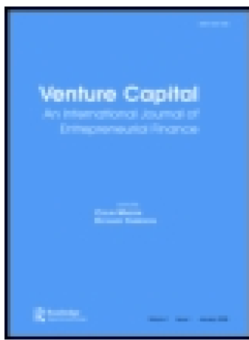

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The moderating influence of financial literacy on the relationship between access to finance and firm growth in Ghana

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ABSTRACT

The literature on access to finance has confirmed a positive relationship between access to finance and firm growth. Yet the boundary conditions for such linkage are less examined in the context of developing economies. This study draws on resource-based view to introduce financial literacy as a moderator of the relationship between access to finance and firm growth. This theoretically derived research model is empirically tested using survey data from 201 small and medium-sized enterprises in Ghana. Our empirical findings suggest that financial literacy positively enhances the access to finance-firm growth relationship.

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Access to finance; financial literacy; SMEs; growth; Ghana

1. Introduction

Small and medium-sized enterprises (SMEs) generate jobs (Carrer and Klomp 1996), contribute to innovation and drive economic growth (Audretsch et al. 2009; Carter and Jones-Evans 2006). Yet, SMEs in developing economies face a number of problems such as absence of adequate and timely banking finance, limited capital and financial knowledge and lack of capacity to identify new financial products. In Ghana, lack of financial management skills places significant constraint on SME development. It has been noted that SMEs tend to attract skilled managers but they can hardly compete with larger firms (Abor and Quartey 2010). The scarcity of financial management talent, prevalent in most developing countries, has a crucial impact on SMEs' growth. Indeed, the aftermath of the financial crisis has led to a significant decline in both debt and equity finance flows to SMEs (Cowling, Liu, and Ledger 2012; Fraser, Bhaumik, and Wright 2015), and recent studies have called for financial inclusion of entrepreneurs (Helfat et al. 2007; Lusardi 2012). As a result, interest in SMEs' financing and growth has been in the forefront of policy debates in most developing countries (OECD 2012; Wehinger 2014).

Indeed, research on SMEs' growth is not scarce (e.g. Coad 2007; Davidsson and Wiklund 2000; Storey 1994; Wiklund, Patzelt, and Shepherd 2009;). One important stream within

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this perspective is the relationship between access to finance and firm growth (Cooper, Gimeno-Gascon, and Woo 1994; Dollinger 1999; Rahaman 2011; Sexton and Bowman-Upton 1991; Storey 1994). Indeed, financing is an important aspect of firms' operation. Without adequate access to financing, the health of the firm is likely to be weak and its potential growth is jeopardised. In keeping with this conventional wisdom, scholars have concluded that the relationship between access to finance and firm growth could be considered positive (Cooper, Gimeno-Gascon, and Woo 1994; Rahaman 2011; Storey 1994). A major tenet is that firms with strong financial muscles outperform other firms.

While there is often assumed to be universally positive influence of access to capital on firm growth as broadly construed, managers are confronted with complex financial decisions to turn around the fortunes of their businesses (Cooper, Gimeno-Gascon, and Woo 1994). For example, managers make financial decisions in the form of savings, investment and retirement planning. Firms often undertake certain activities to obtain resources and further develop these resources (Stadler, Helfat, and Verona 2013). To be able to perform these activities efficiently, firms may rely on dynamic capabilities such as financial literacy, which can assist firms turn resources into variety of purposes such as creation, extension and modification of resources (Helfat et al. 2007).

According to Lusardi (2012), financial literacy encompasses knowledge and cognitive skills with a set of desirable attitudes, behaviours and external enabling factors. In this study, we conceptualise financial literacy as the attainment of knowledge and skills to manage finances, utilise financial services and plan the consumer market effectively to achieve the financial objectives of a firm. This includes skills such as budgeting, bill payment, debt acquisition and payment, management of consumer problems, and comparison shopping (Reich and Berman 2015).

The attainment of these skills is crucial for SMEs in developing economies. For example, the 2014 World Bank Global Development Report (World Bank 2013) had financial inclusion as main theme. The report showed that SMEs and particularly informal businesses or SMEs in emerging markets face significant financial management constraints that undermine their contribution to employment, productivity growth and innovation. The report suggests that financial sector practitioners saw financial education as the most effective means of addressing financial exclusion for businesses. The call for financial education is not a new agenda, yet the financial crisis and its aftermath have renewed interests of practitioners and scholars for greater financial inclusion aimed at improving the financial capability of entrepreneurs.

Despite these calls, our understanding of the role of financial literacy in converting access to finance to improved growth outcome is limited. Put differently, although access to finance requires additional capabilities to turn it into proper usage, research on access to finance and firm growth have not investigated the factors that turn firms' access to finance to higher growth outcomes. Given this gap in the literature, it behoves on scholars to continue to probe potential moderating effects on the access to finance-growth relationship to paint a more comprehensive picture of the circumstances under which access to finance results in favourite growth outcomes. Therefore, this study extends research on how access to finance interacts with individual-level capabilities to increase firm growth by arguing that dynamic capabilities play a key role in converting access to finance into improved firm growth.

