,169 \cdot 0.05^2) = 379$.

500 questionnaires were rather self-administered to registered SME operators purposively sampled from a list of firms obtained from the Ghana Enterprise Agency due to the difficulties faced during

the pilot study. Out of the questionnaires administered, 432 were retrieved, and after ‘cleaning’ and removing inadequately filled questionnaires, 400 were deemed useful for the study’s analysis using causal mediation via the aid of the ‘paramed’ command in Stata proposed by Emsley and Liu (2013).

The appropriateness of the instrument was ensured through the assessment of the questionnaire by industry and academic experts to ascertain the usefulness of the research in question. A pilot study was also conducted using 30 SMEs to ensure the clarity and time factor were ok. Revisions were made to the questions based on the suggestions received from the experts and the SMEs

The causal mediation framework proposed by Emsley and Liu was favored above other approaches of conducting mediation analysis such as the traditional Baron and Kenny (1986) method and also the structural equation modeling (SEM) method mainly because it addresses the three important limitations shared by the traditional and SEM approaches; being: the 1) inability to control for mediator-outcome confounders, 2) the inability to incorporate exposure-mediator interaction, and 3) the inability to incorporate non-linearities in these two approaches.

3.2. Model Specification and Estimation

The study specifies its mediation models for analysis by following the standard approach of Baron and Kenny (1986) as follows:

Model for the Outcome (with Mediator)

$$E[Y | a, m] = \alpha_1 + \beta_1 a + \theta \dots \dots \dots eqn(1)$$

Model for the Mediator

$$E[M | a] = \alpha_2 + \gamma a \dots \dots \dots eqn(2)$$

Where, β_1 is the direct effect, $\theta\gamma$ is the indirect effect (product method).

The controlled direct effect that compares outcomes under treatment level $A=1$ vs. $A=0$, fixing $M=m$:

$$CDE(m) = E(Y(1, m)) - E(Y(0, m)) \dots \dots \dots eqn(3)$$

Where $CDE(m)$ depends on M level m .

The natural direct effect, that compares outcome under treatment level $A=1$ vs. $A=0$, fixing $M=M(0)$, is:

$$NDE_0 = E(Y(1, M(0))) - E(Y(0, M(0))) \dots \dots \dots eqn(4)$$

Moreover, the natural indirect effect, that compares outcomes under $M=M(1)$ vs. $M=M(0)$, fixing $A=1$, is:

$$NIE_1 = E(y(1, M(1)) - E(Y(1, M(0)) \dots \dots \dots \text{eqn}(5)$$

Finally, the total causal effect can be decomposed as:

$$TCE = E(Y(1)) - E(Y(0)) = NDE + NIE \dots \dots \dots \text{eqn}(6)$$

In line with Baron and Kenny (1986), the present study therefore, formulates its models for outcome [i.e., SME Growth (SMEG)] and mediator [i.e., Risk Attitude (RA)] with Financial Literacy (FL) as the exposure variable for analysis as follows:

$$E[SMEG | FL, RA] = \alpha_1 + \beta_1 FL + \theta RA + \sum CONTROLS \dots \dots \dots \text{eqn}(7)$$

$$E[RA | FL] = \alpha_2 + \gamma FL + \sum CONTROLS \dots \dots \dots \text{eqn}(8)$$

Where β_1 is the controlled direct effect (which is the treatment effect neither due to mediation nor interaction), $\theta\gamma$ (i.e., the product) represents the natural indirect effect (which is the treatment effect only due to mediation), and *CONTROLS* are used in the model to capture the effects of confounding variables.

The study uses risk attitude as a possible mediator in the causal mediation analysis of the effects of financial literacy on SME growth in equations (7) and (8). This mediation analysis was carried out using the Stata community contributed command “*paramed*,” by Emsley and Liu (2013) where several other confounding variables were controlled in the analysis. This approach disentangles the direct and indirect effects of financial literacy on SME growth. The study performed this so as identify the “how,” or the possible channel(s), or pathways through which financial literacy may affect SME growth. The results and analysis of our findings are presented under the next section.

