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Does Risk Attitude Increase the Effect of Financial Literacy on Access to Finance?

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Abstract

The paper aimed to examine the moderating impact risk attitude has on the link between financial literacy and access to funding for SMEs. Respondents included SMEs in Accra via standardized questionnaires. 396 accurate responses were analyzed utilizing PLS-SEM. Findings showed an important beneficial correlation between knowledge of finances and credit accessibility. The relationship between risk-taking behavior and financial access also proved significant. Additionally, the study discovered that the connection between financial competence and financial access is significantly moderated by risk-taking tendency. The results support the knowledge base view theory, according to which financial literacy is a unique strategic asset that firms can exploit to gain an advantage over rivals. Additionally, it was established that risk-averse owners/managers are more likely to miss out on possibilities to build wealth, which opens up access to credit or even poses the willpower to access debt finance.

Keywords: Risk Attitude, Financial Literacy, Access to Finance, SMEs

JEL: G53, G32 ,D91

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1. Introduction

Recently, the significance of financial capability and its part in assisting entrepreneurs in making wise financial choices, such as obtaining external financing for the expansion of their enterprises, has increased (Potrich & Vieira, 2018). Policymakers in both wealthy and developing nations are becoming more interested in this area of research. One of the main attributes of being financially knowledgeable is to assist people in making sensible financial decisions when addressing financial difficulties.

SMEs are essential to the economic development of both developed and developing countries. Extant research has shown that they support job creation and boost the economy (Khan et al., 2020). Yet, SMEs encounter several challenges that restrict their capacity to support economic advancement (Khan et al., 2021; Wang, 2016). According to Adomako (2015), SMEs' poor financial management abilities are a significant barrier to their ability to succeed. It has been demonstrated by earlier research (Korkmaz et al. (2021) that financial knowledge is important when making financial decisions for firms. We investigate the connection between being financially knowledgeable and financial accessibility and study the possible amplification or dampening influence that risk attitude may play by introducing risk attitude as a link in the affiliation between financial capacity and credit access in light of the ongoing increased failure rate of businesses in emerging nations, which primarily is blamed on a lack of financial access (Cressy, 2006).

Researchers are becoming more interested in how SMEs manage their operations with a risk-taking mindset and how entrepreneurs' risk-taking behaviors affect the expansion and success of SMEs. This can be due to previous research findings that showed a considerable impact of risk mindset on the development of SMEs. Earlier studies have found that risk-taking behavior has a significant impact on the success of enterprises (Buchdadi et al., 2020; Ye & Kulathunga, 2019). This is consistent with the outcome recorded in 2019 by Ye and Kulathunga, that risk attitude strongly affects enterprise success and sustainability, this can be attributed to the unknowns surrounding each financial decision made in business (Nguyen et al., 2022). A wrong financial choice is likely to spell doom for the firm. In light of the fact that risk attitude has a considerable impact on decision-making, we contend that it is important to examine risk-taking tendency in the affiliation between financial understanding and credit availability. There has not been much attention accorded to this research area that looks at risk-taking attitude as a moderating factor in the relationship between financial understanding and financial access. We, thus, investigate risk behavior as a moderating link in the correlation between financial acumen and credit availability.

Access to finance is the accessibility to financial resources. In this study, the ability to acquire formal credit to support business operations is defined as access to finance. The acquisition of financial aid is essential for SMEs since credit accessibility continues to be a significant barrier for SMEs in many parts of the globe. The World Bank concluded that SMEs suffer financial management challenges that prevent them from making the intended contribution to growth and development in its 2014 World Bank Global Report. SME financial inclusion is not new, but the continual difficulty of SMEs to survive owing to financial constraints has reignited interest in calls

for greater financial access through financial literacy (Adomako, 2015). Despite the fact that these calls have been made, it is still unclear how other elements, such as risk attitude, affect our comprehension of the ways in which being financially literate affects access to financing. Given this gap, researchers must keep looking into potential pathways by which the influence of financial knowledge on credit access is improved in order to improve our understanding and contribute to the policy conversations around this issue.

This research consequently broadens our understanding of how risk-taking attitude acts as a moderator to improve the impact of being financially literate on having financial access. The belief is that SMEs that are not risk averse can counter the challenges of information asymmetry by having the boldness to consider debt finance in the hierarchy of financing and acquiring assets that may be used as collateral for accessing loans (Yao et al., 2004). The knowledge base (KBV) and the utility theories are both used in this study to evaluate how risk attitude affects the financial knowledge-financial access association. By highlighting the role risk attitude plays in this relationship, We intend to contribute to the continuing debate around financial access and financial education.

The study has important implications for policymakers and businesses alike as it further highlights the significance of risk attitude in improving the influence of financial literateness on access to credit. This would encourage SMEs to include seminars and workshops on risk management and financial literacy in their annual programs to assist them to develop their understanding of finance and attitude toward taking risks. Finally, the need of creating realistic financial knowledge and risk management training policies for SMEs to increase their ability to access capital for the expansion of their firms and the overall economy will also be recognized by policymakers.

The main research questions that underpin this investigation were: what is the effect of financial literacy on access to finance? to what extent does risk attitude impact access to finance? does risk attitude moderate the relationship between financial literacy and financial access?

The remaining parts of the research are as follows: The study's hypotheses are developed in the next section, which also reviews theories and earlier research. Following that, the research approach, data collection instruments, data analysis, and a discussion of the findings are presented. With a few suggestions for additional research, the study is concluded in the final part.

2. Review of Literature

2.1. Knowledge Base Theory (KBV)

We use the KBV theory to better understand how financial literacy and financial access are related. We talk about the significance of financial literacy in obtaining financing. According to the KBV, firms can rely on knowledge as a strategic resource to rise in the competition among competitors (Curado, 2006). KBV is an extension of the resource-based perspective theory and is considered the most unique strategic firm asset which does not deteriorate in comparison to other conventional organizational resources (Curado, 2006; De Carolis, 2002). Organizations are viewed as diverse units packed with knowledge, which is difficult to reproduce (Hoskisson et al., 1999). KBV is seen by Wiklund and Shepherd (2003) as the primary tenet of sustained differentiation. The basic tenet

of the KBV is that knowledge is a valuable asset that is unique since it doesn't decay and is difficult for rivals to copy, giving organizations that acquire knowledge assets a competitive advantage over those that don't (Wiklund & Shepherd, 2003). Financial literacy is thus a crucial tool that organizations can utilize to gain access to funding. Financial literacy is viewed as an intellectual asset unique for managing finances and making wise financial decisions (Ye & Kulathunga, 2019). A major shortfall that has been found to impact SME access to formal finance is the lack of information on the sources and requisite requirements to access finance (Amadasun & Mutezo, 2022; Wallis, 2006). Financial knowledge of the owner/manager is therefore important to overcome this challenge and be on top.

2.2. The Utility Theory

Decision-making in business is inevitable, as businessmen are faced with making choices in all aspects of their business. Decisions which are complex and have financial implications for the business are to be handled through analysis and reasoning (Kahneman & Frederick, 2002) to not further complicate them (Sapre, 2021). Notwithstanding this, the most important outcome is to achieve the highest benefit. The expected utility assist in making decisions when the outcome is uncertain. According to the utility theory, the choice of a decision is based on the highest expected utility, therefore, a decision-maker will prefer the outcome that will give the highest satisfaction. The basic premise of utility theory is that individuals choose among alternative options based on the expected utility they derive from each option. Expected utility is calculated by combining the utility of each outcome with the probability of that outcome occurring. The decision-maker selects the option that maximizes their expected utility. Kahneman and Tversky (1979) argue that individuals perceive and evaluate potential gains and losses relative to a reference point, which is often the status quo or their current situation. They do not make decisions based on the absolute value of outcomes, but rather on changes or deviations from this reference point. According to Kahneman and Tversky (1979), people tend to overweight small probabilities and underweight large probabilities, leading to risk-averse behavior in the domain of gains and risk-seeking behavior in the domain of losses. Thus, the concept of loss aversion, whereby people tend to be more motivated to avoid losses than to achieve gains, and they are willing to take on more risk to avoid losses.

Risk avoiders are adamant about avoiding risk (Molins et al. 2022). Taking chances, however, has been shown to be advantageous for business success (Addo & Asantey, 2023; Ye & Kulathunga, 2019). Owners/managers who are therefore able to take risks irrespective of utility levels or whether in situations of crisis or good, so as to avoid loss can seize available opportunities to expand their wealth and thus increase their chances of accessing credit and also have the boldness to consider debt financing in the hierarchy of financing to finance their business.

2.3. Small and Medium-sized Enterprises (SMEs)

Firms that maintain their revenue, employees and assets below a preset level are known as small and medium enterprises. Assets, employees and turnover remain the definition's common denominator, despite the fact that definitions may vary from country to country. According to the International Monetary Fund, SMEs are companies with between 10 and 249 employees. SMEs

are defined by the Ghana Statistical Service as organizations with 6 to 100 employees. Earlier literature has acknowledged how SMEs contribute to development in both developed and developing economies (Beck et al., 2005; Khan, 2022). SMEs are essential to the revolution of transition economies, claim Beck et al. (2005). According to Asare (2014), SMEs considerably boost Ghana's Gross Domestic Product (GDP) and employment, especially in the manufacturing sector. Despite all of these efforts, it is still difficult for SMEs to be sustainable (Asare, 2014), with access to financing being the biggest obstacle (Cressy, 2006). This inspired the current study to examine the financial literacy-access to finance relationship and access whether risk attitude increases or dampens this relationship.

2.4. Financial Literacy and Access to Finance

For many years, SMEs have been extremely concerned about access to financing. Access to financing is the biggest barrier for small and medium-sized enterprises (Beck et al., 2006; Cressy, 2006). A review of the results of various studies reveals that access to credit has a major impact on how rapidly a business expands (Adomako, 2015; Beck et al., 2006; Bongomin, 2017; Malo & Norus, 2009). SMEs, however, are unable to obtain the funding they need to sustain their operations. The absence of available public information and the fact that SMEs are sometimes young and operate in unfamiliar industries are two factors cited as contributing to their difficulty in gaining financing (Abraham & Schmukler, 2017). These difficulties produce high risk and information asymmetry, which restrict access to financing (Abraham & Schmukler, 2017). Ye and Kulathunga (2019) contend that increasing financial literateness can reduce information disparity and broaden access to credit. Financial knowledge can enhance one's access to funding, according to numerous other research (Fatoki, 2021; Hussain et al., 2018). Firms with stronger financial literacy, according to Wise (2013), have higher loan repayment likelihood and lower possibility of involuntarily liquidating their enterprises, thus, improving their prospects of obtaining credit. Oke (2018) discovered that financial capability has a key role in determining how easily SMEs can get capital. According to Wachira and Kihui (2012), the likelihood of those who lack financial literacy continuing to be financially excluded is very high, despite the present degree of comprehension of the need for financial education. The assertion that having financial literacy significantly affects one's ability to obtain financing for business development was supported by the findings of Hasan and Hoque (2021).

Nonetheless, Eresia-Eke and Raath (2013) disputed the idea that business success is correlated with SME owner financial literacy. Oke et al. (2020) reinforced this discovery that financial literacy has no bearing on access to bank finance. Therefore, financial literacy is not a prerequisite for using behavioral finance, according to Dwiastanti (2015), because conduct is sometimes impacted by variables other than knowledge, such as emotions and psychological considerations. This bolsters Alsemgeest's (2015) claim that, despite receiving countless financial literacy lessons, the majority of people now find themselves in a much worse financial situation than they were before. Due to the discrepancies in these results, it has become intriguing to investigate how financial literacy affects SMEs' access to financing in Ghana by using the KBV and other empirical findings. Thus, we postulate that:

H1: Financial literacy significantly affects access to finance

2.5. Risk attitude as a moderator between financial literacy and financial access

We make a case, supported by the utility theory for why SMEs' access to finance increases as risk attitudes are improved. It has been discovered that risk attitude significantly influences SME performance and decision-making. According to Buchdadi et al. (2020), the performance of SMEs is significantly impacted by a person's attitude toward financial risk. Ye and Kulathunga (2019) discovered a beneficial association between a risk mindset and firm sustainability. A substantial correlation between total money earned and a willingness to take financial risks was also discovered by Grable and Lytton (1999) in their study. It is usually believed that people's propensity to engage in dangerous endeavors depends on the anticipated reward from the supposed risk (Ye & Kulathunga, 2019). Thus, Gilmore (2004) came to the conclusion that better performance should arise from a proper attitude regarding risk..

For SMEs, access to financing in developing nations is a significant barrier (Robson et al.,2008). The literature validates that an entrepreneur's attitude toward risks sometimes makes this situation worse (Hermansson, 2015). According to Mullei and Bokea (1999), banks lower the risk of lending to SMEs by requiring collateral before making loans. Nevertheless, most SMEs lack sufficient collateral to enable them to access loans (Osano & Languitone,2016). As a result, their chances of getting bank loans are diminished greatly.

