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Determinants of micro and small enterprises financial performance in the non-farm sector of Ghana: A quantile regression approach

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Sylvester N. Ayambila^{1*}

Abstract: This study estimates the factors influencing micro and small enterprise financial performance in the non-farm sector of Ghana. Data was sourced from Ghana ECG/ISSER Socio-Economic Panel Survey in 2010. The study is underpinned by the resource-based view theory of firm performance. Ordinary least squares were used to determine the factors affecting financial performance and quantile regression used to analyse the variation of financial performance among enterprises. Many variables including; gender of the enterprise owner, enterprise owner's age, technical education, enterprise years of operation, enterprise location, enterprise sub-sector, number of casual, hired labour, and enterprise value of assets significantly influenced enterprise financial performance. Enterprise resources dominated industry and sector characteristics in shaping enterprise financial performance. Inter-quantile regression results indicate that gender variable was statistically significant across six inter-quantiles emphasizing the importance of gender. Enterprises in the services sub-sector were less profitable relative to those from the manufacturing, trade and restaurant sub-sectors. The results from the quantile regressions dismiss the argument that a joint set of factors influence the financial performance of enterprises, and that those factors do not vary irrespective of whether the enterprise is performing well or not. Technical education should be promoted in order to improve enterprise performance.

Subjects: Economics; Finance; Business, Management and Accounting; Industry & Industrial Studies

Keywords: Financial performance; non-farm enterprises; quantile regression; ordinary least squares; resource-based view; Ghana

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1. Introduction

Non-farm micro and small enterprises (MSEs) significantly contribute to improving the social wellbeing of many societies as well as the economic development of industrialised and developing countries in the world (Carree & Thurik, 2008; Nichter & Goldmark, 2009). Within the confines of developing economies, it has been recognized that most of the MSEs are concentrated in the informal economy (Roy & Wheeler, 2006) and they provide income and employment for most of the rural poor (Mead & Liedholm, 1998). As noted by Haggblade and Reardon (2005), income from non-agricultural activities accounts for 30%-45% of poor rural households' incomes in developing countries. Agriculture is the mainstay of most of the rural population in the African continent. Despite the dependence on agriculture, the continent still faces severe problems with food security in its attempt to feed the ever-growing population. One reason is that agriculture has not been able to provide sufficient food to meet household food security arising from low productivity and adverse weather conditions (Owusu et al., 2011).

In the Ghanaian context, agriculture plays an important role by providing food, income and employment to many people across the country and also contributing to the gross domestic product (GDP). The agricultural sector is constrained by the challenges of low adoption of improved technologies, financial resources, climate change and imperfect markets (Asravor, 2018). Non-farm household enterprises constitute an important source of employment and an option for diversified sources of income in Ghana (Appiah et al., 2021). Barrett et al. (2001) observed that promoting the establishment of non-farm activities in the rural sector is a possible route to getting people out of the sequence of food insecurity witnessed in Sub-Saharan Africa. Non-farm work is a potential pathway out of poverty because most activities of non-farm work are labour-intensive and need a little capital injection and minimum training to establish (Owusu et al., 2011).

Evidence from Ghana Living Standards Survey (GLSS7) conducted in 2016/17 revealed that 50.5% of households in the urban centres operate a non-farm enterprise while 34.6% in rural settings engage in non-farm enterprises. The survey further states that about 6.6 million people are engaged in 3.8 million non-farm enterprises and thus demonstrating the relevance of non-farm enterprises to the economic transformation of Ghana. Interestingly, agriculture and non-farm enterprises are interconnected and provide support to each other to grow. Stamoulis and Zezza (2003) noted that extra income realized from agricultural growth creates conditions for goods and services from the non-farm sector, thereby commencing a sequence in which agriculture and the non-farm sector income grow and provide support for each other's growth.

There are limited opportunities in the agricultural sector in Ghana and non-farm activities provide employment and reduce rural poverty by offering opportunities to augment the farm incomes of those in agriculture (Ackah, 2011). Literature shows that MSEs contribute about 22% of GDP, especially in the agriculture and transport sectors ([African Development Bank AfDB, 2005]). Apart from the employment that is generated by non-farm enterprises, they are crucial for households to diversify their income sources create market linkages, and reduce poverty and inequality (Newman and Canagarajab (2000). Non-farm work is critical for people who do not have access to arable land due to the issue of land ownership in Ghana (Abdulai, 1999) and the fact that it offers poor households alternative income sources, especially during crop failure (Abdulai & Delgado, 1999).