3.3. Measurement

The study's instruments were distributed to three (3) academic and business professionals for assessment and validity evaluation (Fraenkel et al., 2012). Each question must have at least two (2) members agree that it is relevant before it can be added to the final text. The experts recommended modifications because they thought a few of the questions were overly broad. The questions were changed to take into account the recommendations of two experts who made an identical set of suggestions for a given item.

Also, as part of a pilot test, surveys were delivered to SMEs in specific locations. They were asked for feedback on the length and clarity of the questions. The survey questions were then adjusted with comments made by participants hence making it much clearer for administration to the target respondents.

Financial literacy: The test for financial literacy was adapted from Adomako et al. (2015) and Chen and Volpe's (1998). The study's respondents were asked to indicate their views on the following claims: we ensure to prepare financial statements regularly, we analyze financial statements so as to understand their implication for business, we also have an understanding of the business's profit margins, and the pre-conditions for accessing formal finance are well understood by the firm. A Likert scale with seven possible responses from strongly do to strongly don't was given to the respondents.

Risk Attitude: The tool to gauge risk attitude was created by Ye and Kulathunga (2019). On a Likert scale from 1 to 7, respondents were asked to rate their likelihood of investing 10% of their annual income in business expansion, putting 10% of annual income in a mutual fund as an investment, investing 10% of monthly income as a business fund for emergency purposes, and investing 10% income on a daily basis in a high-risk bet.

Access to Finance: The measurement of financial access was adapted from Waked (2016) and assessed the cost of credit, its terms and conditions, and its suitability for commercial use.

Growth of SMEs: As suggested by earlier academics, the study followed Adomako et al. (2015) to measure the firm's growth. SME owners/managers were asked to indicate their company's growth on three fronts: market share, employee growth, and sales growth in comparison to industry rivals.

Responses received on all three variables of the study were each resolved into composite indices using rotated principal component analysis to arrive at the study metric for financial literacy, risk attitude and SME growth.

The control variables used in the study's estimations comprised sex, age and educational level of respondents alongside the sector and geographical regions in Ghana where the sampled firms were embedded. The sex of respondents was limited to male or female, the age of respondents was grouped into four categories (i.e. 18-30, 31-43, 44-56, above 56), whereas, the educational level of respondents was categorized into six (i.e. Primary education, Lower secondary education, Upper secondary education, Tertiary education, Informal education, No education). Besides, the three prominent sectors in which the sampled SMEs in Ghana operated were identified as service, industrial and agricultural sectors while the five regions which reflect the representation of all the sampled SME firms in Ghana comprised the Ashanti, the Greater Accra, the Central, the Western and the Eastern regions.

4. Results and Discussion

The study presents its results and analysis starting with the descriptive statistics of the study variables. This is followed by a correlation diagnostic to ascertain the presence of any multicollinearity issues and the suitability of the study's independent variables for inferential analysis. Inferential statistics using a counterfactual framework (causal mediation analysis) which overcomes the limitations of the traditional Baron and Kenny (1986) approaches and the structural equation modeling (SEM) approach to mediation analysis were used to examine the connection between financial literacy and SME growth through risk attitude mediation analysis. This mediation analysis revealed the controlled direct effect of financial literacy on SME growth which

is neither due to mediation or interaction, and a natural indirect channel through which financial literacy may affect the growth of SMEs; being through the mediation of risk attitude.

4.1. Descriptive Statistics

Table 1 summarizes the descriptive statistics for the study's sample firms.