The willingness to take risks irrespective of the expected satisfaction to be derived can therefore provide SMEs the confidence to purchase financial assets, which will result in the requisite collateral when looking to obtain credit, thereby, boosting their chances of doing so (Hermansson, 2015). According to the utility theory, people prefer to take risks when expected outcomes will result in a high derived satisfaction, however, as their utility levels reach their maximum, the desire to take risks diminishes, resulting in an aversion to risk (Bernoulli, 1738). Risk aversion prevents owners/managers from taking advantage of available opportunities around them to achieve success.

The pecking order theory postulates that entrepreneurs take into consideration different hierarchies of financing when making decisions on how to finance a firm (Myers & Majluf,1984). Debt finance is second only to the firm's retained earnings and is confirmed in prior literature to have a significant association with firm performance (Cole & Sokolyk, 2018; Fowowe, 2017). Hermansson (2015) posited that risk lovers have higher debt compared with risk avoiders. While Han et al. (2018), found the link between risk behavior and borrowing to be correlated. According to Hyll and Irrek (2015), holding financial assets like stocks, bonds, and business assets corresponds to having a high-risk attitude. For Arrow (1984), people are more willing to accept risks as their wealth increases. According to Hermansson (2015), those with high risk have greater financial possessions and obligations than those with low risk. Therefore, those who take risks can easily consider debt finance as a financing option for their business. Furthermore, Yao et al. (2004) found that risk-takers have higher assets that can serve as collateral when accessing finance. This raises their chances of having access to finance.

It can thus, be said that although the financial knowledge of the owner/manager of the firm helps in understanding the hierarchies and sources of financing, not all entrepreneurs has the boldness to access debt finance, however, owners/managers who can take risk irrespective of the satisfaction to be derived or their current satisfaction level but rather in order to avoid future misfortunes will have the boldness to access the debt finance as a financing option for the business (Kahneman & Tversky, 1979). Furthermore, they will take the risk to invest in assets that can be used as collateral for accessing debt finance (Hyll & Irrek, 2015).

Although the risk attitude-access to finance relationship has been assessed in prior studies, not much attention has been given to this field in Ghana, and studies looking at risk attitude as a moderating factor in the nexus between financial literacy and access to finance are scarce, therefore we examine the link between the risk attitude of SME owners/managers and its influence on SMEs access to finance in Ghana and further assess risk attitude as a moderator in the financial literacy-access to finance connection. We suggest that:

H2: Risk attitude has a significant influence on access to finance

H3: Risk attitude moderates the financial literacy-access to finance nexus significantly

Figure 1 depicts the variables and the hypothesized relationships.

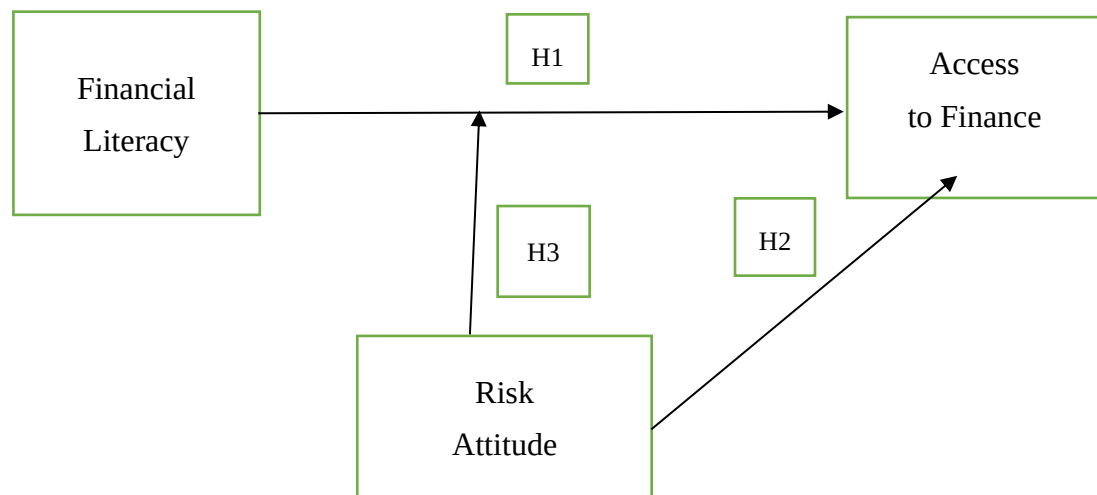


Figure 1. Analytic Framework

3. Research Method

In order to evaluate the study's hypothesis, we looked at SMEs in Ghana, a nation in sub-Saharan Africa. Ghana has about 31 million people, making it the second-largest nation in West Africa after Nigeria, according to the most recent population census. Ghana borders Burkina Faso in the north, Ivory Coast in the west, and Togo in the east. (GSS,2021). Like in most developing nations, SMEs continue to contribute significantly to Ghana's employment figures. However,

Adomako (2015) observed that the skill gap is a big issue that impacts SMEs' ability to make sound financial decisions. This difficulty is attributable to underdeveloped countries' inadequate educational systems (World Bank, 2009). People with low levels of education often start survival enterprises (Adomako, 2015), however, these businesses usually struggle to survive due to their low educational levels. Due to this, it has become challenging for SMEs to remain in operation longer than five years after their formation (Akoto, 2022). Due to Ghana's environment being typical of countries in which financial education may be one of the major obstacles to business success, Ghana makes a good case study for our research.

The study's data came from respondents at the Ghana Enterprise Agency in Accra. According to the Ghana Statistical Service's Integrated Business Establishment Survey (GSS-IBES, 2015), there are 27,192 SMEs in the Greater Accra region, of which Accra is the capital. The Slovin formula, $n = N / 1 + N.e^2$, $n = 27,192 / 1 + 27,192 (0.05)^2$, $n = 394$, was used to determine the sample size. The data was obtained from SME owners/managers, who are often the business decision-makers, using the purposive sampling approach.

Validity was ensured by a panel of three academic and business experts who reviewed the instruments. Where at least two members recommended a modification, their suggestion was considered and the question was modified. A pilot test was further conducted to test the clarity and timing needed to complete the questionnaires, and final adjustments were done afterward. The respondents were contacted at their offices to fill the questionnaires. They were mostly returned on the same day, however, where the questionnaires could not be completed on the same day, they were collected on future agreed dates.

We issued 550 questionnaires, 400 were returned, while 396 were deemed useful after the unfit ones were eliminated. Structural equation analysis was performed in Smart-PLS. This analytical technique has been approved and applied in earlier studies (Aydemir & Aren, 2017; Potrich et al., 2016; Wasiuzzaman et al., 2020).

3.1. Measurement

To measure key constructs, the study used items from earlier research. Factor loadings and a description of the predictive measures are outlined in Table 2, and Cronbach alpha results are shown in Table 3. Every reliability value fell within the advised range of 0.7 and higher (Hair et al., 2011).

Three (3) academic and business experts were given copies of the study's instruments to review in order to assess their validity (Fraenkel, et al. 2012). The relevance of each question must be accepted by a minimum of two (2) members in order for it to be included in the final questions. Some of the questions were deemed to be too general by the experts, therefore they suggested revisions. When two experts offered the same recommendations for a particular question, their recommendations were taken into consideration and the said questions adjusted. Also, SMEs in some defined locations were given surveys to complete as part of a pilot test. They were asked to comment on the questions' clarity and length. After that, the questions were improved for clarity.

Financial literacy: The financial literacy measures were adapted from earlier works (Adomako, 2015; Chen & Volpe, 1998). The following statements were made: We perform the following tasks on a monthly basis: (a) financial statement preparation (b) financial report review (c) financial statement analysis (d) we understand our gross turnover. (e) we know the requirements for a bank loan. The respondents were provided with a seven-point Likert scale, ranging from strongly do to strongly do not.

Access to finance: The questions on financial access were modified from Ye and Kulathunga (2019) and are as follows: accessing finance is easy; credit products offered by banks are suitable for business; the terms and conditions of the credits are suitable; we are satisfied with interest charged. On a seven-point Likert scale, from strongly satisfied to strongly dissatisfied, these were rated.

Risk Attitude: Ye and Kulathunga developed the instrument for assessing risk attitude (2019). The following acts were listed, and respondents were questioned on how likely they were to undertake each one on a Likert scale from 1 to 7. Spend 10% of your annual income on business expansion, 10% on stocks or mutual funds, 10% on monthly revenue for a business emergency fund, and 10% of your daily revenue on a high-risk wager.

4. Result and Discussion

4.1. Descriptive statistics

According to the survey results, the frequency was highest in the service sector (55.1%), the industrial sector came next (29%), and the agricultural sector was the lowest (15.9%). This highlights the importance of the service sector in driving Ghana's GDP (Owusu et al., 2019).

46.2% were employed by businesses with 31 to 60 employees. Companies with 61 to 100 employees had 26%, while those with 6 to 30 employees had 27.8%. This demonstrates that while more SMEs fall into the medium size range (31–100), the bulk is still well below the threshold of 100 employees. More than 46% of them employ between 31 and 60 people. This suggests that a lot more must be done so SMEs can realize their full employment potential in order to lower the unemployment rate in Ghana.

We discovered that 129 enterprises had been in operation for less than 3 years. The frequency of companies older than 10 years was 112, those from 7-10 years were 107, and businesses from 3 to 6 years were 48 (See Table 1). The bulk of the businesses was discovered to have been in operation for less than three years (32.6%), while those that had been in operation for more than ten years made up 28.3% of the respondents, demonstrating the unsustainable state of SMEs (Ye & Kulathunga, 2019).

Table 1: The Sample Profile

Sector	Frequency	Percentage
Agriculture	63	15.9%
Industrial	115	29%
Service	218	55.1%

Company Size

6 – 30	110	27.8%
31 – 60	183	46.2%
61- 100	103	26%

Age of the Company(Years)

Below 3	129	32.6%
3 – 6	48	12.1%
7 – 10	107	27%
Above 10	112	28.3%

4.2. Data Analysis

For the analysis of the data, PLS-SEM was used. The measurement model and the structural model are the two levels of analysis used in SEM. The structural model examines the path link between the variables, whereas the measurement model evaluates the latent variables (Hoyle 1995; Kline,2010). The measurement model evaluates the validity and reliability of data. Only until the necessary conditions for reliability and validity have been met can the structural model be completed. The structural model was used to estimate the path relations amongst the variables because the threshold for each variable had been met.

4.2.1. The measurement model

Based on the evaluation of the model's measurement, the study's constructs are rated for quality. A review of factor loadings precedes the determination of the construct validity and reliability in the assessment of the quality standards.

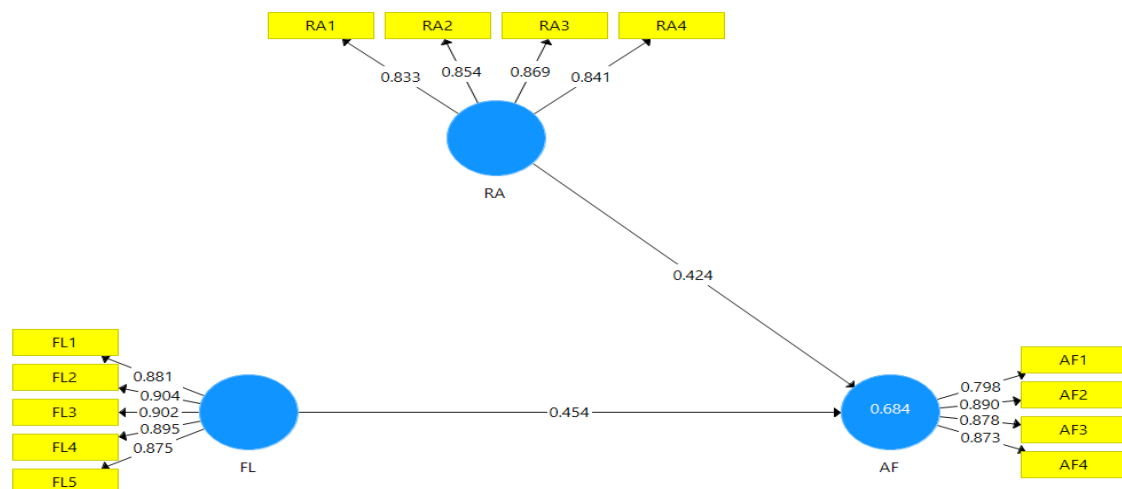


Figure 2. Sources: Result of Measurement Model Evaluation

4.2.2. Factor Loading

Factor loadings measure how closely a variable is related to a specific factor. The factor loadings met the recommended cutoff of 0.6 and above (Awang, 2015).