Notwithstanding the relevance of non-farm businesses in contributing to the socio-economic well-being of developing economies, they are constrained by low rates of growth and high failure rates (ILO, 2002). They are also faced with a high cost of credit, difficulties acquiring modern technologies, low levels of managerial skills and high levels of competition (Daniels & Mead, 1998; Livingstone, 1991). According to Aryeetey et al. (1997), credit accessibility is often mentioned as one of the topmost constraints confronted by micro and small businesses, particularly among the advocates of microcredit. In many countries, the problems of the micro and small businesses sector are compounded by unfavourable macroeconomic policies (Steel & Andah, 2004).

Many a time there is the assumption that a set of factors determine micro and small enterprise financial performance and the argument is that those factors do not change based on whether the enterprise is performing well or not. However, Masakure et al. (2008) noted that the non-farm micro and small business sector in Ghana is heterogeneous. The objective of this paper is to estimate the variation in enterprise financial performance of micro and small businesses in Ghana by employing conditional quantile regression which is capable of analysing the variation of enterprise financial performance among poor and well performing enterprises. The use of the conditional quantile regression is to address the problem of the heterogeneous nature of non-farm enterprises in the Ghanaian context. Conditional quantile regression is able to deal with data containing large outliers and when the disturbances are not distributed normally. In particular, the paper uses the resource-based view of the firm which is recognised as an evolving body of literature in strategic management (Lockett & Thompson, 2001).

Despite related empirical studies on MSEs performance, little literature exists on the use of the resource-based view in explaining enterprise financial performance in Ghana. One of the related studies that used the resource-based theory in determining the profitability of microenterprises in the manufacturing sector of Ghana is Masakure et al. (2009). But their study did not extend to enterprises in trade and services subsectors. Secondly, their paper did not analyse the variation in enterprise financial performance. This present study aims at estimating the factors that determine the financial variations of non-farm micro and small business using quantile regression. This paper contributes to the strategic management literature by exploring the financial performance of micro and small enterprises with the use of the resourced-based view theory. The use of the quantile regression is significant as it distinguishes in terms of the performances of poor and well performing enterprises which is often overlooked in most previous studies.

In this study, firm and enterprise are used interchangeably. MSEs are defined as enterprises employing not more than nine (9) people (African Development Bank AfDB, 2005). The remainder of the paper is structured to include the review of relevant literature, research methodology, results and discussions and lastly conclusions and policy implications.

2. Literature review

The study is underpinned by the resource-based view theory (RBVT) of the firm according to Barney (1991), Lockett and Thompson (2001) and Masakure et al. (2008). Literature indicates two main theories of research on the determinants of firm performance. The first and earlier one is the industrial organization view that focuses on factors which are outside the firm (e.g markets in which the firm competes) and is described as market-based view (MBV). It argues that industry characteristics explain the differences in firm profitability (Lockett & Thompson, 2001). The industrial organisation (IO) view theory is grounded on the Structure-Conduct-Performance (SCP) framework that posits that firm behaviour is determined by the structure of the market and that will in turn determine firm performance (Mason, 1957). Typical industry characteristics of the MBV industrial include variables such as market share, barriers to market (entry and exit), level of market concentration, structure of enterprise cost and size of firm but in developing countries, there are low barriers to entry and exit, little innovation and large numbers of enterprises (Daniels, 2001). In earlier studies during the late 1970s, industrial organization economic proponents provided the central theoretical foundation for strategic management investigation about enterprise performance emphasizing that firm performance is driven by structural characteristics (Porter, 1980). The structure-conduct-performance framework posited that firm profitability is linked to the structure of the market.

The second is the RBVT of the firm which considers inwardly resources available to the firm. These resources include information, knowledge, firm-specific assets, capabilities, organizational processes, firm attributes etc., that make it possible for the firm to develop strategies to improve efficiency and effectiveness (Barney, 1991). Makhija (2003) found that RBV-driven variables are remarkably better at explaining enterprise performance as compared to the MBV variables among

Czech firms in privatization era and this underscores the importance of firm resources as principal determinants of enterprise performance. The RBVT is founded on the postulation that an enterprise's success is principally determined by the kind of resources that are owned and controlled. RBVT inwardly considers an enterprise resource and its capabilities to explain enterprise profitability and value (Barney, 1991; Wernerfelt, 1984). Accordingly, an enterprise's competitive advantage is demonstrated by its distinctive enterprise resources that its competitors are incapable of reproducing (Barney, 1991).

RBVT is thought to have begun with the earlier writings of Selznick (1957), Penrose (1959), Rumelt (1984) and Wernerfelt (1984) whiles others argue it evolved from three major intertwined research programmes including strategic research, organizational economics, and industrial organization (Mahoney & Pandian, 1992). Theoretically, the expectation is that enterprises are challenged with similar external environments which relates to the nature of competition, the kinds of product produced, market factors, barriers to entry and exit etc, and if those enterprises have related sets of resources and capital abilities, ceteris paribus, they will show similar characteristics and performance.