Dynamic capabilities allow firms to reconfigure their existing resources and capabilities (Teece, Pisano, and Shuen 1997). Given the recent economic crisis combined with an

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increasingly complex financial system, and the associated negative impact on firm growth (Cowling et al. 2015), financial literacy of entrepreneurs seems especially crucial. Additionally, the risk for negative consequences relating to bankruptcy and debt crisis further accentuate the importance of this issue (Bell and Lerman 2005; Lyons, Chang, and Scherpf 2006; Reich and Berman 2015). We posit that, in order to put financial resources into proper usage, a reconfiguration of the existing resources or capabilities that dynamic capabilities can provide is crucial, as the inertia of stable, 'ordinary' resources and capabilities may not allow the full potential of access to finance to be come to fruition (Eisenhardt and Martin 2000; Engelen et al. 2014; Helfat et al. 2007; Teece, Pisano, and Shuen 1997). We argue that entrepreneurs who possess financial management skills are able to take strategic decisions regarding the entrance into new (international) markets, a dynamic capability, in which firm members pool their various business, functional and personal expertise to make the choices that shape the major strategic moves of the firm. Thus, entrepreneurs can create and adapt the resource base of their firms' activities, developing new products, introducing products to foreign markets and alliancing with other firms (Eisenhardt and Martin 2000). These dynamic capabilities are central elements of strategic entrepreneurship. We argue that financial literacy can aid managers with access to finance to make better financing decisions (Cole, Sampson, and Zia 2009; Lusardi and Tufano 2009) which can spur growth of their firms.

This study adopts the resource-based view (RBV) (Barney 1991) and investigates the potential moderating effect of financial literacy on the relationship between access to finance and firm growth among SMEs. The principal research question that drives this study is: How does financial literacy impact on access to finance-firm growth relationship? Thus, we aim to contribute the entrepreneurship and dynamic capabilities literature. That is, by investigating such contingency, we introduce a theoretically meaningful, yet under-researched, moderator of the access to finance-firm growth relationship under the rubric of the RBV. The RBV (Barney 1991; Makadok 2001) suggests that valuable, rare and inimitable resources may be sources of competitive advantage. Because financial capability of managers is construed to be a resource which is considered valuable, rare and inimitable (Barney 1991), the availability or constraint of strategically valuable resources such as access to finance influences the extent to which managers are able to make decisions regarding financing. Therefore, under the rubric of the RBV, this study adopts financial literacy moderator of the access to finance-growth linkage. We develop a theoretical rationale for how access to finance interacts with financial literacy as a major dynamic capability that is required in order to increase firm growth. In so doing, we link access to finance to the theory of dynamic capabilities, in order to clarify which resources and capabilities foster a robust firm growth. We argue that this study is the first to examine the moderating role of financial literacy on the access to finance-growth relationship from a developing country perspective where access to finance has been argued to be a major constraint to growth (Robson and Obeng 2008).

In the section that follows next, the theoretical background and research hypothesis, as displayed in Figure 1, are presented. This is then followed by the study's analytical approach relating to measures and an assessment of the hypothesis. We then present the results and discussion of the study's contribution. The study concludes with remarks regarding limitations and future research trajectory.

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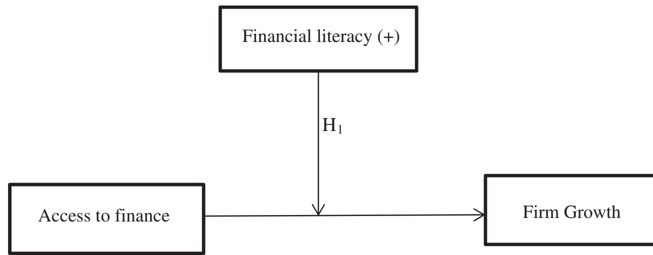

Figure 1. Conceptual model.

2. Theory and hypothesis

To enhance our knowledge of these relationships, we dwell on the RBV to discuss the beneficial effects of financial literacy on access to finance-growth relationship, contending that the relationship between access to finance and firm growth is positively moderated by financial literacy. The RBV (Barney 1991; Penrose 1959; Wernerfelt 1984) suggests that organisations are bundle of resources. The main idea of the RBV is that a firm can achieve sustained competitive advantage and eventual superior growth and performance if it acquires and controls valuable, rare, inimitable and non-substitutable resources and capabilities, as long as it has the ability to absorb and apply them (Barney 1991). For example, resources that can generate sustained competitive advantage include assets, capabilities, organisational processes, information and knowledge (Desarbo et al. 2005; Slater, Olson, and Hult 2006; Song et al. 2007; Teece 2012). Therefore, internal capabilities are important for the access to finance-growth linkage. According to the RBV, firms are unequally distributed bundles of resources (Teece 2012; Wernerfelt 1984), creating resource heterogeneity that persists over time and provides a basis for firm growth (Barney 1991). We argue that access to finance and financial literacy are bundle of resources available to a firm that are essential for generating competitive advantage (Song et al. 2007) and can be used to undertake various activities to achieve growth. Entrepreneurs' financial literacy is an internal firm capability that can complement access to finance to achieve superior growth outcomes. This point has been stressed by previous scholarly studies (e.g. Brush and Chaganti 1999), arguing that the configuration of a firm's capabilities enables the firm to efficiently pursue its growth. Thus, using the RBV, we examine the growth implications of financial literacy of firms' managers on access to finance-growth relationship of SMEs in Ghana.