Table 2: Factor Loading

	AF	FL	RA
AF1	0.798		
AF2	0.89		
AF3	0.878		
AF4	0.873		
FL1		0.881	
FL2		0.904	
FL3		0.902	
FL4		0.895	
FL5		0.875	
RA1			0.833
RA2			0.854
RA3			0.869
RA4			0.841

Explain the symbols AF1 to AF4, FL1 to FL4, and AR1-AR4

4.2.3. Reliability

The consistency and stability of an instrument are measured in terms of its reliability. Cronbach alpha and also composite reliability are the two most popular reliability techniques. 0.70 or higher is considered an acceptable criterion (Hair et al., 2011). Cronbach alpha, as well as composite reliability values, were over 0.7, reliability was consequently determined.

Table 3: Cronbach's Alpha/ Composite Reliability

	Cronbach Alpha	Composite Reliability
AF	0.882	0.919
FL	0.935	0.951
RA	0.871	0.912

4.2.4. Convergent validity

When different analyses of the same construct converge or concur, convergence validity is established. The assumption is that if two or more examinations of the same object are accurate

measures of the same concept, they should vary greatly (Bagozzi et al., 1991). When an average variance extracted (AVE) is greater or equal to 0.50, the items converge to assess the underlying construct and establish convergent validity (Fornell and Larcker, 1981). Items converged to measure the constructs, as seen in the AVE below.

Table 4: Convergent Validity (AVE)

	AVE
AF	0.740
FL	0.795
RA	0.721

4.2.5. Discriminant Validity

Discriminant validity is established in accordance with Fornell and Larcker's (1981) criteria when AVE's square root exceeds its connection with other concepts. The construct's connection with other constructs was less significant than the square root of AVE (in bold italics), as seen in Table 5 below.

Table 5: Fornell Larcker Criterion

	Access to Fin.	Fin. Literacy	Risk Attitude
AF	<i>0.860</i>		
FL	0.783	<i>0.891</i>	
RA	0.777	0.778	<i>0.849</i>

NB: Bold and Italics for square root of AVE.

4.2.6. Heterotrait -Monorait Ratio (HTMT)

The evaluation of the construct is the basis of HTML. The HTMT ratio's discriminant validity has been demonstrated. In earlier literature, there has been discussion over the HTMT threshold. For instance, Teo et al. (2008) offer a threshold of 0.90 or smaller, whereas Kline (2011) suggested 0.85 or less. The HTMT in the following table satisfied Teo et al.'s suggested criterion (2011).

Table 6: HTMT

	Access to Fin.	Fin. Literacy	Risk Attitude
AF			
FL	0.862		
RA	0.885	0.861	

4.2.7. The Goodness of Fit

The access to finance data showed an R square value of 0.684, indicating that a variance in access to financing of 68.4% may be attributed to financial knowledge and the risk propensity of SME owners/managers. Based on Chin's (1998) recommendation, the R square of 68.4% attained substantial predictive power. This further suggests that additional predictive factors play a role in predicting how SMEs might acquire financing.

Table 7: Goodness of Fit

	R Square
AF	0.684

4.2.8. Structural Model

In order to validate the proposed hypotheses, structural modeling's next step is to estimate the hypothesized links. To support the proposed hypotheses, an evaluation of the hypothesized correlations was conducted. The significance of the connection between the various constructs is assessed using the bootstrapping procedure in SEM.

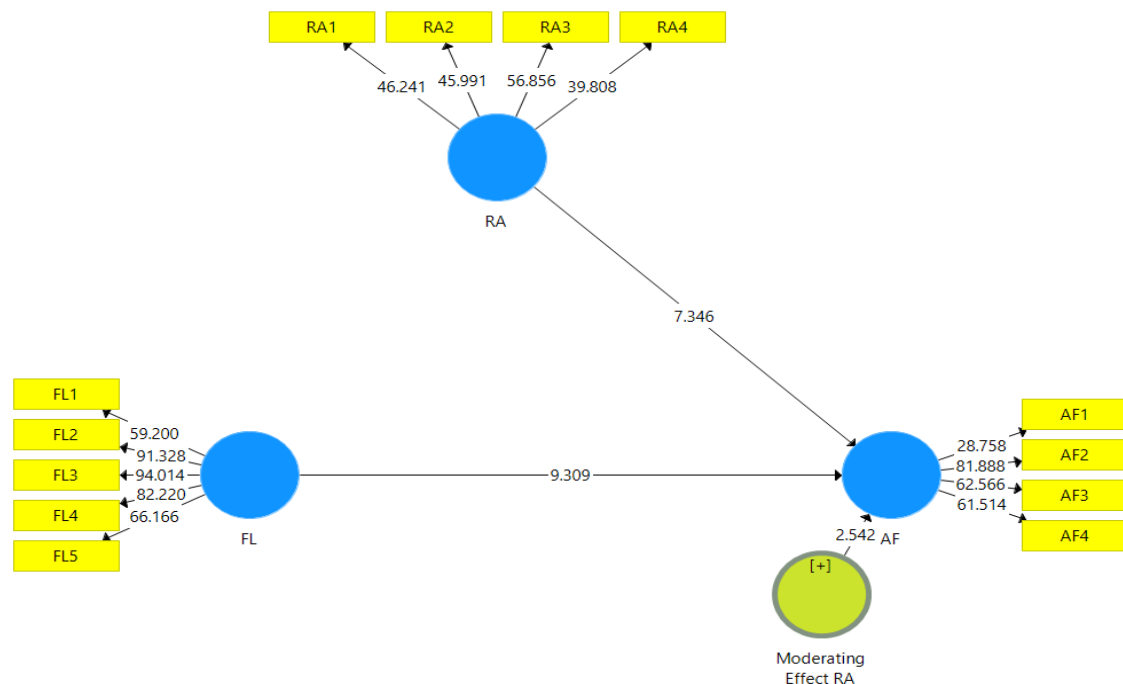


Figure 3. Structural Model Result from Analysis

4.2.9 Hypothesis Testing

The direct correlations between the variables were first tested using the bootstrapping method, the moderating relationship was afterward. The first hypothesis looked at the connection between financial knowledge and financial access. H1 was accepted since the outcome was favorable and significant ($\beta = 0.454$, $p = 0.000$), indicating that being financially knowledgeable has a beneficial impact on accessing finance. Furthermore, supported by the outcome of ($\beta = 0.424$, $p = 0.000$) was hypothesis 2's claim that accessing finance is positively correlated with risk attitude. In the table below, the direct connections are shown.

Table 8: Direct Association Results

	Beta Coefficient	T Statistics	P.Values
FL -> AF	0.454	9.102	0.000
RA -> AF	0.424	8.931	0.000

Hypothesis 3, predicted that risk attitude moderates the association between financial literateness and credit access. The outcome was negatively significant ($\beta = -0.051$, $p = 0.011$). Hence, we draw the conclusion that risk attitude has a detrimental impact on the connection between financial knowledge and accessing credit.

Table 9: Moderating Association Result

	Beta Coefficient	T Statistics	P.Values
Moderating Effect RA -> AF	-0.051	2.542	0.011

4.3. Discussion

The study looked at how risk attitude moderates the financial literacy-access to finance relationship in developing economies. The statistical method employed for the investigation was PLS-Structural Equation Modelling (SEM). We found that having a working knowledge of finances and getting credit is positively and significantly correlated. This suggests that having financially literate SME owners and managers results in a grasp of essential requirements to obtain financial help. Financially aware SMEs can also evaluate various financing tiers and sources to get funding for their company. Given that financial capability is viewed as a strategically important strength for gaining the lead over rivals, this conclusion is consistent with the knowledge base view (Curado,2006). This result is in line with earlier research outcomes (Buchdadi et al., 2020; Han et al., 2018; Ye & Kulathunga, 2019) that found that financial capability greatly impacts access to finance. Our outcome further demonstrates that financial literacy education can suggestively reduce the number of SME business failures that are linked to a lack of access to capital. This can

be linked to financial literacy's capacity to help close the gap in knowledge by providing SMEs with the necessary information to have access to financing. The result, though, is unlike that of Eresia-Eke and Raath (2013), who did not discover a significant link between financial knowledge and access to credit. Similarly, Oke et al. (2020) discovered no evidence of a relationship between financial competence and availability of bank credit. Their conclusion was backed up by Dwiastanti (2015), who argued that financial education does not ensure the use of behavioral finance because conduct may occasionally be influenced by reasons other than facts, such as emotions and psychological considerations.

The hypothesis that a person's risk-taking attitude affects their ability to acquire financing was also confirmed. This result demonstrates how the entrepreneur's risk tolerance influences his capacity to obtain financing. This finding is consistent with Han et al. (2018), who discovered a favorable correlation between risk-taking tendency and debt finance. According to Hermansson (2015), those with a voracious taste for risk have more debt than people with a cautious appetite. This demonstrates how a person's risk tolerance has a big impact on their desire to access loan financing. This result supports the results put forth by Yao et al. (2004) that risk-takers might seize opportunities to build wealth, which eventually serves as security for obtaining financing.

We found a negative significance of the influence of risk attitude on the financial literacy-financial access link. This illustrates that when a risk-taking attitude is added in the relationship, the influence of financial competence on access to finance is lessened. This suggests that the relationship is negatively impacted by risk attitude. Overconfidence or hubris on the side of financially competent SME owners or managers, which tends to make people miss certain inherent risks connected with particular financial decisions, may be blamed for the dampening influence of risk propensity on the financial expertise- access to finance nexus (Pikulina et al., 2017). Furthermore, risk-taking behavior moderating the financial capability-credit access nexus is congruent with risk aversion that the tendency to avoid risk can affect a person's boldness to consider debt finance or to make wealth and have the needed collateral to access finance since risk takers are considered to seize available opportunities to make wealth (Yao et al., 2004).

5. Conclusion

The study investigated the moderating effect of risk attitude on the financial literacy-access to finance relationship. The many hypotheses proposed were determined to be significant. The study's findings demonstrated that financial expertise has a substantial impact on how easily firms may acquire financing. Since financial literacy can assist in closing the knowledge gap about avenues to source for funding and is a prerequisite for getting credit from financial establishments, businesses should prioritize financial literacy as a strategic tool for accessing finance. Additionally, financial know-how can assist in improving risk-taking attitudes. To help them become more financially literate, regular attendance of financial expertise training and workshops is advised.

Policies like yearly risk management and financial knowledge workshops and seminars for SME owners/managers should be considered to help improve the financial capability and risk behavior of SMEs as policymakers continue to pursue greater access to finance for SME enterprises.

A novel contribution to the literature on SME sustainability is the inclusion of risk-taking tendency in the nexus between financial knowledge and financial access. The adverse moderating impact highlights the significance of exercising extra caution and avoiding overconfidence owing to financial literacy while making financial decisions in a company.

The study was restricted in that it covered SMEs supervised by the GEA in Accra and should be interpreted as such. Secondly, the respondents were restricted to owners/managers of SMEs only. Future research may include the company's other financial employees since financial choices are not just made by SME owners/managers. As the moderating variable employed in this study was negative, future researchers can further develop this model by looking at other moderating factors, such as business performance. Furthermore, the study was restricted to SMEs in general, different economic sectors were not assessed. Future research might do a comparative analysis of the outcomes from different economic sectors.

The goal of the study, in sum, was to investigate the moderating role of risk-taking tendency in the connection between financial knowledge and financial access. We created a model incorporating risk attitude as a moderating variable using the knowledge base theory and the utility theory. The study's primary analytical tool was PLS-SEM. The findings indicated financial literacy has a major impact on financial access. The moderating effect was detrimental, weakening the link between financial literacy and financial access. We draw the conclusion that risk-taking tendency and financial capability have financial access implications. By reaffirming financial literacy and risk attitude as crucial factors for increasing SME financing availability in developing nations, this study adds to the body of knowledge on SME financing.

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

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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.

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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.