Nonetheless, enterprises are heterogenous and have a competitive advantage which emanates from the firm's internal structure, approach and core competencies (Jacobides & Winter, 2007; Kor et al., 2007). In addition, enterprises have specific assets which include physical and intangible assets which include organizational practices and capabilities (Witt, 2007). This suggests that micro and small enterprises' success depends on the decisions and actions of enterprise managers regarding the management of enterprises' product (s), processes involved in production and marketing and financing (Frese & Kruif, 2000). This implies that when investigating enterprise performance, there is the need to consider the competencies of the enterprise functions. For this study, the educational level, age of the entrepreneur and gender of the entrepreneur are proxies for human capital while the enterprise size, the length of years of operations, access to credit and social networks are indicators of enterprise-level resources. External dynamics include the place in which the enterprise is located and the nature of the infrastructure.

However, the RBVT has been contested on the basis that the industrial structure in general is not stable since the market environment is always experiencing constant rapid changes (Eisenhardt & Martin, 2000). It will therefore be difficult for enterprises that subscribe to RBVT alone to achieve a competitive advantage in such an unstable environment. Enterprises that aspire to be competitive in the midst of a dynamic environment should strive to build distinct capacities and integrate and reconfigure internal and external resources (Huang et al., 2010).

The RBVT of firm performance focuses on occurrences within the organization and argues that superior performance is as a result of firm-specific resources (Barney et al., 2011) and it is based on two fundamental assumptions; resources are heterogeneously distributed among firms; and they are imperfectly mobile (Chatzoglou et al., 2018). These assumptions collectively permit for differences in firm resource endowments to occur and continue over a period of time translating into competitive advantage (Barney et al., 2011; Newbert, 2007; Ray et al., 2004).

According to Barney (1991), resources that are valuable and rare offer organisations competitive advantage and better performance in the short run. He also argued that for organisations to sustain these advantages over time, then those resources must be inimitable and have no substitutes. However, Priem and Butler (2001) believe that the "processes through which particular resources provide competitive advantage remain in a black box".

RBVT literature indicates that organizational resources are unique and possess capabilities which differentiate one organization from other organizations operating in similar industries (Ahmed et al., 2018) and suggest that RBVT focuses on internal properties of organizations. Chuang and Lin

(2017) define organizational internal properties to include both organizational assets which include tangible and intangible and organizational capabilities which include internal knowledge and competencies. The RBVT argues that firm efficiency and effectiveness are strongly dependent on the resources available to the firm (Savino & Shafiq, 2018). One important aspect of RBVT is its simplicity and focus on firm performance (Beamish and Chakravarty (2021).

Literature indicates that strategy is highly connected with firm performance because strategy is key to decision-making processes in organisations (Drahokoupil, 2014; Kang & Montoya, 2014). In the context of competition in the global environment, organisations need to continually develop strategies that will offer them competitive advantage. Thus, organisations continue to adapt to changes in the environment, develop new competitive advantages and improve their strategic position in comparison with their competitors (Rothaermel, 2015). Over the years, literature indicates there has been a major shift from industry-specific factors to firm-specific factors in determining variation in business performance (Barbosa et al., 2013; Hoopes et al., 2003; Lazzarotti et al., 2011).

Bayraktar et al. (2017) in examining the association between strategy, innovation and firm performance among Turkish manufacturing companies concluded that firm-specific factors impacted on cost-leadership and differentiation on the performance of firms. Hernández-Perlines et al. (2016) also observed similar conclusions in their study of international entrepreneurial orientation and international performance in family businesses in Spain. However, Arbelo et al. (2021) evaluated the impact of corporate reputation on profit efficiency of 49 Spanish firms and found no empirical support to the RBV literature.

Literature has recognized that many factors including firm size, number of years of enterprise, gender of entrepreneur, access to credit/capital, location of the enterprise, sector of enterprise, managerial skills, type of labour, registration status of enterprise among others affect the financial performance of enterprises. The law of proportional growth by Gibrat (1931) is recognized as one of the utmost important foundational theories in the literature on firm growth. Gibrat further emphasises that all firms are confronted with the same probability of growth because the processes of growth are random. Gibrat argues that firms go through growth processes and these are not affected by the size of the firm but rather random processes which are as a result of the interaction of many factors such as political trends and risk aversion behaviour of entrepreneurs. In later years, scholars such as Jovanovic (1982) contested this argument and proposed that managers of enterprises learn to improve efficiency over some time and when firms are expanding, managers assume it is due to efficiency levels but these are underestimations of the true level of efficiency.