2.1. *Access to finance and firm growth*

There is a general consensus in the entrepreneurship literature that access to finance is a major problem for entrepreneurs (Hassanein and Adly 2008; Moy and Luk 2003). Without adequate access to financing, the operating power of the firm and its potential for growth is at risk. The growth of small firms also depends on the type and amount of resources controlled by or made available to it (Slevin and Covin 1997; Wiklund and Shepherd 2003). Access to finance is particularly important in realising business objectives such as growth and performance (Sexton and Bowman-Upton 1991).

Scholarly developments suggest that access to financial capital is necessary in order to initiate, operate, develop and facilitate growth within a business (Binks and Ennew 1996;

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Bygrave and Zacharakis 2008), yet financial capacity is likely to be unevenly distributed among firms (Grande, Madsen, and Borch 2011). For example, start-ups may not have strong capability to build sufficient equity to finance a development project. Such firms are likely to depend more on loans and external support. Smaller firms in particular tend to experience most difficulties in accessing finance to facilitate development projects (Binks and Ennew 1996). Thus, access to finance is likely to be an important resource for SMEs and a source of competitive advantage for those firms which have greater access to it than their competitors (Grande, Madsen, and Borch 2011).

In the entrepreneurship and small business literature, lack of access to finance has been associated with entrepreneurs' inability to achieve their objectives (Beck, Demirguc-Kunt, and Maksimovic 2005; BIS 2013; Coad and Tamvada 2012; Heshmati 2001; Hsu and Chen 2000; Hutchinson and Xavier 2006; Malo and Norus 2009; Pissarides 1999; Robson and Obeng 2008) and restrict owner-managers' opportunities to take action (Wiklund and Shepherd 2003). Scholarly evidence suggests that access to finance enhances the pursuit of resource-intensive growth strategies (Cooper, Gimeno-Gascon, and Woo 1994) because slack resources can be tailored to new strategies and practices, which in turn can allow the firm to pursue new growth opportunities (Penrose 1959). Indeed, the literature suggests that access to finance enhances growth outcomes of firms (Cooper, Gimeno-Gascon, and Woo 1994; Storey 1994). Thus, access to finance may play the twin roles of proxying for (internal) financial capacity as well as providing a signal about the quality of future growth opportunities, in turn, reducing the external financing constraints for firms facing informational problems. Thus, scholarly evidence suggests that access to finance can underpin the effective implementation of entrepreneurial and financial management plans by allowing firms to access finance that may be more demanding in terms of collateral requirements but that also have better chance of succeeding. Therefore, given the broad acceptance of the access to finance-firm growth relationship, we offer no direct-effect hypothesis; rather, we focus instead on the boundary conditions of the access to finance-firm growth relationship.

2.2. Moderating effect of financial literacy

Guided by the RBV and the understanding of the access to finance and the financial literacy construct, we now develop theoretical arguments concerning why the success of SMEs increases as entrepreneurs' financial literacy increases. Thus, this study enriches the notion of growth benefits of high levels of access to finance by addressing the question of whether the influence of access to finance on firm growth is conditioned by differential levels of financial literacy within a less developed market environment. Indeed, scholars have increased their efforts in examining the relationship between financial literacy and financial decision-making (Banks, O'Dea, and Oldfield 2010; Christelis, Jappelli, and Padula 2010; Hilgert, Hogarth, and Beverly 2003; Lusardi and Mitchell 2011; Smith, McArdle, and Willis 2010; Van Rooij, Lusardi, and Alessie 2011; Yoong 2011). A major conclusion from most of these studies suggests a strong positive association between financial literacy and financial outcomes. Further, recent empirical evidence suggests a strong correlation between financial literacy and behaviour (Cole, Sampson, and Zia 2009) and that an important determinant of stock market participation is financial literacy (Van Rooij, Lusardi, and Alessie 2011). The literature suggests that individuals with more financial knowledge are more likely to engage in a wide range

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of recommended financial practices (Hilgert, Hogarth, and Beverly 2003). Thus, financial literacy is a significant tool for managing business finance (Miller et al. 2009).