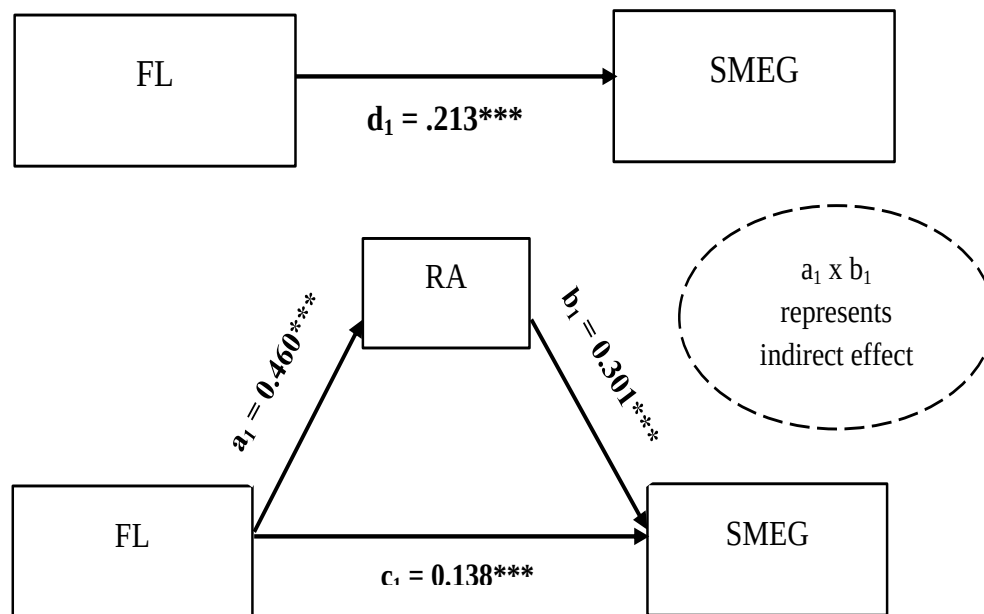


Figure 1 Path analysis: financial literacy, risk attitude, and SME growth

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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Knowledge Retention Strategy and Performance of Small and Medium Enterprises in Ado-Ekiti Metropolis

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Abstract

The study looked at the performance of small and medium-sized businesses in Ado-Ekiti Metropolis and their knowledge retention strategy. The study took the form of a descriptive survey research design. The study's participants were 11,663 owners and managers of small and medium-sized businesses in the Ado-Ekiti Metropolitan Area. Yamane was used to collect 387 samples (1967). The study's primary data was collected via a standardised questionnaire. Regression was used to examine the data collected. The findings show that all of the explanatory factors' constructs significantly impact the performance of small and medium-sized businesses in Ado-Ekiti Metropolis.

Keywords: Knowledge Retention, SMEs, Performance

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1. Introduction

Knowledge is recognised as one of the elements in gaining a lasting competitive advantage over competitors in today's modern business. Organizations that are "constantly learning," adaptable, and flexible are more likely to thrive, and harnessing and exploiting human capital is an important aspect of achieving that aim. That is, knowledge retention can be utilised to gather, distribute, apply, exploit, and possibly develop knowledge before people leave the

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company, or to quickly onboard new employees. Organizations that prioritise knowledge retention efforts are more likely to achieve a competitive edge (Liebowitz, 2011). Knowledge retention has a lot of potential for firms in terms of lowering turnover costs and, perhaps most importantly, maintaining corporate performance (manpower Inc., 2010). As a result, today's SMEs are more concerned with knowledge retention as a critical aspect in enhancing their efficiency and competitiveness, as they are typically more prone to losing key individuals than larger businesses.

Knowledge retention refers to the process of storing information in an organisation so that it can be utilised later. Knowledge retention, according to Walsh and Ungson (1991), is critical to the growth and development of all businesses (Foray, 2004; Mosconi & Roy, 2013). As a result of globalisation, knowledge retention has evolved into an intangible resource that generates long-term economic advantage (Ikujiro & Hiroshi, 2013; Tunc & Bozbura, 2007). In order to boost market involvement and, as a result, improve performance, small and medium-sized businesses (SMEs) must collect knowledge from both domestic and foreign sources.

Performance is a recurring subject in most management fields, according to Lia (2009), and it interests academics and practical managers. Performance is one of the most researched structures in management research, and it may be the most essential factor in deciding whether or not a small organisation will prosper (Cho, 2001). To determine company performance, Gholami, Asli, Nazari-Shirkouhi, and Noruzy (2013) evaluated metrics such as return on assets, sales growth, new product success, market share, and overall customer pleasure (Ellinger, Daugherty & Keller, 2000).

2. Literature Review

2.1 Knowledge Retention

According to Kirsch (2008), knowledge retention requires focusing on critical knowledge at risk of loss, prioritising what is at risk based on likely knowledge gaps and their impact on overall organisational performance, and then putting specific steps in place to protect that knowledge. Getting ahead of any potential knowledge retention difficulty, rather than waiting until organisational knowledge "walks out the door," is one of the most difficult challenges for any organisation (or is going toward the door, as in conventional "exit interview" efforts to retain knowledge). The knowledge-harvesting efforts of the organisation should be centred on acquiring as much information as possible about its projects and procedures, including tacit knowledge that is often not documented.

One of the main reasons for executing knowledge retention is to increase the organization's institutional memory. Employees can learn from prior successes and failures in this way, ensuring beneficial outcomes. Learning from others might help you avoid making the same mistakes or reinventing the wheel (Liebowitz, 2009). Knowledge management is incomplete without knowledge retention. According to Daniel Alpert of the University of Oklahoma, knowledge retention solutions boost creativity, organisational growth, efficiency, employee development, and competitive advantage (Liebowitz, 2009).

Alignment with company goals, transparency, feasibility, and adaptability are the four fundamental elements of a knowledge retention plan. The degree to which a knowledge retention plan supports a company strategy is referred to as alignment with business strategy. Transparency refers to the degree to which the ambitions, goals, and action plans for the knowledge retention process are expressed explicitly. Feasibility refers to the degree of success

in implementing knowledge retention programmes depending on present resources and organisational culture. Flexibility refers to the ability of a knowledge retention strategy to evolve as the business environment changes.

As a result of a better understanding of the importance of knowledge to an organization's performance and survival, knowledge management has become more important. The two main categories of knowledge are tacit and explicit knowledge. Tacit knowledge is a tough-to-understand cognitive process that is difficult to document. It's instilled in the form of abilities, skills, and concepts that people carry about with them (Davenport & Prusak, 2000). It can only be passed on in the form of experiences, practise, sentiments, and attitudes through interactions with other employees. Explicit knowledge, on the other hand, is information that can be easily expressed, codified, transferred, and communicated with others via manuals, fact sheets, pictures, charts, and diagrams (Price, Stoica & Boncella, 2013). As a result, knowledge management has been defined as the explicit and methodical management of vital knowledge and the processes of generation, organisation, diffusion, use, and exploitation linked with it (Skyrme, 2001). Knowledge generation, information technology, and knowledge organisation are all resources that contribute to an organization's knowledge capabilities. These resources, when considered together, determine knowledge management competency, which has been connected to organisational performance (Al-Qarioti, 2015).

2.2 Small and Medium Enterprises (SMEs) Performance

Small and medium businesses (SME) are non-subsidary commercial operations with a fixed number of employees, which varies by country. For SMEs, there is no commonly agreed definition (Beyene, 2002; Verdolin et al., 2018). Many classifications, like small and medium, take size into account, as the name implies. Others consider the number of employees and the value of the company's assets. Furthermore, different groups have presented other definitions based on their interest in this topic. Government agencies, non-profit organisations, international organisations, consulting firms, researchers, chambers of commerce, and other SMEs service providers all have their own classifications based on their own criteria (Dasanayaka, 2008; Jain & Gandhi, 2016). For example, a business entity or activity that involves industrial activities and services, whether as a solo proprietorship, a partnership, or a corporate endeavour, has been extensively defined as an enterprise.

According to Acs, Audretsch, Lehmann, and Licht (2016) and Dasanayaka and Sardana (2016), SMEs engage in a variety of business activities ranging from agriculture, such as fishing, animal husbandry, or manufacturing, to mining, urban and estate settings, construction, serving the business eco-system, retail, wholesale, and services in rural environments (2007). SMEs are growing and active in various sectors, according to Fayomi, Fields, Arogundade, Awotunde, Ijamusan, and Onileowo (2019). Agricultural input or output businesses in rural areas, manufacturing sectors such as computer sales and hardware repairs, local and international commercial construction, chemical, garment, machinery, and food and beverage enterprises in cities are among these industries. In both emerging and developed countries, the number of SMEs includes one-man businesses or small groups of entrepreneurs, family businesses, relatives/friends, or business partners who make business decisions in one way or another.

In several fields, the concept of performance is widely employed. Typically, performance refers to how well a mechanism or a process achieves its goal. Performance is said to be a multifaceted and complex entity that may be quantified using a variety of metrics (Stam, Souren, & Elfring,

2013). From an organisational standpoint, performance refers to how successfully a company is run and the value it provides to consumers and other stakeholders (Wu & Zhao, 2009). It is undeniable that improving organisational performance is a primary goal of both entrepreneurship and strategic management theory and research (Mthanti, 2012). According to Alchain and Demsetz (1972), "firm performance" and "firm success" are interchangeable terms. Performance refers to the comparison of the value provided by a firm with the value expected by the starter. Existing literature on business performance focuses on two varying dimensions, according to March and Sutton (1997). Firm performance indicates effective outcome (Flapper, 1996). The first line of research focuses on finding ways to increase the company's performance, while the second examines various influencing elements on the company's success (Herath & Mahmood, 2014).

2.3 Theoretical Framework

Competence-based theory is a specialised method of operating a business. A business, according to this perspective, is an open system that interacts with the environment to gather resources and improve outcomes. According to this theory, a firm's capacity is built on core capabilities that can't be acquired by competitors and generate higher revenues, which serve as the firm's success basis (Prescott, 2011). The expansion of new technology, products, markets, and competitors constantly test a firm's competitive position in today's dynamic business climate. In the pursuit of long-term competitive advantage, however, flexibility and adaptability have emerged as fundamental management concepts (Whetton, 2011). Competence-based theory offers the framework for a company's competitiveness and sales to coincide with customers' views, resulting in better overall market performance (Lovelock, 2011). As a result, this idea corresponds to a company's ability to analyse a changing business environment and devise survival strategies.

3. Methodology

For this study, a survey research design was used. According to NBS, the study is focused on 11,663 SMEs in Ado Ekiti (2013). A total of 387 SMEs were chosen using Yamane's (1967) sample determination approach as follows:

N = Total Population, e = Significant (Error Margin), and 1 = Constant, where N = Total Population, e = Significant (Error Margin), and 1 = Constant. A 5 per cent (0.05) significant error was used. As a result, a questionnaire was used as a research tool to gather information from SME owners.

$$n = \frac{N}{1 + N(e)^2} \quad 3.1 \quad n = \frac{N}{1 + N(e)^2} \quad 3.1 \quad n = \frac{N}{1 + N(e)^2}$$

Where n denotes the expected total sample size, N is the population size, and e denotes the tolerable error term (0.05)

As a result, the total sample size was calculated as follows:

$$n = \frac{1204}{1 + 1204(0.05)^2}$$

$$n = 305$$

4. Results and Discussion

The total sample size for this study was 387 respondents, with 305 questionnaires returned, accounting for 78.8% of the total questionnaires sent out. The responses have been analysed in the following sections.

Table 1: Demographic Distribution of Respondents

	Frequency	Per cent
Age Distribution		
30-39years	84	26.5
40-49 Years	98	30.9
50-59 Years	58	20.7
60- 69 Years	40	15.5
70 Years and Above	25	6.4
Total	305	100.0
Gender Distribution		
Male	198	56
Female	107	44
Total	305	100.0
Marital Status		
Single	50	20.1
Married	135	40.4
Divorced	74	24.3
Widow	46	15.2
Total	305	100.0
Education Qualification		
Not Attended	10	2.3
Primary School	30	5.8
Secondary School	45	10.1
Diploma/ NCE	60	18.5
Degree /HND	95	36.2
Postgraduate Degree	65	27.1
Total	305	100.0
Business Type		
Ownership/Proprietor	51	18.1
Manager	198	64.4
Both (Owner and Manager)	32	3.0
Not specified	24	14.5
Total	305	100.0
Years of Operation		
Less than 5 years	190	51.3
5-10 Years	80	26.1
11-15 Years	20	14.0
16-20 Years	15	9.5
20 Years and Above	305	100
Total		

Source: Field Survey, 2021

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The age distribution of respondents showed that eighty-four (26.5%) of the respondents are between the ages of 30-39 years, ninety-eight are between 40-49 years, thirty (30.9%) are between 50-59 years while forty (15.5%) are 70 years old and above. This implies that the ages between 30-39 years more in the categories of the students that fill the questionnaire. The gender distribution of the respondents showed that one hundred and ninety-eight (56%) are male students while one hundred and seven (44%) are female students. This suggests that male is more involved in Small and Medium work. The marital distribution of respondent showed that single are fifty (20.1%), Married are one hundred and thirty-five (40.4%), Divorced are seventy-four (24.3%) while Widows are forty (15.2%) of the respondents which means married respondents turn up in filling the research questions. Education qualification of the respondents showed that ten (2.3%) did not have any education background thirty (5.8%) are Primary school certificate holder, forty-five (10.1%) are secondary school holder, Diploma/ NCE are sixty (18.5%), Degree/ HND certificate holder ninety-five (36.2%) while the postgraduate degree holder are sixty-five (27.1%). This implies that the respondents have the necessary quality and experience that qualify them for the job.