There are conflicting pieces of evidence in literature concerning the connection between the gender of the enterprise owner and enterprise performance. Available evidence suggests that female micro-enterprise owners are relatively disadvantaged concerning access to resources (Boohene, 2009; Daniels & Mead, 1998; Fafchamps, 2003). Similar studies revealed that enterprises owned by males tend to be growth-oriented as compared to those enterprises owned by females and this is mirrored in superior financial performance (Singh et al., 2001). Studies have shown that enterprises in 26 transition countries in the formal sector that are owned by females are found to be less profitable as compared to those owned by males (Sabarwal & Terrell, 2008). Further to this, Rijkers and So¨derbom (2013) found that in Ethiopia, enterprises operated by males tended to be productive as compared to those operated by females. Nonetheless, Watson (2003) indicates that when you control for explanatory variables such as the size of the enterprise, the enterprise age, the sector of the enterprise, level of educational of the enterprise owner and the days of the operations in a year, enterprises operated by females will equally perform well as those operated by males.

MSEs' growth and expansion are constrained by a lack of access to credit (Bigsten et al., 2003). In enterprises where female micro-entrepreneurs are involved as sole proprietors, they face the additional constraint of lack of collateral to access loans (Abor & Biekpe, 2006; Aryeetey et al., 1994). Nevertheless, there are claims that MSEs exhibit low levels of capitalization which means they require limited credit and therefore the assertion that credit constraints these enterprises are overstated (Masakure et al., 2008; Nichter & Goldmark, 2009). It is not even confirmed if access to formal credit from banks and microfinance institutions translates into superior firm performance and in most cases, informal credit is less costly and always available and serves as a substitute (Akoten, et al., 2006; Loening et al., 2008). The majority of MSEs function in informal markets and this constrains their capacity to access resources and skills necessary for growth (McKenzie & Woodruff, 2006; Nichter & Goldmark, 2009). In the analysis of access to credit by non-farm enterprises in Nigeria, Ojonta (2023) found that credit exerted a positive and significant influence on non-farm household enterprises total sales in Nigeria. The study however, did not differentiate between formal or informal credit source. In all these, it is not clear whether formal credit improves the performance of enterprises as compared to cheaper sources of credit from the informal sector (Daniels & Mead, 1998). Also, McPherson et al. (2010) found that access to credit did not significantly improve enterprise growth.

Literature shows there exists a positive connection between technology use and firm profits and that firms' performance is less susceptible to recurring factors (Daniels, 2003; Sleuwaegen & Goedhuys, 2002). However, the gains in terms of technology (nature and level) are less for MSEs that generally possess small capital stock. Literature from strategic management showed that enterprises exhibit dynamic capabilities and offer the enterprise a comparative advantage over others in terms of innovations (Jacobides & Winter, 2007; Lockett & Thompson, 2001).

The location of enterprises can have an impact on the level of enterprise performance. The level of competition faced by enterprises as well as the cost of purchase of inputs depend on the location of the enterprise (McPherson et al., 2010). Notably, enterprises located in urban centres have improved access to a range of resources as well as infrastructural support as compared to those in rural settings (Bogetic & Sanogo, 2005). MSEs in the urban sector enjoy a better and cheaper cost of inputs, access to big and dynamic markets, more networking opportunities and relatively greater access to information and all these are critical to the performance of enterprises (Shields, 2005; Sleuwaegen & Goedhuys, 2002).

The sector of the enterprise is found to impact on the performance of MSEs (Daniels & Mead, 1998; Fafchamps & Gabre-Madhin, 2001). Sector variables and the environment within which these enterprises operate can affect how readily available enterprise-specific resources can be utilized to achieve the objectives of the enterprise. Enterprises from different sectors face different product demands and are also confronted with different cost structures which will have differential effects on the performance of enterprises (Nissanke & Aryeetey, 2006; Steel & Andah, 2004). However, empirical literature largely neglects the distinct sectoral growth patterns but rather emphasises on within country variations which depend on resource endowment (Liedholm, 2002; Mead & Liedholm, 1998).

It is documented that human resources can serve as a basis for competitive advantage to firms as long as they provide support and value to business enterprises (Wright et al., 2001). Undeniably, human resource enhances enterprise competitiveness (Barney, 1995). A study by Van der Sluis et al. (2005) proved that evidence suggests human capital expressed in the manager or its employees promotes enterprise growth. It has been observed that disparities in the decisionmaking skills of micro-entrepreneurs exert an appreciable impact on firm performance (Verheul et al., 2002). There is a tendency to conflate managerial skills with that of entrepreneurial ability because they are few findings in developing countries that have tried to explore its distinctive influences on enterprise performance (Udry & Anagol, 2006). The registration of businesses is recognized to influence business performance. Studies by Deininger et al. (2007) and Sleuwaegen and Goedhuys (2002) revealed that micro-enterprises that are formally registered develop faster as compared to the informal ones when endogeneity is controlled. Enterprises that are registered have credibility with the necessary licensing authorities and can have access to restricted resources, and reduction in transaction cost and these contribute to improving enterprise performance (Sleuwaegen & Goedhuys, 2002). Conversely, if the net benefit of formal registration is less as compared to the cost of informality, firms may choose to remain informal (Liedholm & Mead, 1996).