In the context of developing economies, access to finance has been argued to be a major constraint to SMEs growth (Coad and Tamvada 2012; Robson and Obeng 2008). This is worsened by lack of financial management skills leading to poor financial innovation, and this severely limits the growth prospects of promising SMEs in developing countries. Although entrepreneurs in developing countries rely very heavily on informal sources of finance to finance their businesses (Bygrave 2003), existing literature suggests that the most common types of small business financing are not obtained on strictly commercial terms (Forbes Insights 2010). Certainly, retained earnings and credit from suppliers are two crucial sources of finance, yet both are generated during the course of business operations and depend on credit and financial management. The volumes of financing obtained in this way are far from negligible. Trade credit, in particular, typically provides SMEs with twice as much liquidity as do banks (Paul and Boden 2012), while internal budgets are often much more of a constraint on business innovation than the supply of external funding (Forbes Insights 2011).

A high degree of financial literacy of entrepreneurs can give entrepreneurs constant access to new knowledge and information about how to manage their finances (Forbes Insights 2010), which in turn can allow a firm to outperform its competitors (Barney 1991). While these aspects of financial literacy offer a high number of high-quality financial opportunities and that they are correctly evaluated, the extensive knowledge base and the ability to interpret and evaluate new financial information about emerging financial opportunities enable a firm to select and pursue opportunities efficiently at comparatively low cost. This suggests that financial management remains paramount as the strength of business' cash flow is a significant determinant of the outcomes of finance applications, regardless of whether they pertain to debt or equity. It therefore falls to the businesses to manage their finances to generate beneficial outcomes.

The issue of building financial management capability for small business owners in developing country settings has received increased attention in recent times (Bruhn and Zia 2013; Field, Jayachandran, and Pande 2010; McKenzie and Woodruff 2014). Financial literacy tends to equip business managers with financial knowledge necessary to create budgets, initiate savings plans and make strategic investment decisions (Greenspan 2002). Additionally, financial literacy improves firms' financial practices, objective reporting quality and sales revenue (Drexler, Fischer, and Schoar 2014). Scholarly evidence has revealed that financial knowledge directly correlates with self-beneficial financial behaviour (Hilgert, Hogarth, and Beverly 2003). It can, therefore, be argued that stronger financial knowledge is relevant in overcoming difficulties in managing firms' financial capital (Berglund, Hellström, and Sjölander 2007) and financial literacy can facilitate the decision-making processes such as payment of bills on time, proper debt management which can improve the credit worthiness of potential borrowers to support firm performance (Van Rooij, Lusardi, and Alessie 2011).

Our major insight is to argue that SMEs' owner-managers with no financial literacy might overlook necessary risks or, if they do recognise risks, might not be able to interpret them correctly or act on them in a timely manner. This is likely to inhibit access to finance's positive growth potential. Overall, we conclude that the ability to acquire financial information and to react to this information (financial literacy) can facilitate the successful conversion of access to finance into improved firm growth. Therefore, we state:

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H_1: The level of financial literacy will moderate the relationship between access to finance and firm growth. Growth will increase with access to finance but at a faster rate for those with higher financial literacy.

3. Method

3.1. Study setting

To test our hypothesis, we used a sample of SMEs in Ghana, a sub-Saharan West African nation. Ghana has a population of about 24 million people (Ghana Statistical Service 2011), with a landmass of about 239,460 square kilometres, approximately the size of United Kingdom. As developing country, Ghana has experienced consistent political stability since 1992 with high GDP growth of 16.30% (Standard Chartered Bank 2011). The country is widely recognised as one of few developing countries to have rapidly reduced severed hunger from 34% in 1990 to less than 9% in 2010 (World Bank 2010). Ghana has received much attention in the popular business press and related publications regarding its economic transformation policies (Acquaah 2007; Leechor 2004) and market-based activities of private firms of successive Ghanaian governments (Boso, Story, and Cadogan 2013; Chironga et al. 2011). For example in 2006, Ghana was ranked among top 10 reformers on the ease of doing business (World Bank 2006). Recent indicators suggest a steady improvement in the Ghanaian business environment for entrepreneurs over the last five years (World Bank 2010). Despite Ghana's success story, Ghana still faces many challenges in promoting more economically, socially, environmentally sustainable forms of entrepreneurial activity (Dia 1996) and entrepreneurs still face many constraints in the business environment including access to finance and skill gap (Robson and Obeng 2008). Illiteracy of many entrepreneurs creates a problem in accessing finance and managing these firms in developing countries (Baah-Nuakoh 2003). Entrepreneurs in developing countries often possess relatively low levels of education. According to a World Bank report, primary school completion rates hang at 60% in sub-Saharan Africa; 80% in South Asia and 90% in Middle East and North Africa (World Bank 2009). For this reason, in developing countries, less educated individuals are likely to create survival-oriented businesses. Therefore, we conduct our study in a setting in which financial literacy may be one of the most important barriers to success. This may in part be explained by low educational expenditures: measured as a share of GDP, education expenditures in Ghana is among the lowest in the world (UNESCO 2007). Ghana is, therefore, a significant case example to examine access to finance, financial literacy and firm growth.