Discussion of Findings

Knowledge retention strategy has no significant effect on the performance of small and medium enterprises in Ado-Ekiti.

Table 2 Estimated Effect of Knowledge Retention Strategies and SMEs Performance

Variables	Co-eff.	Std. Error	t-value	p-value
Constant	38.859	2.445	15.896	0.000
Transparency	2.137	0.643	3.327	0.001
Feasibility	4.083	1.276	3.199	0.002
Flexibility	6.638	0.776	8.557	0.000
R	0.517			
R Square	0.267			
Adj. R Squared	0.257			
F-Stat.	27.804 (.000)			

Dependent variable: Performance of SMEs

The respondents' ratings on three variables of knowledge retention (transparency, feasibility, and flexibility) on SME performance were calculated and subjected to multiple regression analysis to evaluate this hypothesis. Table 2 shows that the R (Regression Coefficient) is 0.517, indicating that knowledge retention has a considerable and favourable impact on SMEs' performance. The R² is the percentage of total variance in the dependent variable that the independent variables can explain. The corrected R², which measures the model's goodness of fit, is 0.257, suggesting that after all errors and corrections, the model can only account for 25.7 percent of the variance in knowledge retention, with the remaining 74.3 percent explained by the data.

With $t = 3.327$ and $(p = 0.00 < 0.05)$, the unstandardized beta co-efficient of transparency is 2.133. Transparency has an impact on the success of small and medium-sized firms, according to these studies. We accept the alternative hypothesis and reject the null hypothesis since the difference is significant. This suggests that respondents' reasons for small and medium-sized

business success are heavily influenced by knowledge retention. This implies that information transparency has an impact on the performance of small and medium businesses.

With $t = 3.199$ and $(p = 0.002 < 0.05)$, the unstandardized beta co-efficient of feasibility is 4.083. These findings revealed that feasibility has a positive relationship with small and medium-sized business performance. We accept the alternate hypothesis and reject the null hypothesis because it was found to be significant.

With $t = 8.557$ and $(p = 0.000 < 0.05)$, the unstandardized beta co-efficient of flexibility is 6.638. These findings revealed that flexibility has a bigger impact on the performance of small and medium-sized businesses. We accept alternative hypothesis and reject null hypothesis since it is substantial. This suggests that respondents' reasons for small and medium-sized business success are heavily influenced by flexibility. Table 2 shows how the F-test is used to determine the overall significance of the study hypothesis. The F-statistic distribution computed value is greater than the F-tabulated value, as seen in the table. As a result, the alternative hypothesis is accepted whereas the null hypothesis is rejected. This suggests that knowledge retention will have a significant impact on the success of small and medium businesses in Ado-Ekiti. The findings of the study were consistent and supported by previous studies.

The multiple regression of the model is shown below as:

$$(P = 38.859 + 2.137TP + 4.083FS + 6.638FX)$$

(Where TP = Transparency; FS = Feasibility, FX = Flexibility, SP = SMEs Performance).

5. Conclusion

Based on the findings of this study, the entire knowledge retention strategy (transparency, feasibility and flexibility) were positive and found significant while flexibility affect small and medium enterprise performance most as revealed by the findings. Therefore, the study accepts the alternate hypothesis and rejects otherwise thus concluded that knowledge retention attributes are significantly and positively related to small and medium enterprise performance in Ado-Ekiti.

According to the findings, small and medium-sized business owners and managers should participate in developmental programmes that will help them contribute to human development and increase their expertise. Properly adopting knowledge retention strategy will help enhance employee's skills, innovativeness and creativity towards achieving better or higher performance.

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The Impact of Renewable Energy Consumption and Public Capital Expenditure on Poverty Reduction in Nigeria

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Abstract

Poverty has been an important issue of discussion in underdeveloped countries and has been of crucial concern to many stakeholders across the globe. This article examines the extent to which renewable energy consumption and public capital expenditure impact the poverty rate in Nigeria over the period 2003 - 2019. We employed cointegration and Autoregressive Distributed Lag (ARDL) bounds model for our analysis. Our results revealed that renewable energy consumption significantly escalates poverty in the short run. Public capital expenditure, economic growth, and governance quality substantially reduce Nigeria's poverty. The long-run analysis reveals that renewable energy consumption significantly elevates Nigeria's poverty rate in the long run. Moreso, economic growth and quality of governance reduce the poverty rate substantially, whereas public capital expenditure does not significantly reduce the poverty rate in Nigeria in the long run. The Nigerian government was recommended to adopt modern renewable sources through a public-private partnership and promote good governance, especially in the efficient and appropriate implementation of public capital expenditures.

Keywords: Renewable Energy Consumption, Public Capital Expenditure, Poverty, Human Development Index.

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1. Introduction

Globally, there has been increasing attention and literature on poverty and the state of living standard of people. It has been argued that economic growth and increased production activities could reduce the poverty rate in underdeveloped nations (Department for International Development [DFID], 2002). This notion is also supported by the vicious circle of poverty concept

postulated by Nurkse (1953), which illustrates that poor economies remain poor due to low income, which reduces their purchasing power and savings, leading to low capital formation and low productivity. This scenario will eventually lead to a low-income generation and the cycle will continue, leaving poor economies in a perpetual state of poverty (Hashim et al., 2016; and Bass, 2011).

Energy is perceived as a vital element for production and is subsequently important for economic growth and development (Alaali et al., 2015). Energy is crucial for sustainable development and poverty eradication and fossil fuels will continue to take a larger portion of total energy use in decades (The United Nations Commission on Sustainable Development [UNCSD], 2007). There are debates on the environmental consequences of conventional energy usage due to its creation of CO₂ emissions, which contribute to global warming (Balsalobre-Lorente et al., 2018; Adu & Denkyirah, 2019). These consequences have led to the promotion of environmentally friendly renewable energy sources. Sub-Saharan African (SSA) countries are recently adopting innovative technologies for renewable energy utilization (Asongu et al., 2019). However, renewable energy technologies, including Nigeria, still account for only a small fraction of total energy use in this region.

Keynes' popularization of the critical relevance of government intervention in the economy to provide social benefits for poverty reduction has increased government provision of infrastructural facilities such as roads, irrigation, electricity, healthcare facilities, transportation and communication networks. These governments' intervention tends to equalize opportunities to reduce poverty. Surprisingly, according to the (Central Bank of Nigeria [CBN], 2019), Nigeria's public capital expenditure increased considerably over time, amounting to N 2288.996 billion in 2019, yet the country's poverty rate, as reported by the Nigerian Bureau of Statistics for 2019 was as high as 40% as the World Bank reports that 4 in every 10 Nigerians are below the poverty line in 2022. Furthermore, there are arguments that one of the panaceas to meeting a country's socioeconomic development is government participation through intensive capital projects. Lam and Law (2018) identified the significance of public expenditure as an economic and social intervention to increase the economy's production capacity. Similarly, Muritala and Taiwo (2011) concluded that capital expenditure promotes economic growth in developing countries.

A series of measurements used to explain the economic growth and development level include GDP, GDP per capita and welfare. Social indicators have been identified as a better measure of basic needs for economic development because they can be used to measure deprivations. Furthermore, these social indicators centre on alleviating poverty by providing basic needs to the less privileged (Jhingan, 2012). Hicks and Streeten (1979) identified health, education, food, water supply, sanitation and housing as six social indicators for basic needs. There have also been human development indices like the physical quality of life index (PQLI) proposed by Morris in 1979 and the human development index (HDI) by Desai and Sen in 1990.

As we explore the extent to which public capital expenditure and renewable energy consumption reduce the poverty rate in Nigeria, poverty reduction is proxied with HDI in this study. More importantly, this study examines the extent to which the Nigerian government's attitude towards capital expenditure and renewable energy consumption has reduced poverty in the country.

Based on the Robert Solow growth theory propounded in 1956, economic growth is a result of improvement in labour, capital and state of technology, while the Keynesian theory emphasizes the role of public expenditure in boosting the economy and reducing poverty level (Mathew et al., 2019) by injecting public expenditure into the economy. In like terms, Lam and Law (2018) emphasized the relevance of the government in providing financial support to achieve economic growth.

The energy transition theory, having linked energy consumption with poverty, proposed that energy is crucial for production and income generation, without which the levels of economic activities are limited (Kaygusuz, 2011; Sovacool, 2012; Okwanya & Abah, 2018). The energy transition theory is also used to explain the situation of economies moving from reliance on fossil fuels and other non-renewable energy sources to economies relying on renewable energy sources. Previous scholars have noted that many countries have been pursuing policies of transitions to a cleaner, renewable energy (Berkhout et al., 2012) as they strive for economic growth and development without neglecting environmental consequences.

There are propositions for measuring the level of poverty in an economy, one of which is the human development index (HDI). The HDI was postulated by Meghnad Desai and Amartya Sen in 1990 postulated. It is an index of social indicators across four dimensions which measures health, literacy and income level. HDI is a measure of average accomplishment across socio-economic indicators (United Nations Development Programme [UNDP]). The UNDP has since 1990 been presenting the HDI as the average measurement of human development.

To construct the HDI, Desai and Sen, 1990 first created the index for the dimensions: Life Expectancy Index, Education Index and GDP Index. The HDI is then derived by finding the average of the three indices.

Table 1. The HDI Estimation Criteria

Indicators				Maximum Value	Minimum Value
Life Expectancy at Birth (years)				85	25
Education Index	Adult Literacy Rate in percentages			100	0
	Combined Gross Enrolment Ratio in percentages			100	0
GDP Per Capita (PPP in US Dollars)				40,000	100

Source: Jhingan (2012)

Measuring a country by accomplishments in healthcare, level of education and income level can give a clearer view of the level of development in a country (Jhingan, 2012), thus can be used to measure the poverty level of a country. In this case, a high HDI value implies improved welfare and less poverty, while a low HDI implies a high poverty rate.

In the present study, while adopting the Solow and Keynesian growth model and the energy transition theory, poverty is proxied with HDI as the tendencies of public capital expenditure and renewable energy consumption in reducing poverty in Nigeria over the period 1981 – 2021 is investigated.

2. Literature Review

In this study, the empirical literature review is in two strands; In contrast, the first review is past literature on the public expenditure-poverty nexus, and the second focuses on the renewable energy consumption-poverty relationship.

2.1 Renewable Energy Consumption and Poverty Nexus

Studies on the relationship between different energy sources and other variables started with the work of Kraft and Kraft in 1978. They argued that energy was one of the essential drivers of modern growth. Since then, many other researches have been carried out on the relationship between energy consumption and other macroeconomic variables. Particularly, there have been studies that investigated the relationship between renewable energy consumption and economic growth in multiple countries (Maji, 2015; Belaid & Youssef, 2017; Bhattacharya et al., 2016; Maji, 2017; Narayan & Doytch, 2017; Balsalobre-Lorente et al., 2018; Silva et al., 2018; Maji et al., 2019; Nguyen & Kakinaka, 2019) and individual countries (Jebli & Youssef, 2015; Dogan, 2016; Boontome et al., 2017; Cherni & Jouini, 2017; Lotz & Dogan, 2018; Pata, 2018; Sarkodie & Adams, 2018). Results revealed a positive relationship between the variables (Jebli & Youssef, 2015; Bhattacharya et al., 2016; Lotz & Dogan, 2018; Pata, 2018; Silva et al., 2018). Some reported significant negative relationships (Nguyen & Kakinaka, 2019), while a few found no significant relationship between the variables (Dogan, 2016).

There is a need for an updated study of the relationship between renewable energy consumption and poverty rate, especially on the extent to which poverty rate in low income countries can be reduced through the adoption of renewable energy sources. Nevertheless, Meikle and Bannister (2003) evaluated the relationship between energy consumption and the poverty rate in Indonesia, Ghana and China, discovering that the less privileged are more vulnerable to shocks in the energy market. Investigating the relationship between energy consumption, electricity consumption and human development index across 15 developing countries between 1988 and 2008, Ouedraogo (2013) discovered that in the short-run no causal link exist between the variables. At the same time, the long-run result shows a negative causality from energy consumption to HDI and a positive causality from electricity consumption to HDI. Gertler et al. (2011) examined the relationship between the rate of poverty, economic growth and energy demand and found that pro-poor countries have a higher demand for energy than those that are not. Okwanya and Abah (2018) examined the relationship between energy consumption and poverty rate in 12 African countries from 1981 to 2014. They employed the fully modified ordinary least squared method and discovered long-run negative relationship between energy consumption and poverty level. They also noted that capital stock and political stability significantly reduce the poverty level in sample countries.