MSEs are characterized by high labour intensity (Nichter & Goldmark, 2009), suggesting that accessing low labour costs with the requisite skills is an important factor affecting firm performance. The majority of MSEs employ various combinations of labour sources including family members (usually not paid), paid workers and apprentices (Frazer, 2006). Frazer further stated that whiles paid labour is more productive and reflects high levels of skills and expertise, family labour can increase firm profits since it is less expensive. Evidence from the study of micro-enterprises in Ghana revealed that using hired labour positively influences firm performance (Masakure et al., 2009). Studies have shown that hired labour is usually more skillful, more experienced and more productive in the case of micro enterprises in Kenya (Daniels & Mead, 1998).

3. Methodology

3.1. Data and empirical model

The study used data from the ECG-ISSER Ghana Socioeconomic Panel Study Survey (2009–2010) Wave One. The data is national and representative of all the regions in Ghana. It involved the sampling of 5010 households across all the regions. The data contained 18,889 individuals. The sampling followed a two-stage stratification technique which was based on the ten regions involved. Data were collected in 2009–2010 and at that time, Ghana had ten regions. In the first stage, clusters were chosen from a master sampling frame which was created from the Ghana 2000 Population and Housing Census. In all, 334 clusters were randomly selected from a master sampling frame and this consisted of a list of enumeration areas in each region. Fifteen (15) households were chosen out of the enumeration areas. The number of enumeration areas were proportionally allocated with estimated population share for each region. Simple random sampling technique was employed in the selection. As part of the first stage, a complete households listing provided the sampling frame that was used in the second stage to select households.

Simple random sampling technique was used during the second to choose 15 households from each cluster to ensure that there is adequate regional representation with acceptable precision. Field data collection spans six months from November 2009 to April 2010 to allow for the collection of adequate data. The long period of six months was to ensure that enough household baseline information was gathered. Also, due to the length and intensity of the survey, most households were surveyed over the course of multiple visits. To the best of the researcher's knowledge, this is one main data that is nationally representative, comprehensive and contain adequate data on MSEs in the non-farm sector of Ghana. This survey contains comprehensive data on non-farm MSEs (primary and secondary) activities in Ghana. The data also contains the assets of enterprises, expenses and revenues, sources of credit/capital, and hours of work among others.

MSEs were categorized into four (4) sub-sectors/industries according to the International Standards Industrial Classification (ISIC). The total number of individuals operating non-farm enterprises across the four industries is 2003. For the analysis of data, 1887 enterprises (478 manufacturing enterprises, 1042 trade enterprises, 180 restaurants enterprises and 187 services enterprises) were considered.

3.2. Enterprise financial performance and its measurement

Enterprise profit was estimated from enterprise operators' information on sales based on low, average and high months for the whole year of operation. Enterprise profits are used as proxy for enterprise financial performance in this study. Data on cost was obtained through the same process as indicated above. Enterprise profit was then calculated by totaling reported sales in low, average and high months for the past year before the survey to take care of the seasonality of enterprise operation. There are periods in the year when enterprises are not performing as expected owing to limitations of raw material, and capital among others.

Firm performance is often seen as a reflection of firm competitive advantage in empirical studies of management research. Effective and efficient management of company assets enhances good financial performance which is reflected in the level of profitability (Putra et al., 2021). Firm performance can be measured by profits realized from firm operations (see for examples, Masakure et al. (2009); Masakure et al. (2008), De Mel et al. (2009); Daniels (2001); Liu et al. (2013). However, Arbelo et al. (2021) argue that the use of simple financial metrics tends to ignore other relevant dimensions of firm performance (financial metrics do not reveal the gap between actual and potential performance). According to Maiti (2019), it is observed that in the majority of cases of financial data, there are fat tails in the tail part of the distribution and these do not follow normal curve distribution as OLS regressions follow the central tendency theory and towards the extreme distributions it loses its effectiveness which can affect the results. Conditional quantile regressions divide the data into equal percentiles and it is effective and robust in capturing outliers.

It has been observed by Mensah et al. (2007) that MSEs in Ghana are underutilized during some periods in the year and this is due to scarcity of raw materials, inadequate or lack of capital and market demands. The possible constraint with reported high, average and low sales and costs is the ability to recall enterprise operations for the whole year. But MSEs are not complicated as compared to large-scale ones. The study acknowledges the problems connected with precise measurement of micro and small business financial performance (Daniels, 2001; Daniels & Mead, 1998; De Mel et al., 2009). The problems of accurate measurement of the majority of MSEs profit include; poor record keeping resulting in considerable dependence on memory recall, households consuming enterprise resources and not reporting, production variations across seasons and the fear of paying taxes (De Mel et al., 2009).