3.2. Sample and data

Previous studies conducted in Ghana suggest that there is no single public register of small and medium-sized firms in Ghana (Buame 1996; Wolf 2004). For this reason, the sample frame for this study was developed from multiple business listings including Ghana's company register database (available at Registrar General's Department, Ghana), Ghana Export Promotion Council, the Association of Ghana Industries and the Ghana Business Directory. We followed the Ghana Statistical Service standard for SMEs, which defines SMEs as companies with 250 or fewer employees. We contacted 969 firms listed in Ghana company register database (i.e. 358 from a total of 11,456), Ghana Export Promotion Council (i.e. 107 firms from a total of 787), the Association of Ghana Industries (i.e. 267 firms from a total of 1245) and the Ghana

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Table 1. Summary of predictor measures.

Domain and predictor	Number of item	Scale format	Cronbach's alpha	AVE	CR
Financial literacy	4	1 to 7 Likert scale	.79	.74	.70
Access to finance	5	1 to 7 Likert scale	.84	.83	.84
Firm growth	3	1 to 7 Likert scale	.78	.83	.78

Note: Composite reliability (CR) is calculated as the sum of the square roots of the item-squared multiple correlations squared and divided by the same quantity plus the sum of the error variance (Werts, Linn, and Joreskog 1974).

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Business Directory (i.e. 237 firms from a total of 2341) via telephone to elicit information in our study. We contacted 598 firms by telephone to confirm participation in the study. Subsequently, the respondents were contacted with a questionnaire, administered in person. Responses were received from 201 firms (33.6%). In this sample, 85% of the questionnaires were answered by the CEO and 15% by senior finance managers. CEOs and finance managers have been found to have in-depth knowledge regarding firm growth and performance (Boso, Story, and Cadogan 2013). To assess non-response bias, we compared early and late respondents and found no significant difference in the study (Armstrong and Overton 1977).

3.3. Measure of constructs

This study relied on previous research items to measure key constructs examined. Table 1 shows a summary of predictor measures and their respective factor loadings and Cronbach's alpha values. The internal reliability values for all scales were above the .70 threshold suggested by Nunnally and Bernstein (1994).

3.3.1. Firm growth

Following Anderson and Eshima (2013), a three-item, seven-point, subjective performance scale measured firm growth. Each respondent was asked to compare their firm's growth with their intra-industry rivals on three items: sales growth rate, market share growth and employee growth. This approach to measuring growth has been endorsed in management research (Anderson and Eshima 2013; Covin and Slevin 1991; Lawrence and Lorsch 1967). As with all multi-item scales in the study, the combined mean of the scale measures constitutes the variable score. The Cronbach's alpha of the scale was .89, indicating high reliability (Hair et al. 2006).

3.3.2. Financial literacy

Measures of financial literacy were adapted from Dahmen and Rodríguez (2014) to assess managers' level of financial literacy. In total, four items were used to measure financial literacy construct. Entrepreneurs were asked to respond to the following statements: (i) we prepare monthly company financial statement (income statement and balance sheet); (ii) we review monthly financial statements; (iii) we perform financial analysis on monthly financial statements; (iv) we have an understanding of the company's gross profit ratio and its contribution to the overall profit. A seven-point Likert scale with anchors 'strongly disagree' and 'strongly agree' was used to record entrepreneurs' financial literacy. The Cronbach's alpha of the scale was .79, indicating high reliability (Hair et al. 2006).

Table 2. Collinearity diagnostic test.

Dependent variable = firm growth	Collinearity statistics	
	VIF	Tolerance
Firm size	.922	1.084
Firm age	.830	1.204
Entrepreneur's age	.948	1.055
Entrepreneurial experience	.832	1.202
Education	.906	1.104
Gender	.960	1.042
Industry type	.946	1.057
Access to finance (AF)	.881	1.135
Financial literacy (FL)	.887	1.128
FL × AF	.960	1.042

Notes: The table presents the results of collinearity test after the residual centring approach. The results indicate that there is no issue of multicollinearity among the variables.

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3.3.3. Access to finance

Following Cooper, Gimeno-Gascon, and Woo (1994) and Wiklund and Shepherd (2005), we measured access to finance. One subjective item was taken from Wiklund and Shepherd (2005). This item measured the entrepreneur's level of satisfaction with his/her access to finance. This measure is original and was measured on a seven-point scale with the opposite statements 'insufficient and a great impediment for our development' and 'fully satisfactory for the firm's development' (Wiklund and Shepherd 2005). We then adapted four subjective items from Cooper, Gimeno-Gascon, and Woo (1994). For example, entrepreneurs were asked to indicate how their companies have easy access to finance to support its business operations; how business operations are better financed than our key competitors' operations. This was measured on a seven-point scale with anchors ranging from strongly disagree to strongly agree. The Cronbach's alpha of the scale was .84 for all items, indicating high reliability (Hair et al. 2006).