Table1. Descriptive Statistics of Study Variables

VARIABLES	(1) N	(2) Mean	(3) SD	(4) Min	(5) Max
Sex	400	1.488	0.500	1	2
Age	400	2.438	1.102	1	4
Educational_level	400	3.362	1.766	1	6
Sector	400	2.390	0.748	1	3
Region_of_business	400	3.035	1.126	1	5
SMEG	400	-2.24e-10	1.000	-3.565	1.139
RA	400	-2.24e-09	1.000	-3.146	1.552
FL	400	1.22e-09	1.000	-3.083	1.501
AF	400	-2.31e-09	1.000	-2.838	1.746

The correlation diagnostics as presented in Table 2 show that, almost all the independent variables included in the study's models have a statistically significant correlation with the dependent variable, which is likely to offer at least, some evidence for the proposition that, these independent variables interact with the SME growth variable. The absence of evidence of any of the correlation coefficients being above 0.80 (Damodar, 2004) offers some support for the absence of multicollinearity and necessity of including these independent variables in our empirical models to alleviate potential bias caused by variable omission.

Table 2. Correlation Coefficients

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) SMEG	1.000								
(2) FL	0.485*** (0.000)	1.000							
(3) RA	0.508*** (0.000)	0.611*** (0.000)	1.000						
(4) Sex	0.021 (0.682)	-0.068 (0.173)	0.010 (0.840)	1.000					
(5) Age	0.079 (0.116)	0.061 (0.226)	-0.009 (0.857)	-0.024 (0.630)	1.000				
(6) Educational_level	0.020 (0.696)	0.069 (0.166)	0.061 (0.227)	-0.090* (0.073)	-0.004 (0.930)	1.000			
(7) AF	0.438*** (0.000)	0.607*** (0.000)	0.525*** (0.000)	-0.032 (0.520)	0.008 (0.866)	-0.001 (0.988)	1.000		

(8) Region_of_business	-0.013 (0.790)	0.052 (0.300)	0.022 (0.657)	-0.039 (0.434)	-0.041 (0.417)	0.024 (0.634)	-0.082* (0.103)	1.000
(9) Sector	0.002 (0.975)	-0.055 (0.273)	-0.047 (0.353)	0.040 (0.427)	-0.071 (0.158)	-0.079 (0.115)	-0.040 (0.427)	-0.025 (0.615)

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

4.2. Multiple Regression Analysis

The results of our mediation analysis are presented in Tables 3 which comprise of an outcome model, a mediator model, and an estimate for controlled direct effect (CDE), natural indirect effect (NIE), and the total effect (TE) for causal inference. The results of our baseline model control for the effects of sector and region of business on the growth of the surveyed SMEs (see Table 3, Column 2).

Table 3. Causal Mediation Analysis Output for the Study's Outcome Model with Mediator

Variables	Robustness Test Model with SMEG as outcome variable and no control variables used in estimation (1)	Baseline Model with SMEG as outcome variable and two control variables used in estimation (2)	Additional Test Model with SMEG as outcome variable and four control variables used in estimation (3)	Additional Robustness Test Model with SMEG as outcome variable and six control variables used in estimation (4)
FL	0.209*** (0.058)	0.213*** (0.058)	0.206*** (0.058)	0.209*** (0.0587)
RA	0.300*** (0.054)	0.301*** (0.0540)	0.302*** (0.0542)	0.303*** (0.0543)
AF	0.153*** (0.054)	0.150*** (0.054)	0.155*** (0.054)	0.153*** (0.0545)
Region_of_b usiness		-0.0160 (0.037)		-0.0117 (0.0373)
Sector		0.044 (0.0556)		0.0480 (0.0558)
Educational_ level			-0.00519 (0.0236)	-0.00363 (0.0237)
Age			0.0622 (0.0377)	0.0639* (0.0379)
Sex			0.0747 (0.0834)	0.0716 (0.0836)
Constant	5.47e-10***	-0.0561	-0.245	-0.329

	(0.041)	(0.181)	(0.185)	(0.265)
Observations	400	400	400	400
R-squared	0.321	0.322	0.327	0.328
Adj. R-squared	0.316	0.314	0.317	0.315
F-statistic	62.35***	37.46***	31.82***	23.90***