2.2 Relationship between Public Capital Expenditure and Poverty

Lupu et al. (2018) examined the relationship between various categories of government expenditure on GDP in 10 Central and Eastern European countries using quarterly data for 1995-2015 and the ARDL model. They discovered that government spending on certain categories like education and health improves economic growth. In contrast, government spending on other sectors of the economy, rescues economic growth in the observed countries. Udonwa and Praise (2018) assessed the impact of government expenditure on poverty in Nigeria over the period 1970

to 2014 using the ARDL technique. Their results revealed that the government's recurrent expenditure on administration reduced poverty while its recurrent expenditure on social and community services increased Nigeria's poverty rate. Their result also shows that government capital spending on economic, social and community services reduced poverty while capital expenditure on transfers increased the poverty rate in Nigeria within the observed period. They recommended efficient and adequate implementation of planned capital expenditures with a reduction in recurrent spending. Similarly, Adegboyo (2020) analyzed the impact of public spending expenditure on the poverty rate in Nigeria for the period 1981 - 2017 using the ARDL model. His finding revealed that recurrent government expenditure on economic, social and community service and transfer reduces the poverty rate, while government capital expenditure on transfer and administrative services increases poverty in the country.

Omodero (2019) investigated the impact of public sectorial expenditure on poverty reduction from 2000 to 2017 in Nigeria. The researcher employed the OLS estimation method and found that public expenditure on various sectors significantly reduce poverty rate. The researcher recommended sufficient allocation of government expenditure to the identified sectors to ensure improvement in their productivity, which should invariably alleviate poverty.

Joy et al. (2021a) evaluated public spending's impact on Nigeria's poverty rates from 1981-2015. Using the ARDL model, they discovered that public capital expenditure significantly increases the poverty rate in Nigeria. The researchers opined that inefficient government spending on capital projects could account for their results. Similarly, Joy et al. (2021b) examined Nigeria's public capital expenditure and her economic development nexus over the period 2008 - 2015 using the ARDL method. Their results show that public capital expenditure significantly reduced economic development in Nigeria and recommended that government capital expenditure be used appropriately to yield the economic development desired. Hidalgo-Hidalgo and Iturbe-Ormaetxe (2018) studied Europe's public expenditure's impact on poverty reduction among adults. The study covered 2005 to 2011 and found that public expenditure on education significantly reduced the incidence of poverty among adults. Dimnwobi, Onuoha, Uzoechina, Ekesiobi, and Nwokoye (2022), with evidence from Nigeria, investigated if public capital expenditure reduced energy poverty between 1990 to 2020. Using the ARDL method, they discovered that government capital expenditure negatively impacts access to energy in Nigeria which translates to reduced access to urban electrification and renewable energy generation and consumption while insignificantly improving rural electrification. Their results also show that an increase in energy prices would lead to improvement in energy access which would translate to rural and urban electrification and more generation and consumption of clean energy.

Related studies carried out in the past have focused on the energy-poverty relationship or public capital expenditure-poverty relationship. The current study, however, concentrates on the public capital expenditure-renewable energy consumption-poverty relationship and uses the HDI as a proxy for the poverty rate.

3. Research Methods

Relying on the Solow and Keynesian growth models, we recognized the importance of public capital expenditure in determining the country's poverty level. In addition, the energy transition theory helped us identify the likely link between energy consumption and poverty via income level.

However, some recent transition studies opined that other factors like political, institutional and socio-cultural changes are important influencers of sustainable development, consequently, poverty reduction (Berkout et al., 2009). As a result, apart from renewable energy consumption, we also included GDP and quality of governance as determinant variables of poverty in our study.

This study adopted the model Okwanya and Abah (2018) used in a related study by replacing energy consumption with renewable energy consumption, a capital stock with public capital expenditure and political stability with quality of governance. The modified model adopted in this study is presented below:

$$\text{Pov} = f(\text{PCE}, \text{REC}, \text{GDP}, \text{QG}) \dots \dots \dots (1)$$

Where Pov denotes poverty, F is the functional relationship, PCE, REC, GDP, and QG represents public capital expenditure, renewable energy consumption, gross domestic product and quality of governance, respectively. The quality of governance variable was estimated by finding the mean of four dimensions as noted in table 2 below.

Table 2: Variables and Sources

Variable Name	Notation	Estimations	Data Source
Poverty	Pov	Human Development Index	UNDP
Government Capital Expenditure	PCE	Government capital expenditure in (₦' Billion)	CBN
Renewable Energy Consumption	REC	% share of renewable energy in total energy consumption	WDI
Economic Growth	GDP	Gross Domestic Product Per Capita (2015 constant US\$)	WDI
Quality of Governance	QG	i. Political Stability and Absence of Violence/Terrorism ii. Regulatory Quality iii. Rule of Law	ESG

UNDP: United Nations Development Programme; WDI: Word Development Indicators; CBN: Central Bank of Nigeria; ESG: Environment Social and Governance.

Source: Authors' Compilation, 2022.

The model is specified in its explicit form to reflect the time series nature of the variables as below:

$$\text{Pov}_t = f(\text{REC}_t, \text{PCE}_t, \text{GDP}_t, \text{QG}_t) \dots \dots \dots (1)$$

$$\text{Pov}_t = \alpha_0 + \alpha_1 \text{REC}_t + \alpha_2 \text{PCE}_t + \alpha_3 \text{GDP}_t + \alpha_4 \text{QG}_t + \varepsilon \dots \dots \dots (2)$$

α_0 is constant; α_1 , α_2 , α_3 and α_4 are the coefficients of lung-run elasticities associated with the explanatory variables; ε is the error term.

All variables in the model were converted into a logarithm linear econometric model to reduce skewness in the time series data (Maji, 2015), which is presented below.

$$\text{Pov}_t = \alpha_0 + \alpha_1 \ln \text{PCE}_t + \alpha_2 \ln \text{REC}_t + \alpha_3 \ln \text{GDP}_t + \alpha_4 \ln \text{QG}_t + \varepsilon \dots \dots \dots (3)$$

The first step was establishing whether the variables have unit roots by conducting the stationarity test using the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests. Next was to test for cointegration among the variables of interest.

4. Results and Discussion

This study examined the empirical impact of renewable energy consumption and public capital expenditure in Nigeria. The annual data were obtained in 2022 from the World Bank's world development indicator (WDI), the Central Bank of NigerCentral Bank of Nigeria (CBN) statistical bulletin and Environment Social and Governance (ESG). The collected data were for 2003 to 2019 due to availability.



Fig. 1. Variables trend. Source: WDI (2022)

Table 3: Description of variables.

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Variables	$\ln \text{Pov}_t$	$\ln \text{REC}_t$	$\ln \text{PCE}_t$	$\ln \text{GDP}_t$	$\ln \text{QG}_t$
Mean	-0.698008	4.430337	6.705871	7.745618	-1.306306
Median	-0.709277	4.430936	6.773881	7.809681	-1.287277
Maximum	-0.618040	4.485034	7.735869	7.896652	-1.226388
Minimum	-0.798508	4.389995	5.487649	7.475166	-1.504243
Std. Dev.	0.057682	0.027090	0.538048	0.132932	0.073501
Skewness	-0.128241	0.435189	-0.395447	-0.693826	-1.399735
Kurtosis	1.703299	2.147186	3.351744	2.151181	4.390706
Jarque-Bera	1.237611	1.051769	0.530709	1.874300	6.921192
Probability	0.538587	0.591032	0.766934	0.391743	0.031411
Sum	-11.86614	75.31573	113.9998	131.6755	-22.20721
Sum Sq. Dev.	0.053236	0.011742	4.631932	0.282735	0.086437
Observations	17	17	17	17	17

Source: Authors' computation (2022)

The result of Jarque-Bera reflects the normal distribution of all variables used in the model.

Table 4: Stationary test result.

Variables	ADF		PP	
	Level	First difference	Level	First difference
$\ln \text{Pov}_t$	-1.220903(0.638)	-3.959148(0.011)***	-1.220903(0.638)	-3.959148(0.011)***
$\ln \text{REC}_t$	-1.027746(0.716)	-3.959148(0.014)***	-1.066725(0.702)	-3.959148(0.014)***
$\ln \text{PCE}_t$	-2.701103(0.056)*	-1.811646(0.358)	-1.650207(0.436)	-3.959148(0.021)***
$\ln \text{GDP}_t$	-1.576135(0.470)	-1.639003(0.440)	-2.673460(0.056)*	-1.595133(0.461)
$\ln \text{QG}_t$	-3.920350(0.049)***	-4.004425(0.000)***	-2.673460(0.051)*	-3.959148(0.000)***

*** indicates 1% significance level while * indicate 10% significance level.

Source: Authors' computation (2022)

The result of Jarque-Bera reflects the normal distribution of all variables used in the model. The stationarity of the variables was tested with the unit root tests of Augmented Dickey-Fuller (ADF) and Phillips Perron (PP). The stationary test result is depicted in the above table and suggests that the variables were stationary at I (0) or I (1). This indicates that the autoregressive distribution lag (ARDL) test is appropriate for estimating the long-run relationship among the variables.

Table 5: Result of ARDL cointegration test

$\text{Pov}_t = f(\text{REC}_t, \text{PCE}_t, \text{GDP}_t, \text{QG}_t)$		Sig. level	Critical values for bound test: Case III	
F-statistics			Lower bounds	Upper bounds
(12.14202)***		1% level	3.29	4.37
Lag length		5% level	2.56	3.49
(1,1,1,0,1)		10% level	2.2	3.09

*** Indicates 1% significance level

Source: Authors' computation (2022)

Since the variables are stationary at levels and first difference, the appropriate cointegration test is the ARDL bounds test proposed by Pesaran et al. (2001). The ARDL bound test null hypothesis is that no cointegration exists in the equation, while the alternative hypothesis is that cointegration exists in the equation. The F-statistic value ascertains the ARDL bound test position. If it is greater than the critical value for the upper bound, then cointegration exists, meaning a long-run relationship exists among the variables. Further analysis would be to estimate the long-run model by conducting the ARDL and error correction model. On the other hand, a greater If the value of the calculated F-statistic is below the critical value for the lower bound, it can be concluded that cointegration and the long-run relationship do not exist. In such a situation, only the short-run model would be estimated, which is the ARDL model without the error correction model.

The ARDL cointegration test result is presented in Table 5. It shows that cointegration exists since the F-statistics value (12.14202) is greater than the value of the upper bounds (4.37) at a 1% significance level. It became imperative to conduct the long-run and short-run relationship among the variables using the ARDL and error correction model (ECM).

Table 6: Estimated long-run and short-run coefficients.

Dependent variable = $\ln \text{Pov}_t$				
Long-run results			Short-run results	
Variables	Coefficient	T-ratio (p values)	Coefficient	T-ratio (p values)
$\ln \text{REC}_t$	-0.883180	-7.955771(0.000)	-0.395970	-4.947036(0.002)
$\ln \text{PCE}_t$	0.015731	1.367971(0.214)	0.034058	6.520005(0.000)
$\ln \text{GDP}_t$	0.203592	4.813400(0.002)	0.137295	4.053763(0.005)
$\ln \text{QG}_t$	0.239121	2.998911(0.020)	0.038227	2.341433(0.052)
Constant	1.848377	2.413374(0.047)	1.246479	8.473983(0.000)
ECM (-1)			-0.674364	-8.416634(0.000)

Source: Authors' computation (2022)

Having established cointegration among the variables, the long-run and short-run models were determined, as depicted in Table 6 above. Based on the long-run ARDL analysis, there exists a significant relationship between poverty reduction and renewable energy consumption, economic growth and quality of governance, whereas there is no significant relationship between poverty reduction and public capital expenditure. The long-run coefficient of renewable energy consumption is negative and significant, while that of economic growth and quality of governance is positive and significant. In contrast, the long-run coefficient of public capital expenditure is positive but not insignificant.

More so, the long-run analysis revealed that renewable energy consumption has an inverse relationship with poverty reduction in Nigeria. A 1% increase in renewable energy consumption increases poverty by 0.8832%, other determinants of poverty held constant. This result is not far from the reality since Nigeria is still in the early stage of renewable energy consumption and has yet to utilize available renewable energy sources fully. Moreover, biomass still constitutes a larger portion of renewable energy sources in the country. Also, the coefficient of economic growth is

significant at 1% and has a positive long-run relationship with poverty reduction in Nigeria. This result implies that a 1% increase in economic growth reduces poverty by 0.2036%.

Similarly, the coefficient of governance is positive and significant at a 1% level, implying that a 1% improvement in the quality of governance reduces poverty by 0.2391%. Therefore, the government should promote the rule of Law and regulatory controls. More so, the government, at various levels, should put in place measures to prevent and reduce violence and terrorism in the country. On the other hand, the estimate of public capital expenditure and poverty reduction is positively but insignificantly related in Nigeria. This means that a 1 % increase in public capital expenditure reduces poverty by 0.0157% but insignificantly.