Some of the problems as shown by De Mel et al. (2009) include the lack of financial records resulting in memory recall, the use of enterprise money for households and vice versa without reporting and individuals not disclosing their earnings because of the fear of taxation. This study contends that the approach used here to measure profit is quite reasonable because it captures the issues relating to seasonal variation in enterprises' revenues and costs. The problem of recall is minimised considering the fact most of these enterprise operators are fully aware of seasonal patterns regarding their businesses and could easily indicate months of high, average and low sales and costs.

The study employed quantile regression by Koenker and Bassett (1978) that make it possible to trace the entire distribution conditioned on fixed explanatory variables (Fattouh et al., 2005). Fattouh and others argued that quantile regression is relevant when dealing with data that is likely to contain huge outliers and when the distribution is not normal. In this case, employing conditional mean estimators will not be appropriate because the estimators are not robust to differences from normality or error distributions and consequently, ordinary least squares (OLS) will likely produce inefficient and biased estimates. This problem is addressed with the use of quantile regression which is robust from normality and skewed tails (Mata & Machado, 1996). This approach became relevant considering the heterogeneous nature of micro and small non-farm businesses in Ghana as recognized by Masakure et al. (2008). Their study highlighted some fundamental weaknesses in previous studies that assumed implicitly that a collective set of factors

define enterprise performance and that these factors remain the same irrespective of how the enterprise performs.

From literature and following Masakure et al. (2009), the following were identified as constituting the domain of resources characteristic of a firm; "entrepreneurial resources; organizational resources and technological resources". The entrepreneurial resources comprised basically of human endowments such as the length of the period in which the enterprise had operated, gender of the enterprise owner and educational level. Variables that are usually proxied as organizational resources include enterprise size, enterprise age, formal registration of enterprise, assets, physical location of enterprise, financial resources and human capital in the enterprise. Tangible and intangible assets of the enterprise are proxies for technological resources, including research and development, product utilization, etc (Geroski, 1995; North & Smallbone, 2001). Nonetheless, it is important to note that these resources are challenging to recognize among MSEs in emerging countries because there is a limitation in capital investment (Masakure et al., 2009). According to Geroski (1995), market/industry effects can be captured by drawing inspiration from the industrial organization viewpoint which considers market/industry effects variables such as gross domestic product (GDP), market shares, level of concentration of the industry, presence of unionization and level of imports etc.

In this study, firm-specific resources include; entrepreneurial (educational level of enterprise owner, age of enterprise owner, gender of enterprise owner), enterprise resources (assets, credit, formal registration of enterprises, type of labour (hired, household, apprentices, casual), age of enterprise, months operated. Location and industry factors include; the location of the enterprise (urban or rural), geographical location (Savannah, Forest and Coastal), sub-sector (manufacturing, trade, restaurants and services).

Sleuwaegen and Goedhuys (2002) and Oerlemans and Meeus (2005) emphasized the function of the geographical location of enterprises, competitiveness, knowledge spillovers and networks on firm performance. Accordingly, location variables in this study refer to zonal characteristics which are captured using dummy variables as proxies for market effects. To evaluate the effects of enterprise-specific and non-enterprise factors on non-farm enterprise financial performance in Ghana, a standard OLS model was estimated and a quantile regression model was employed to evaluate the factors that influence the variation in enterprise financial performance.

The estimation model is stated subsequent to Masakure et al. (2008) which included variables that mirror the standard methods used in MSEs literature such as the attributes of the enterprise owner/manager, enterprise sub-sector and market effects. Thus, enterprise profit is given as π ik for enterprise i which operates in the sub-sector k which is expressed below.

$$\pi_{ik} = X_{i}^{\prime} \alpha + Y_{k} \beta + \varepsilon_{ik} \tag{1}$$

where; Xi is a vector that captures observed enterprise-specific variables, Yk is a vector that captures unobserved attributes of the sub-sector of the enterprise, α and β are unknown factors, and ϵ ik is the unobserved error term. To estimate the factors influencing enterprise profit, the study employed quantile regression following Koenker (2005) and Masakure et al. (2008). Let Q θ (π |c) for $\theta \in (0, 1)$ denote θ quantile of enterprise profits (π) distribution given the identified vector c=(X,Y). To obtain the first quantile, set θ = 0.1. This indicates that as θ increases from 0 to 1, the entire enterprise profits can be traced in the distribution conditional on the identified vector (c). The model is specified as;

$$Q_{\theta}(\pi_{ik}|\mathsf{C}_{ik}) = X'_{i}\alpha_{\theta} + Y'_{k}\beta_{\theta}$$
⁽²⁾