3.3.4. Control variables

Following previous scholarly studies (e.g. Anderson and Eshima 2013; Wang 2008; Wiklund and Shepherd 2005; Yiu, Lau, and Bruton 2007), we tested a number of control variables to account for factors other than the theoretical constructs of interest that could explain variance in the dependent variable (i.e. firm growth). As firm size, firm age, industry type, entrepreneur's age, education and experience of the entrepreneur have been found to influence firm growth (e.g. Delmar 1997), these variables were included to account for exigencies that may influence the research model. We measured firm age as the number of years the firm has been in operation (George 2005). Firm age was log transformed to normalise its distribution and then standardised before inclusion in the research model (Anderson and Eshima 2013). To prevent skewness, we measured firm size as the natural logarithm of the number of employees of the firm (Sheng, Zhou, and Li 2011).

4. Statistical procedure

We used moderated hierarchical regression analysis as the main statistical procedure for estimating the relationship between access to finance and firm growth, as well as the proposed moderating effects of financial literacy. Hierarchical regression is an appropriate technique

Table 3. Descriptive statistics and correlations[a] (square root of AVE in the diagonal).

Variable		Mean	SD	1	2	3	4	5	6	7	8	9	10
1.	Firm size	12.91	1.14										
2.	Firm age	26.79	2.77	.08									
3.	Industry type	3.50	1.94	.11*	−.01								
4.	Manager's age	29.36	2.16	.06	.36**	.14**							
5.	Education	2.26	1.13	.19**	.11*	.16**	.16**						
6.	Working experience	14.56	1.49	−.09*	−.14**	−.01	.03	.04					
7.	Gender	.20	.42	−.12*	.03	−.08	−.07	.07	−.06				
8.	Access to finance	5.93	.95	.18**	−.05	.01	.01	−.05	.02	.15**	**.(86)**		
9.	Financial literacy	4.22	1.06	.08	.06	.03	.12*	.12*	−.05	.09*	.29**	**.(91)**	
10.	Firm growth	4.38	.93	.21**	−.15**	.01	−.03	.17**	.04	.11*	.31**	.18**	**.(91)**

Note: SD = standard deviation. The bold figures denote average variance extracted (AVE). [a]Non-logged transformed age and employees reported. *Correlation is significant at the .05 level (one-tailed). **Correlation is significant at the .01 level (one-tailed).

for evaluating such relationships (Cohen et al. 2003) as it has received much endorsement as a model estimator in entrepreneurship studies (Rauch et al. 2009). We followed existing scholarly studies (e.g. Adomako and Danso 2014; Boso, Story, and Cadogan 2013; Cadogan et al. 2006) in the creation of our interaction variables. Due to the inclusion of interaction variables in the regression estimate, multicollinearity becomes an issue. Previous scholarly studies suggest that to avoid coefficient bias, the exogenous and endogenous variables should be orthogonised (e.g. Little, Bovaird, and Widaman 2006). Following this argument, all the variables involved in the creation of the interactive terms were residually centred. A three-step procedure was adopted in the evaluation of the interrelationship between access to finance, financial literacy and firm growth.

The first stage involved the estimation of the non-hypothesised variables. The second model introduced the main effects variables, whiles model 3 was estimated with the interaction terms nested in the main effect model. We calculated the variance inflation factors (VIFs) for all regressions in our model to test for multicollinearity. Findings from the collinearity test following the residual centring approach is presented in Table 2. As can be seen, all variables involved in the regression estimate exhibit a low VIF, way below the recommended cut-off of 10.00 (Baum 2006) indicating no concerns regarding multicollinearity (Aiken and West 1991). Thus, all the variables can be used to interpret the regression results.

The regression equations for the three models used in this study are stated below:

$$\text{Firm growth} = FS + FA + IN + MA + ED + ME + GN + e \quad (1)$$

$$\text{Firm growth} = FS + FA + IN + MA + ED + ME + GN + (AF + FL) + e \quad (2)$$

$$\text{Firm growth} = FS + FA + IN + MA + ED + ME + GN + (AF + FL) + (FL \times AF) + e \quad (3)$$

where FS = firm size, FA = firm age, IN = industrial type, MA = manager/CEO's age, ED = manager/CEO's education, ME = manager/CEO's experience, GN = gender, AF = access to finance and FL = financial literacy.

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Table 4. Results hierarchical regressions with firm growth as dependent variable (N = 201).