The estimated short-run relationship was also presented alongside the long-run results in Table 6. The result revealed that the coefficient of all variables is significant at the 1% level. All variables except renewable energy consumption positively relate to poverty reduction in the short run. The short-run coefficient of renewable energy consumption is -0.39597, which means that a 1% raise in renewable energy usage increases poverty by 0.3960%. More so, the result shows that a 1% increase in public capital expenditure reduces poverty by 0.0341%, while a 1% increase in economic growth also reduces poverty by 0.1373%, and a 1% increase in quality of governance leads to poverty reduction by 0.03823%. In addition, the coefficient of the ECM is negative and significant. The ECM result shows a high speed of adjustment from the short to the long run. If there is any disequilibrium in the system, it takes an average speed of approximately 67.44% to adjust back from the short to the long run.

The diagnostics tests were further conducted to ascertain the reliability and stability of the results. The model's reliability was tested for serial correlation, normality and heteroscedasticity. The result of the diagnostic test is presented in Table 7 and shows that the model passes the three diagnostic checks with p-values higher than 0.05. The stability of the model was tested by conducting the cumulative sums of recursive residuals and the square of recursive residuals. The results were presented in Fig. 2 and Fig. 3, depicting that the statistics fall within the acceptable critical bounds at a 5% significance level, which implies that the model is stable and consistent.

Table 7: Diagnostic tests results.

	F-statistics	P values
Serial correlation	0.764949	(0.5130)
Normality	0.723619	(0.6964)
Heteroscedasticity	1.659938	(0.2591)

Source: Authors' computation (2022)

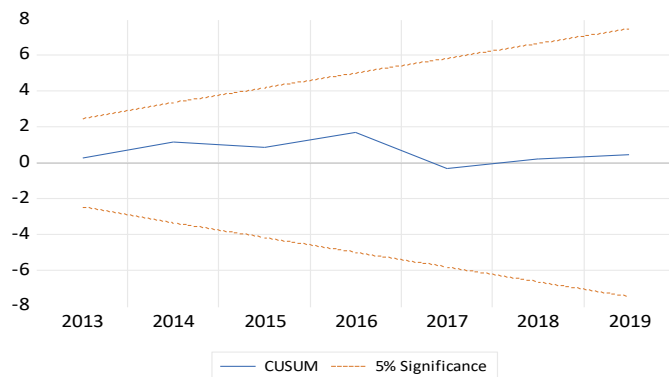


Fig. 2: Cumulative sum of recursive residuals

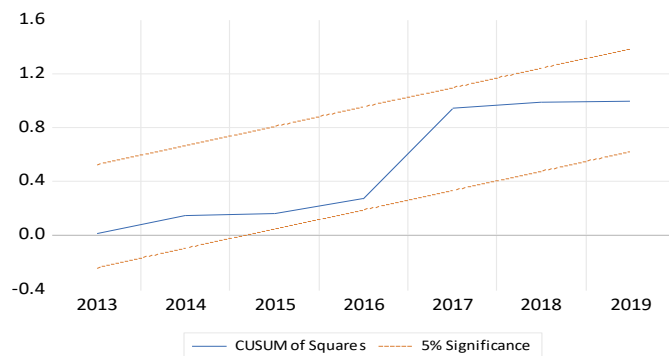


Fig. 3: Cumulative sum of squares of recursive residuals

Source: Extract from *E-views 10* (2022)

5. Conclusions

This study examined the impact of renewable energy consumption and public capital expenditure on poverty reduction in Nigeria from 2003 to 2019. The ARDL bound tests revealed that long-run cointegration exists among the variables and makes it imperative to conduct the long-run and short-run relationship between the dependent and independent variables using the ARDL and error correction model (ECM) estimation technique. The long-run result revealed that renewable energy consumption significantly increases poverty, while economic growth and governance quality significantly reduce it. In addition, public capital expenditure does not significantly impact the poverty rate in Nigeria in the long run. This is linked to past results (Udonwa & Praise, 2018; Omodero, 2019; Adegboyoye, 2020; Joy et al., 2021a), which show inefficiencies in the implementation of government capital expenditure. The short-run result revealed that renewable energy consumption, public capital expenditure, economic growth and quality of governance significantly impact the poverty rate. While renewable energy consumption significantly increases the poverty rate, other variables reduce it in the short run in Nigeria.

It is recommended that the Nigerian government adopt policies to promote modern renewable energy sources through investment in renewable energy technologies and partnerships with private stakeholders. The government should promote good governance and the rule of Law, which would

ensure a conducive business environment and enable citizens to engage in economic and income-generating activities. In addition, the government should ensure efficient implementation of budgeted capital expenditure through monitoring and preventing corruption, which could impede the appropriate capital expenditure implementation in the country.

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Systematic Review on Green Finance in the Banking Industry: Perspectives from a Developing Country

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Abstract:

This paper systematically views the literature on the Green Finance (GF) gap, which refers to the mismatch between the demand for and availability of GF in the banking industry of developing countries. GF is vital for supporting the transition to a sustainable economy. Still, it faces several challenges, such as a lack of standardized definitions, data, incentives, regulations, awareness, capacity, and access to finance. The paper uses a mixed-methods approach, combining bibliometric analysis and qualitative synthesis, to identify and analyze influential publications on the GF gap and synthesize the main findings and implications. The paper also provides potential solutions and recommendations to address the GF gap and suggests directions for future research in this field.

Keywords: Green Finance, Banking Industry, Developing Countries, Systematic Review

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1. Introduction

Green Finance (GF) is defined as "the financing of investments that provide environmental benefits in the broader context of environmentally sustainable development" (UNEP Inquiry, 2015). GF encompasses various instruments, such as green bonds, green loans, green funds, green stock indices, green insurance, and green fintech, as well as policies and regulations that facilitate or incentivize such instruments (Zhang et al., 2020). GF is important for addressing the challenges and opportunities posed by climate change and environmental degradation, as well as for achieving the Sustainable Development Goals (SDGs) and the Paris Agreement targets (UNEP Inquiry, 2015).

The banking industry plays a crucial role in GF, as it intermediates between savers and borrowers, allocates capital to productive sectors, manages risks, provides financial services and products, and influences market behavior (Akomea-Frimpong et al., 2021). The banking industry can contribute

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to GF by providing green credit to finance environmentally friendly projects or activities; issuing or investing in green bonds to raise funds for such projects or activities; developing or adopting green financial products or services that incorporate environmental criteria or incentives; disclosing or reporting environmental information or performance; implementing environmental risk management or due diligence; complying with or exceeding environmental regulations or standards; engaging with stakeholders on environmental issues; supporting environmental education or awareness; participating in voluntary initiatives or networks on GF; and fostering a green corporate culture or governance (Akomea-Frimpong et al., 2021).

However, GF still faces several barriers and challenges that limit its potential and effectiveness, especially in developing countries. One of these challenges is the GF gap, which refers to the difference between the demand for and supply of GF in a given market or sector (UNEP Inquiry, 2015). The GF gap can be caused by various factors, such as lack of common definitions and standards, lack of adequate data and disclosure, lack of appropriate incentives and regulations, lack of awareness and capacity, and lack of access to finance (Zhang et al., 2020). The GF gap can negatively affect both financial stability and environmental sustainability, as it implies underinvestment in green projects or activities, misallocation of capital, and exposure to environmental risks (UNEP Inquiry, 2015).

the purpose of this paper is to conduct a systematic review of the literature on GF gap and its determinants in the banking industry of developing countries. The paper employs a mixed-methods approach that combines bibliometric analysis and qualitative synthesis. The bibliometric analysis uses the Scopus database to identify and analyze the most relevant and influential publications on the GF gap in the banking industry of developing countries. The qualitative synthesis uses thematic analysis to extract and synthesize the main findings and implications of these publications.

The paper contributes to the literature by providing a comprehensive overview of the state-of-the-art and trends in GF gap research in the banking industry of developing countries. The paper also identifies the main determinants of the GF gap in this context, as well as the possible solutions and recommendations to address it. The paper concludes by highlighting the research gaps and directions for future studies.

The rest of the paper is organized as follows. Section 2 describes the methodology of the systematic review. Section 3 presents the results of the qualitative synthesis. Section 4 discusses the main findings and implications. Section 6 concludes the paper and suggests future research directions.

2. Literature Review

2.1. Green Finance gap definition

The selected publications provide various definitions of the GF gap:

The GF gap is described as the difference between the demand for and supply of GF in a given market or sector (UNEP Inquiry, 2015; Zhang et al., 2020; Akomea-Frimpong et al., 2021; Rahman et al., 2022).

It is also defined as the mismatch between the financing needs and availability for green projects or activities (Chen et al., 2019; Liu et al., 2019; Wang et al., 2019; Zhang et al., 2019; Li et al., 2020;

Liu et al., 2020; Wang et al., 2020; Zhang et al., 2020).

Furthermore, the GF gap refers to the shortfall or insufficiency of GF to meet environmental targets or goals (Chen et al., 2018; Chen et al., 2019; Liu et al., 2019; Wang et al., 2019; Zhang et al., 2019; Li et al., 2020; Liu et al., 2020; Wang et al., 2020; Zhang et al., 2020).

Lastly, it can be understood as the inefficiency or ineffectiveness of GF allocation or utilization for green projects or activities (Chen et al., 2018; Chen et al., 2019; Liu et al., 2019; Wang et al., 2019; Zhang et al., 2019; Li et al., 2020; Liu et al., 2020; Wang et al., 2020; Zhang et al., 2020).

The definitions of the GF gap are consistent, referring to the discrepancy or imbalance between the demand for and supply of GF. However, they lack specific criteria, methods, and indicators to measure or estimate the GF gap, as well as considerations for the quality, impact, and performance of GF and the influencing factors.

2.2. GF gap measurement

The selected publications employ various methods and indicators to measure or estimate the GF gap:

Comparing actual or potential GF demand and supply based on data from surveys, interviews, reports, and statistics (UNEP Inquiry, 2015; Chen et al., 2018; Chen et al., 2019; Liu et al., 2019; Wang et al., 2019; Zhang et al., 2019; Li et al., 2020; Liu et al., 2020; Wang et al., 2020; Zhang et al., 2020; Akomea-Frimpong et al., 2021; Rahman et al., 2022).

Calculating GF gap ratios or indices using indicators such as green credit ratio, green bond ratio, green loan ratio, and green fund ratio (Chen et al., 2018; Chen et al., 2019; Liu et al., 2019; Wang et al., 2019; Zhang et al., 2019; Li et al., 2020; Liu et al., 2020; Wang et al., 2020; Zhang et al., 2020).

Employing econometric models and methods like regression analysis, panel data analysis, and structural equation modelling to estimate the GF gap or its determinants based on variables like environmental performance, financial performance, policy support, and market demand (Chen et al., 2018; Chen et al., 2019; Liu et al., 2019; Wang et al., 2019; Zhang et al., 2019; Li et al., 2020; Liu et al., 2020; Wang et al., 2020; Zhang et al., 2020).

The measurement of the GF gap varies across studies, and there is no standardized approach. Some studies rely on qualitative assessments based on expert opinions and surveys, while others utilize quantitative indicators and econometric models to estimate the gap. The choice of measurement method depends on data availability, research objectives, and the specific context of the study.

2.3. Factors influencing the GF gap

The selected publications identify several factors that influence the GF gap:

Policy and regulatory frameworks: The presence of supportive policies and regulations, such as incentives, subsidies, and tax breaks, can stimulate GF supply and bridge the gap (Chen et al., 2018; Wang et al., 2019; Zhang et al., 2019; Li et al., 2020; Liu et al., 2020). Conversely, the absence or inadequacy of such policies may contribute to the GF gap (Chen et al., 2018; Chen et al., 2019; Zhang et al., 2019).

Financial market characteristics: The development and maturity of financial markets, including the availability of green financial products and services, can affect the GF gap (Chen et al., 2019; Wang et al., 2019; Zhang et al., 2019; Li et al., 2020; Liu et al., 2020). For instance, the presence of green bonds, green loans, and other sustainable financing options can enhance the supply of GF.

Investor preferences and risk perception: Investor demand for GF and their perception of environmental risks can impact the GF gap (Chen et al., 2018; Chen et al., 2019; Wang et al., 2019; Zhang et al., 2019; Li et al., 2020). If investors prioritize sustainability and perceive green projects as less risky or more profitable, it can stimulate GF supply.

Information transparency and disclosure: Transparent information about the environmental performance and impact of projects and companies can attract GF and reduce the gap (Chen et al., 2019; Wang et al., 2019; Zhang et al., 2019; Li et al., 2020; Liu et al., 2020). Improved disclosure practices and reporting standards enable investors to make informed decisions and allocate funds to green projects.