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

The results of our mediation analysis demonstrate robustness and negligible biases to alternative specifications with and without different control variables (see, Table 3, Columns 1, 3, & 4). This gives us confidence that the intimate direct relationship between financial literacy and SME growth, and the indirect relationship through the mediation of risk attitude are reliable pointers for policy considerations. The results of the study's attendant mediator models in its estimations (see Table 4) also demonstrate the significant connection between financial literacy and risk attitude which further lends support for its usage in a mediation capacity between financial literacy and SME growth nexus. Finally, Table 5 exhibits the estimates for controlled direct effect (CDE), natural indirect effect (NIE), and total effect (TE) of financial literacy on SME growth through risk attitude.

Table 4. Causal Mediation Analysis Output for the Study's Mediator Model

	Robustness Test Model with RA as outcome variable and no control variables used in estimation (1)	Baseline Model with RA as outcome variable and four control variables used in estimation (2)	Additional Test Model with RA as outcome variable and six control variables used in estimation (3)	Additional Robustness Test Model with RA as outcome variable and six control variables used in estimation (4)
VARIABLES				
FL	0.463*** (0.0485)	0.460*** (0.0490)	0.467*** (0.0488)	0.464*** (0.0493)
AF	0.243*** (0.0485)	0.246*** (0.0491)	0.243*** (.0486)	0.246*** (0.0492)
Region_of _business		.0162 (0.0347)		0.0157 (0.0348)
Sector		-0.0147		-0.0175

		(0.0517)		(0.0520)
Educationa l_level			0.0186	0.0179
			(0.0220)	(0.0221)
Age			-0.0345	-0.0345
			(0.0350)	(0.0352)
Sex			0.104	0.106
			(0.0774)	(0.0776)
Constant	-2.25e-09		-0.1326	-0.139
	(0.0385)		(0.172)	(0.246)
Observatio ns	400	400	400	400
R-squared	0.4111	0.412	0.416	0.417
Adj. R- squared	0.408	0.406	0.409	0.406
F-statistic	138.56***	69.06***	56.15***	39.98***

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table. 5 The Estimates of Causal Effect of FL on SMEG mediated by RA

VARIABLES	Robustness Test Model of Causal Mediation- Model (1)	Baseline Model of Causal Mediation (2)	Additional Test Model of Causal Mediation (3)	Additional Robustness Test Model of Causal Mediation (4)
CDE	0.209*** (0.0578)	0.213*** (0.0582)	0.206*** (0.0583)	0.209*** (0.0587)
NIE	0.139*** (0.0289)	0.138*** (0.0289)	0.141*** (0.0293)	0.1405*** (0.0293)
TE	0.348*** (0.0541)	0.352*** (0.0547)	0.347*** (0.0545)	0.349*** (.0551)
Observations	400	400	400	400

Note: This table reports the empirical results of controlled effect of FL on SMEG as mediated by RA via means of a causal mediation analysis, where cde=controlled direct effect, nie=natural indirect effect, te=total effect. Asterisks indicate significance at 10% (*), 5% (**) and 1% (***).

Source: Stata output of causal mediation analysis to demonstrate the direct and indirect effects of

FL on SMEG through RA as mediator using the “paramed” command by Emsley and Liu (2013).

For a more understandable depiction, the study shows from its baseline estimation, the direct and indirect effects of financial literacy on SME growth through risk attitude mediation via Figure 1.