Variables	Model 1	Model 2	Model 3
Controls			
Firm size	.183**	.142**	.139**
Firm age	−.149**	−.106	−.101
Industry type	.056	−.098	.078
CEO/Manager's age	−.040	−.047	−022
Education	.189 **	.174**	.133*
CEO/Manager's experience	.034	.029	.018
Gender	.027	.038	.021
Main effects			
Access to finance (AF)		.291***	.381***
Financial literacy (FL)		.185**	.198**
Interaction effects			
H_1: FL × AF			.521***
Model fit			
F	3.881***	4.584***	5.453***
R^2	.272	.324	.401
Adjusted R^2	.202	.264	.343

Note: Critical *t*-values are 1.282, 1.645 and 2.325 for $\alpha = .10$, $\alpha = .05$ and $\alpha = .01$, respectively (one-tailed test as all hypotheses are one-directional). *p < .10 **p < .05 ***p < .01

4.1. Validity assessment

We test for convergent validity of our psychometric scales by assessing the composite reliability. Previous scholarly development indicates that estimates of composite reliability above .60 and statistically significant concept-to-domain coefficient ($t > 2.0$, $p < .05$) are considered relevant and supportive of convergent validity (Bagozzi and Yi 1988). In order to test our measures for discriminant validity, we calculated the square roots of Average Variance Extracted (AVEs) for all multi-item constructs (Table 3). The results show that, for all constructs, each correlation of one construct with another is smaller than the square roots of its AVE, demonstrating discriminant validity for our measures (Fornell and Larcker 1981). Discriminant validity applies particularly to our core constructs of firm growth (square root of AVE = .86), access to finance (square root of AVE = .91) and financial literacy (square root of AVE = .91).

The values obtained were all above the stipulated value (.60), and all items proved to be statistically significant (Table 1). Next, we checked the discriminant validity of the constructs using a three-prolonged approached that has been utilised by previous scholars (e.g. Adomako and Danso 2014; Fini et al. 2012). First, we calculated 95% confidence interval for each off-diagonal element of the phi-matrix, and this proved that there was no case does the interval include the value of 1.00. Second, a comparison of our model with series of more restricted models with the correlation between each pair of latent constructs was performed. The significant differences in chi-square, between the null model and more restricted ones, point to a rejection of the hypothesis that any two constructs are not mutually distinct. Finally, we made sure that the average variance extracted by each latent variable's measure was larger than its shared variance with any other latent variable. This proved to be important because it showed the absence of significant problems due to random measurement error (Fornell and Larcker 1981).

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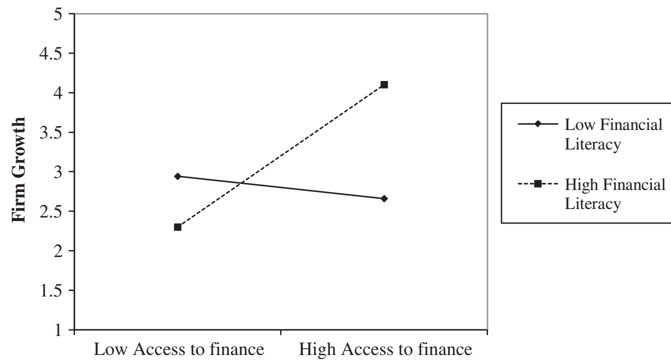

Figure 2. Interaction effect of access to finance with financial literacy on firm growth.

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5. Results

Table 3 provides means, standard deviations and bivariate correlations for study variables. Table 4 provides the results of the hierarchical regression models for firm growth. The graph of the interaction term regarding access to finance and financial literacy is presented in Figure 2. We describe the results in relation to the hypothesis specified in this study.

The only hypothesis in this study (H_1) proposed that entrepreneurs' level of financial literacy moderates the relationship between access to finance and firm growth, such that the relationship will be stronger (i.e. more positive) for those with high, as opposed to low, financial literacy. As shown in model 3 of Table 4, the interaction of entrepreneurs' level of financial literacy with access to finance is significant and positive ($\beta = .52, p < .01$). The graph of this interaction (Figure 2) shows that the relationship between access to finance and firm growth is more positive for those with high, as opposed to low, financial literacy. Hence, the findings offer support for H_1.

6. Discussion

In this study, we sought to enhance our understanding of the moderating role of financial literacy on access to finance-growth relationship. Building on RBV logic, we argued that financial literacy moderates the relationship between access to finance and firm growth such that the relationship is stronger and significant. Empirical findings indicate that financial literacy, indeed, facilitates the association between access to finance and firm growth, thereby addressing Hilgert, Hogarth, and Beverly (2003) call for research on the value of financial literacy. This finding contributes to the entrepreneurship literature. Thus, theoretically we fill a long-standing gap in the entrepreneurship literature by demonstrating that a firm's access to finance-growth relationship is moderated by financial literacy. The finding that financial literacy moderates the relationship between access to finance-growth relationship sheds new light on the importance ascribed to the concept of financial literacy in decision-making (Banks et al. 2010; Christelis, Jappelli, and Padula 2010; Hilgert, Hogarth, and Beverly 2003; Smith, McArdle, and Willis 2010; Van Rooij, Lusardi, and Alessie 2011; Yoong 2011) and behaviour (Cole, Sampson, and Zia 2009). Without this, entrepreneurship theory is unlikely to unearth new insights into the role of financial literacy in access to finance-growth linkage.