Many variables were added to capture the entrepreneurial characteristics of the enterprise owner, enterprise-level resources and market/industry structure effects. Variables were included to capture the effects of entrepreneurial characteristics which are the human capital expressed in the owner of the enterprise or its workers that could promote enterprise performance. The age of the entrepreneur is a continuous variable. Literature suggests a non-linear relationship between enterprise age and enterprise performance (Daniels, 2003; Fafchamps, 2003; Verheul et al., 2005). For this reason, age was squared to capture this effect. The gender of the entrepreneur was assigned a dummy; 1 if the entrepreneur is male and 0 otherwise. The educational level of the entrepreneur was in three forms; first, whether the entrepreneur had ever been to school (formal education), secondly, whether the entrepreneur had technical education and thirdly, whether the entrepreneur had tertiary education. Firm resources are categorized following Barney (1991), Grant (1991) and Hunt (1995). Physical capital assets include plant, raw materials, location, cash, accessibility of capital, and intellectual property rights. Human capital assets include education and training, knowledge and skills etc. Organizational capital assets include capabilities, regulators, policies, culture, information and communication technology etc. Barney (1991) argues that enterprise-specific assets have great value, are rare and challenging to reproduce nonsubstitutability offer to the enterprise as a competitive urge.

Huang et al. (2010) categorized enterprise-specific resources into three components: "productive resources, human capital and tacit knowledge acquisition". Several variables were included to capture the enterprise resources. These included the age of the enterprise (the years in which the enterprise had been in business operation), the age of enterprise squared to capture the non-linear effects of enterprise performance and the age of the enterprise, the length of the period (months of operation) the enterprise had been operating in the past year before the survey, credit dummy variable; 1 if enterprise received credit and 0 otherwise. Variables also included are enterprise assets value, formal registration status of enterprises, number of apprentices, number of casual labour hired and number of full-time employees. Firm-specific resources in this study refer to both entrepreneurial and enterprise resources as discussed above. To capture the market/industry structure effects, the location of the enterprise was considered. That refers to the locality of the enterprise (rural or urban). Urban was assigned a dummy variable; 1, if the enterprise is situated in an urban community and 0, otherwise.

Specific geographical locations (zones) were assigned dummy variables and these included; Coastal, Savannah and Forest zones. Literature indicates that an enterprise location to an extent determines the level of competition and cost of inputs purchased (McPherson et al., 2010). Notably, enterprises located in urban areas tend to have improved access to a variety of resources as well as infrastructure as compared to those in rural areas (Bogetic & Sanogo, 2005). Geographical/ location and sectoral variables are referred to as non-enterprise factors because they are external to the enterprise.

The following hypotheses are tested: H_o; Firm-specific resources will not dominate location and industry factors in explaining enterprise financial performance; H₁; Firm-specific resources will dominate location and industry factors in explaining enterprise financial performance.

4. Results and discussions

4.1. Descriptive statistics

Data is described using mean, standard deviations and percentages. The mean annual profit for the enterprises was GHS 1,306. Analysis of the profit by gender showed that male-owned enterprises performed better than female-owned enterprises in relation to profits. The results indicate that male-owned enterprises had an average annual profit of GHS 2,111 as compared to GHS 993 for female-owned enterprises. The majority (81%) of the enterprise owners had formal education. Only 19% of them had no formal education with 3% having technical education while 2% had tertiary education. The mean age of the enterprise owners is 42 years and this suggests the sector

has an active workforce. On the average, enterprises had operated for about nine (9) years and this is an indication that the enterprises are resilient given the fact that most of the MSEs collapse in under five years. Access to credit is essential for the growth and development of enterprises. The results indicate that only 12% of enterprises had access to credit for their businesses. Although this is low, it is not surprising because credit remains a constraint to micro and small businesses. Formal registration of enterprises is a challenge to micro and small enterprises as this data points out that only 13% of the enterprises were formally registered with government authorities. The majority of the enterprises (69%) used hired workers as a labour source. Most of the enterprises (56%) for this study were drawn from the trade sub-sector. About 26% were from the manufacturing, 10% from the restaurant sub-sector and 10% from the services sub-sector. The trade subsector was the most profitable enterprise recording an average annual profit of GHS 1,463. This was followed by the services sub-sector with an average annual profit of GHS 1,294. The manufacturing sub-sector was third with an average annual profit of GHS 1,088 and lastly the restaurant sub-sector with an average annual profit of GHS 1,017. Enterprises located within the Coastal zone recorded higher profits (average annual profit of GHS 1,458) compared to the other subsectors. Enterprises located in the Savannah zone recorded slightly higher average annual profit (GHS 1,291) as compared to those from the Forest zone which recorded an average annual profit of GHS 1,217. The measurement of the variables and descriptive statistics are presented on Table 1.