Institutional capacity and collaboration: The presence of capable institutions, including green banks, development banks, and financial intermediaries, can facilitate GF supply and bridge the gap (Chen et al., 2018; Wang et al., 2019; Zhang et al., 2019; Li et al., 2020). Collaboration between public and private stakeholders is also crucial for mobilizing GF effectively.

Market demand and awareness: The level of market demand for green projects and the awareness of their environmental benefits can influence the GF gap (Chen et al., 2018; Wang et al., 2019; Zhang et al., 2019; Li et al., 2020; Liu et al., 2020). Increasing demand for sustainable solutions can drive the supply of GF to meet market needs.

2.4. GF gap solutions

This part summarizes the recommendations or suggestions to address or reduce GF gap offered by the selected publications. The summary is as follows:

GF gap can be addressed or reduced by:

Enhancing the environmental performance and awareness of financial institutions, by improving their environmental risk management, disclosure, reporting, auditing, rating, certification, etc. (Chen et al., 2018; Chen et al., 2019; Liu et al., 2019; Wang et al., 2019; Zhang et al., 2019; Li et al., 2020; Liu et al., 2020; Wang et al., 2020; Zhang et al., 2020; Akomea-Frimpong et al., 2021; Rahman et al., 2022).

Improving the financial performance and innovation of financial institutions, by diversifying their green financial products and services, reducing their financing costs and risks, increasing their financing returns and benefits, etc. (Chen et al., 2018; Chen et al., 2019; Liu et al., 2019; Wang et al., 2019; Zhang et al., 2019; Li et al., 2020; Liu et al., 2020; Wang et al., 2020; Zhang et al., 2020; Akomea-Frimpong et al., 2021).

Strengthening the institutional support and pressure for financial institutions, by establishing and enforcing clear and consistent environmental regulations and standards, providing and promoting appropriate incentives and subsidies, creating and facilitating voluntary initiatives and networks, etc. (Chen et al., 2018; Chen et al., 2019; Liu et al., 2019; Wang et al., 2019; Zhang et al., 2019; Li

et al., 2020; Liu et al., 2020; Wang et al., 2020; Zhang et al., 2020; Akomea-Frimpong et al., 2021).

Developing the market demand and supply for GF, by increasing the awareness and capacity of green project owners and investors, improving the information and transparency of green project opportunities and risks, enhancing the intermediation and infrastructure of GF market, etc. (Chenet al., 2018; Chen et al., 2019; Liu et al., 2019; Wang et al., 2019; Zhang et al., 2019; Li et al., 2020; Liu et al., 2020; Wang et al., 2020; Zhang et al., 2020; Akomea-Frimpong et al., 2021).

3. Methodology

This paper utilizes a systematic review methodology to analyze and synthesize the literature on the GF (GF) gap and its determinants in the banking industry of developing countries. The systematic review follows a rigorous and transparent protocol, minimizing bias and error. A mixed-methods approach is employed, combining bibliometric analysis and qualitative synthesis.

The bibliometric analysis is conducted focusing on four indicators: publication year, journal name, author name, and keyword. The qualitative synthesis is carried out with a view to organize, code, analyze, and interpret qualitative data. The synthesis centers around four themes: GF gap definition, GF gap measurement, GF gap determinants, and GF gap solutions.

The systematic review process consists of four main steps: defining the research question, searching and selecting publications, conducting the bibliometric analysis, and conducting the qualitative synthesis. The research question is formulated as follows: "What are the determinants of GF gap in the banking industry of developing countries?" The population of interest is the banking industry, the intervention is GF, the comparison is between the demand and supply of GF, the outcome is the GF gap, and the context is developing countries.

The inclusion criteria for selecting publications are: being written in English, published in a peer-reviewed journal or conference proceeding, published between January 1, 2010, and December 31, 2022, and focusing on GF gap or its determinants in the banking industry of developing countries. The search is conducted on the Scopus database using specific keywords related to GF, gap, banking industry, and developing countries.

After screening titles and abstracts and assessing full texts, a final sample of 12 publications is included in the systematic review. The bibliometric analysis provides insights into publication trends, influential journals, authors, and keywords. The qualitative synthesis identifies and analyzes themes related to GF gap definition, measurement, determinants, and solutions.

The results of the bibliometric analysis show that the field of GF gap research in the banking industry of developing countries is relatively new, with a significant increase in publications in recent years, particularly in 2020 and 2021. The Journal of Cleaner Production and Sustainability are among the most productive journals in this field. The qualitative synthesis provides a comprehensive understanding of GF gap and its determinants, highlighting gaps in research and suggesting directions for future studies.

4.0 Result and Discussion

This section discusses the main findings and implications of the systematic review based on four indicators: publication year, journal name, author name, and keyword.

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The main findings are:

GF gap research in the banking industry of developing countries is a relatively new and emerging field, as most of the publications are published in recent years, especially in 2020 and 2021. GF gap research in the banking industry of developing countries is interdisciplinary and multidisciplinary, as it covers various fields and domains, such as environmental science and engineering, economics and finance, management and business, and others.

GF gap research in the banking industry of developing countries is dominated by authors from China, Bangladesh, and India, as they account for most of the publications in this field. GF gap research in the banking industry of developing countries covers various topics and aspects related to environmental issues and sustainability, financial instruments and products, financial institutions and markets, and developing countries and regions. GF gap is defined or described as the difference between the demand for and supply of GF in a given market or sector.

GF gap is measured or estimated by comparing the actual or potential GF demand and supply in a given market or sector, calculating the GF gap ratio or index, or applying econometric models or methods. GF gap is influenced or explained by environmental factors, financial factors, institutional factors, and market factors.

GF gap can be addressed or reduced by enhancing the environmental performance and awareness of financial institutions, improving the financial performance and innovation of financial institutions, strengthening the institutional support and pressure for financial institutions, and developing the market demand and supply for GF.

The main implications are:

There are many research gaps and opportunities for future studies on GF gap in the banking industry of developing countries, as there are few publications in earlier years, especially before 2017, and few journals with many publications each, and few keywords with many publications each.

There is a need to integrate and consolidate different fields and domains on GF gap in the banking industry of developing countries, as there are many journals with few publications each, and many keywords with few publications each.

There is a need to diversify and represent different countries and regions on GF gap in the banking industry of developing countries, as there are few authors from other countries, especially from Africa and Latin America, which also have significant GF gap issues.

There is a need to focus and cohere different topics and aspects on GF gap in the banking industry of developing countries, as there are many keywords with few publications each, and few keywords with many publications each.

There is a need to develop a common and clear definition of GF gap that is based on scientific and objective criteria and aligned with international standards. There is a need to develop a comprehensive and robust measurement of GF gap that is based on reliable and consistent data and methods.

There is a need to develop a holistic and dynamic understanding of GF gap that considers not only the quantity, but also the quality, impact, and performance of GF, as well as the factors or variables

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that influence or explain them.

There is a need to design and implement specific and practical solutions for GF gap that are based on empirical evidence and best practices, and that are tailored to the context and needs of different markets or sectors

The empirical review highlights the multifaceted nature of the GF (GF) gap and the complexities associated with its measurement and determinants. The GF gap refers to the discrepancy between the demand for and supply of GF, as well as the mismatch between financing needs and availability for green projects or activities. It can be attributed to various factors, including policy frameworks, financial market characteristics, investor preferences, information transparency, institutional capacity, and market demand.

However, the lack of standardized definitions, measurement methods, and indicators makes it challenging to compare studies and assess the magnitude of the GF gap consistently. Further research and collaboration among scholars, policymakers, and practitioners are needed to develop. A common framework for measuring and analyzing the GF gap. Additionally, addressing the identified factors influencing the GF gap requires targeted policy interventions, financial innovation, and stakeholder engagement to foster sustainable and inclusive GF.

4.1. Future Directions for Research

Based on the existing literature, several avenues for future research on the GF gap can be identified:

Standardization of Measurement

Efforts should be made to establish standardized definitions, measurement methods, and indicators for the GF gap. This will enable better comparability across studies and facilitate a comprehensive assessment of the magnitude and trends of the gap over time. Consensus on measurement approaches will contribute to more accurate policy evaluations and targeted interventions.

Regional and Sectoral Analysis

The majority of studies reviewed in this analysis focused on specific countries or regions, with limited coverage of sector-specific gaps. Future research could explore regional variations in the GF gap to account for diverse economic, institutional, and environmental contexts. Additionally, sector-specific analyses could shed light on the differential financing needs and challenges faced by various industries, such as renewable energy, sustainable agriculture, and green infrastructure.

Longitudinal Studies

Longitudinal studies tracking the evolution of the GF gap over an extended period can provide valuable insights into the effectiveness of policy measures and market developments. By examining trends, patterns, and dynamics, researchers can identify critical inflexion points, evaluate the impact of interventions, and project future financing needs and gaps.

Impact Assessment

Quantifying the impact of closing the GF gap is crucial for understanding the potential environmental, social, and economic benefits. Future research could explore the positive externalities of increased GF, such as reduced carbon emissions, job creation, and improved

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resource efficiency. Conducting cost-benefit analyses can help policymakers and stakeholders prioritize investments and align financial flows with sustainable development goals.

Policy Evaluation and Design

Further research is needed to evaluate the effectiveness of policy measures aimed at bridging the GF gap. By assessing the outcomes and unintended consequences of existing policies, researchers can provide evidence-based recommendations for policy improvements and design new mechanisms to mobilize GF more effectively. Comparative studies across countries and regions can also offer valuable insights into the best practices and lessons learned from different policy approaches.

Stakeholder Engagement and Collaboration

Engaging a wide range of stakeholders, including policymakers, financial institutions, businesses, civil society organizations, and academia, is crucial for advancing research on the GF gap. Collaborative efforts can enhance data availability, knowledge sharing, and capacity building, leading to more comprehensive and actionable research outcomes. Engaging practitioners and end-users of GF can ensure that research findings are relevant, practical, and impactful.

5. Conclusion

Based on the findings and gaps identified in the existing literature, the following policy implications and recommendations can be made:

Strengthening Policy Frameworks

Governments and policymakers play a critical role in closing the GF gap. They should prioritize the development and implementation of robust policy frameworks that provide clear signals and incentives for green investments. This includes establishing supportive regulatory frameworks, setting ambitious sustainability targets, and introducing fiscal and financial incentives to encourage private sector participation in GF. Policy coherence and coordination across different government agencies and levels are also essential to create an enabling environment for GF.

Enhancing Data Availability and Transparency

Improving data availability and transparency is crucial for accurately assessing the GF gap and monitoring progress. Governments and relevant institutions should work towards standardizing data collection and reporting methodologies, ensuring consistency and comparability across different sectors and regions. This will enable better tracking of GF flows, identifying gaps, and evaluating the effectiveness of policies and interventions. Efforts should also be made to enhance data accessibility and make relevant information publicly available to support informed decision-making by investors, financial institutions, and other stakeholders.

Strengthening Financial Institutions and Capacity Building

Financial institutions have a pivotal role to play in mobilizing GF. Governments should work with banks, development finance institutions, and other financial intermediaries to strengthen their capacity to assess and finance green projects. This includes providing technical assistance, building expertise in GF, and promoting knowledge sharing among financial institutions.

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Encouraging collaboration between public and private financial institutions can also help leverage resources and expertise to bridge the GF gap.

Promoting Innovative Financial Mechanisms

Innovative financial mechanisms can help overcome barriers and mobilize additional GF. Governments should explore and promote the use of mechanisms such as green bonds, green loans, and blended finance approaches to attract private capital towards green investments. Creating dedicated GF funds, establishing green banks, and implementing risk-sharing instruments can also incentivize private sector participation. Governments can provide guarantees or insurance against specific risks associated with green investments to reduce perceived uncertainties and attract more investors.

Strengthening International Cooperation

Given the global nature of environmental challenges, international cooperation is crucial in closing the GF gap. Governments should collaborate with international organizations, development banks, and multilateral institutions to mobilize resources, share best practices, and support capacity building efforts. Strengthening global coordination on GF, including aligning international financial flows with sustainable development goals, can enhance the effectiveness of interventions and promote the scaling up of GF globally.

Promoting Public-Private Partnerships

Public-private partnerships (PPPs) can be an effective mechanism to bridge the GF gap by leveraging the strengths and resources of both sectors. Governments should foster an enabling environment for PPPs by streamlining regulatory processes, providing long-term policy stability, and offering financial support where necessary. By partnering with the private sector, governments can tap into private capital, innovation, and expertise to accelerate the deployment of green projects and achieve sustainable development objectives.

In conclusion, closing the GF gap requires a multi-faceted and coordinated approach involving governments, financial institutions, investors, and other stakeholders. By implementing the policy implications and recommendations outlined above, countries can create an enabling environment for GF, mobilize private capital, and accelerate the transition to a sustainable and low-carbon economy.

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