An implication is that scholars design their studies to include the role of financial literacy when firms report high levels of access to finance. This new insight implies that by failing to consider the moderating role of financial literacy on access to finance-growth relationship, we neglect an important contribution to the entrepreneurship literature, and thus, scholars may have research a premature and perhaps overly optimistic view of the importance of access to finance in firm growth.

There are managerial and policy implications too. The Ghanaian government has been increasingly engaged in the development of the small business sector. This study suggests that financial literacy is important in translating access to finance into higher growth outcomes. This position has been conceptually stressed by the international financial institutions such as the World Bank. First, interpreting from a practitioner's point of view, the results of this study show that financial literacy can help firms to implement sound financial management by strengthening the relationship between access to finance and firm growth. This insight is particularly important for managers of SMEs to acquire, learn and exploit new financial knowledge to enable their firms improve efficiency and quality of financial services to enhance growth. This is because entrepreneurs with sound financial management skills are better able to evaluate and compare financial products, such as bank accounts, saving products, credit and loan options, payment instruments, investments, insurance coverage (Drexler, Fischer, and Schoar 2014). Therefore, managers of SMEs and policy makers in Ghana and other developing countries may wish to pay greater attention to not only access to finance but also focus on financial literacy. As this study has revealed, managers who are financially literate have access to finance report high firm growth. Managers of SMEs may develop their financial capability alongside learning to access finance. This suggests that managers who have access to financial capital as an end in itself to the neglect of financial literacy may not achieve higher growth. The implication is that when managers have easy access to financial resources, they also need to be inclined in financial management processes in order to achieve higher growth outcomes. Lastly, the result of this study has implications for venture capital decision-making. The implication is that venture capitalists assess the soundness of entrepreneurs' business models and financial projections in order to evaluate the viability of business models (Hsu et al. 2014). For example, entrepreneurs seeking external investment funding are asked to present a financial model of the firm, estimating all cash inflows and outflows such that the net present value of these cash flows can be calculated (Douglas, Carlsson-Wall, and Hjelström 2014). To be able to achieve this objective, the entrepreneur needs sound financial skills in order to convince venture capitalists to invest (Miloud, Aspelund, and Cabrol 2012; Zacharakis and Shepherd 2005). This study suggests that high degree of financial literacy (entrepreneurial capability) tends to covert access to finance to improved growth outcomes. This is likely to help venture capitalists in developing countries in general and Ghana in particular in their decision to finance entrepreneurs.

7. Limitations and future research directions

This study has a number of limitations that should be considered in the interpretation of the findings. First, the study focuses on SMEs in general. Since different SMEs may operate in multiple industries (e.g. agriculture, mining manufacturing, banking), the use of industrial dummies in the regression analysis to control for industrial effect may be insufficient to

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'partial out' the industrial effects (Wan and Hoskisson 2003). As such, future studies could overcome this limitation by focusing on SMEs limited to specific industry to help deal with the industrial effect. Second, the generalisability of the results is limited because we used data from a sample of SMEs in Ghana. Although the level of institutional development in Ghana may be similar to other developing economies and that the results obtained in this study can be generalised to other developing economies (especially those in sub-Saharan Africa). Still, it is important to point out that there could be differences in the level of institutional development among developing countries, which could lead to different implications. Thus, validating our study by relying on data from others developing parts of the world could be fruitful. Future studies might examine the access to finance, financial literacy and firm growth market in mature economies, where firms typically have more resources in order to determine how the findings discussed here change. Third, although we controlled for several factors that account for variance in firms' growth (e.g. firm size, firm age, industry, entrepreneur's age, education, entrepreneur' working experience and gender), we did not include some potentially influential covariates that have been considered in previous scholarly studies, such as industry maturity (Eisenhardt and Tabrizi 1995). This might limit the definitive evaluation of the relative importance of the relationship between access to finance and firm growth in this study and offers a chance for future researchers to take steps in this direction.

Finally, our cross-sectional sample precludes our excluding the possibility of a causal bias. Especially because our study focuses on firm growth, a major avenue for future research should be exclusion of a potential endogeneity bias in this relationship (Hamilton and Nickerson 2003). Future research could overcome this problem using longitudinal data which will enable them to apply techniques such as vector autoregression to estimate the Granger causality (Colombo and Garrone 1996) among financial literacy, access to finance and firm growth.

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8. Conclusion

This study has looked moderating influence of financial literacy on the access to finance-firm growth linkage in Ghana. Limitations aside, our study represents a significant step in entrepreneurship and firm growth research. It outlines theoretically that financial literacy helps firms to deploy its financial resources to improve its growth. The theoretically derived research model, which establishes the link between access to finance, financial literacy and firm growth, was empirically tested using an empirical study of 201 SMEs. Our findings support our empirical hypothesis which argued that financial literacy is a major enhancer of the relationship between access to finance and firm growth. This study contributes to finance and entrepreneurship research. A major implication is that managers should recognise and manage the learning process of financial management. This study also challenges scholars and managers to take a more complex assessment of how and why financial literacy affect the relationship between access to finance and firm growth of SMEs operating developed market economies.

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