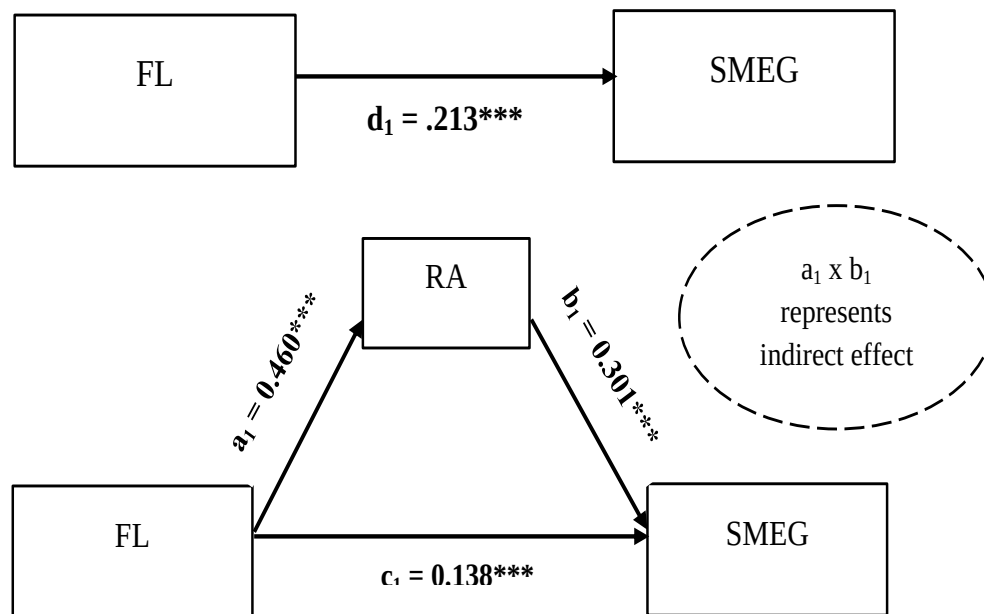


Figure 1 Path analysis: financial literacy, risk attitude, and SME growth

Source: Authors' framework of mediation analysis involving FL, RA and SMEG (2023).

Figure 1 shows a positive and significant association between *FL* and *SMEG* [(0.213, $p < 0.01$); total effect] that is consistent with the study's expectations. In addition, *FL* is positively related to *RA* (0.460, $p < 0.01$) and *RA* is also positively associated with *SMEG* (0.301, $p < 0.01$) which are all consistent with our expectations. Finally, to compute the indirect effect of *FL* on *SMEG* through *RA*, we multiply two coefficients of (0.460) and (0.301) [i.e., $(0.460) \times (0.301) = 0.138$]. The results of the Emsley and Liu test (i.e., $p < 0.01$) (Emsley & Liu, 2013) suggest that the indirect influence of *FL* on *SMEG* through *RA* is significantly different from zero. Our findings show that 64.79% (0.138 is divided by 0.213) of the effect of *FL* on *SMEG* originates from the mediating function of *RA*, which shows that, *RA* serves as a significant intermediary in the relationship between *FL* and *SMEG*. Overall, our findings which show statistically significant evidence of both a direct path from financial literacy to SME growth, and an indirect path that is mediated by risk attitude, suggest that, both financial literacy and risk attitude have a complementary effect on SME growth.

4.3. Discussion

The study found a significantly positive association between financial literacy and SME growth in its main outcome model. This confirms the findings from Frimpong et al. (2022) and also Buchdadi et al. (2020) that SME performance is significantly influenced with financial knowledge. Wise (2013), found that firm owners that are financially educated have the least possibility of shutting down their business since their ventures are able to survive with better management. This confirms financial education's relevance on firms, that business owners/managers with higher financial education have a less possibility of closing down, suggesting that financially literate business owners/managers have the requisite knowledge and skills to grow and sustain their businesses. The result is inconsistent with that of Eresia-Eke and Raath (2013), who found that there is no connection between a business's expansion and the financial knowledge of its owners.

Also, a direct linear effect was associated with the financial literacy-risk attitude link. Risk in business cannot be avoided as the business owner constantly makes decisions for the business and each decision comes with its expected risk. Assuming a decision maker chooses from his available options the decision with the least expected risk with the lowest loss, it shows risk aversion as he is opting for a sure secured result (Wüstermann, 2016). The risk taker, unlike the risk avoider, opts for the option with uncertainties irrespective of the risk involved, therefore, risk lovers are seen as those who are able to take advantage of business opportunities around them irrespective of the outcome so as to make a profit. Scholarly literature shows that the sole source of income for most SMEs owners and their families is their businesses, hence care is usually taken to avoid the worst-case scenario for a business, therefore, SMEs will usually tone down with taking risks compared with larger firms where decisions are made on behalf of the owner by employees who want to end profit for the business (Noack, 2008; Wüstermann, 2016). The benefit of taking risks as recounted by in prior studies with its significant positive results (Buchdadi et al., 2020; Han et al., 2018; Hermansson, 2015; Kim & Reinschmidt, 2011) shows that risk is beneficial for business and must be encouraged. The fact that financial knowledge improves risk attitude is proof of the strength of financial education in business and consistent with other studies (Adomako et al., 2015; Buchdadi, 2020; Ye & Kulathunga, 2019; Yao et al., 2004).

Our third assumption for the study found risk-taking is positively correlated with business success. This result shows SMEs who do not tone down their risk and seize business opportunities can be successful in business (Addo & Asantey, 2023). The finding is in line with earlier findings (Addo & Asantey, 2023; Buchdadi, 2020; Ye & Kulathunga) which found a linear correlation of the link between risk-taking and business growth. There is however, inconsistency between this outcome and that of Willebrands and Lammers (2012) who found a non-linear correlation between the traditional willingness to take risks and the performance of the business.

The indirect association between financial education and firm success through risk-taking behavior was significant. This demonstrates that risk attitude plays an intermediary role in the association between financial literacy and enterprise growth. Our results support the dual process theory of reasoning (Kvaran et al., 2013), according to which decisions made by entrepreneurs to improve the growth and sustainability of their businesses are influenced by two different systems of thought: the automatic unconscious system based on their risk attitude and the deliberate mindful

system where various considerations are taken into account on the basis of their understanding of finance.

The dual process theory intimates a positive association in the financial literacy- business growth relation, with some empirical studies confirming this intimate relationship (Buchdadi et al. 2020; Hussain et al., 2016; Ye & Kulathunga, 2019). The evidence from the current study's mediation results shows that, through the mediation of risk attitude, the effect of financial literacy on SME growth is ascertained to be consistently positive for all three-dimensional effects [i.e., controlled direct effect (CDE), natural indirect effect (NIE), and total effect (TE)] even when we vary or alternate among different the control variables used in our separate estimations (see Tables 3, 4, 5 & 6). The consistency of the positive result seems to point to the fact that, the beneficial effect of financial literacy may be derived through some other channel(s) which may not be observed directly. In the case of this study, risk attitude tends to serve as the channel which acts as a partial mediator via which financial literacy may affect SME growth.

5. Conclusions

Flowing from our study's findings, we conclude that, risk attitude acts as an intermediary in the affiliation between financial literateness and enterprise growth, thus implying that, the risk attitude of SME owners tends to serve as a mechanism through which financial literacy translates to growth of SMEs. We further note that financial literacy acts as a strategically significant resource SMEs can use to attain competitive advantage in the marketplace, and mediated by risk attitude, SME managers are better placed to navigate their way through business uncertainties and ensure the growth and success of their enterprises thereby contributing to economic growth.

There are some limitations associated that should be considered in relation to the findings of the study. The respondents included only owners/managers of SMEs. Other senior staff with relevant firm knowledge were not included in the study.

The study recommends future studies to consider other senior firm members as respondents to obtain a comprehensive understanding of the situation. The study can also be duplicated and extended to include other variables in other jurisdictions. Future scholars can also consider a regional or sectorial analysis to understand the situation in each region and sector of the economy.

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