4.2. OLS and quantile regressions

OLS and quantile regressions were used to analyse the effects of enterprise-specific and nonenterprise factors on micro and small businesses financial performance in the non-farm sector. The use of the quantile model enabled the estimation of enterprise performance (variations of profits) across the quantiles. The F-test of the regression coefficients in the OLS model shows that the model significantly explained enterprise performance. From the results, the R-square in the OLS regression is low but it is not surprising when dealing with cross-sectional data such as the one used in this analysis. The Pseudo R²s in the quantile models are generally low but these are common when using cross-sectional data (see Masakure et al., 2008). The Pseudo R² for the beginning quantile model (0.1) is 0.01 and it reaches 0.18 in the 0.9 quantiles. The sex of the owner of the enterprise and hired workers variable are significant in all the quantiles and also in the OLS model and this emphasise the importance of these two variables. The variable urban is significant across all the quantiles except the beginning quantile (0.1).

One anticipated problem with this kind of analysis is endogeneity. Sadoulet and de Janvry (1995) found that capital stock, credit access and labour are potential endogenous variables to enterprise profit function because production and consumption decisions are jointly taken in the household. One suggested way of dealing with the issue of endogeneity is the use of instrumental variables but this study could not find appropriate instruments. The identification of appropriate instruments is a difficult problem (Strauss & Thomas, 1995). Table 2 provides the estimates from the OLS and quantile regressions on enterprise financial performance.

4.3. Entrepreneurial resource effects on enterprise profits

The joint F-test of variables that captured entrepreneurial resources effects on enterprise profits indicates they are important determinants at a 1% significance level. The results indicate that enterprises owned by males have higher profits as compared to those owned by females. This corroborates previous studies by Daniels and Mead (1998), Masakure et al. (2008) and Sabarwal and Terrell (2008). This is seen in the male coefficient variable which is positive and significant in the OLS and quantile regression models. The coefficient of the male variable increases from lower quantiles to higher quantiles suggesting there is a bigger gap in profits between male-owned enterprises compared to female-owned ones.

The association between enterprise owners age and enterprise profits is positive but insignificant with the OLS regression. However, it is significant at the 0.5 quantile and negative at the 0.9 quantiles showing that age is relevant for enterprises operating around the mean profit of about

| Table 1. Measurement of varia | ibles and descriptive statistics (Me | an and standard deviations) | | |
|-------------------------------|---|-----------------------------|---------|-------------|
| Variables | Descriptions | Observations | Mean | Std. Dev. |
| Dependent variable | | | | |
| Profit | Annual profit (GHS) | 1887 | 1306.42 | 3204.74 |
| Explanatory variables | | | | |
| Entrepreneurial resource | | | | |
| Male | Sex of business owner; 1=male, 0=otherwise | 1887 | 0.28 | 0.45 |
| Age | Age of business owner (number of years) | 1887 | 42.37 | 13.18 |
| Age_squared | Square of the business owner's age | 1887 | 1969.04 | 1261.74 |
| No_education | Owner of enterprise had formal education (1=yes, 0 =otherwise) | 1887 | 0.19 | 0.39 |
| Technical_education | Owner of enterprise had technical education (1=yes, 0=otherwise) | 1887 | 0.03 | 0.17 |
| Tertiary_education | Owner of enterprise had tertiary education (1=yes, 0=otherwise) | 1887 | 0.02 | 0.14 |
| Enterprise resource | | | | |
| Age_enterprise | Age of business (number of years business had operated) | 1718 | 9.16 | 8.58 |
| Age_enterprise square | Age of business (number of years of operation) squared | 1718 | 157.62 | 324.95 |
| Months_operated | Number of months enterprise operated in the past 12 months | 1887 | 11.28 | 2.02 |
| Credit | Access to credit (1=if enterprise had access to credit, 0=otherwise) | 1775 | 0.12 | 0.32 |
| Assets | Total value of enterprise assets (GHS) | 1887 | 480.63 | 1822.28 |
| Registered | Formal registration (1=if enterprise is formally registered, 0=otherwise) | 1750 | 0.13 | 0.34 |
| | | | | (Continued) |

| Table 1. (Continued) | | | | |
|--|---|--------------|-----------|-----------|
| Variables | Descriptions | Observations | Mean | Std. Dev. |
| Apprentices | Number of apprentices | 1887 | 0.11 | 0.62 |
| Casual_labour | Number of casual employees | 1887 | 0.19 | 0.73 |
| Hired_labour | Number of hired employees | 1887 | 0.69 | 0.97 |
| House_holdlabour | Household labour (1=if enterprise use household labour, 0=otherwise) | 1887 | 0.06 | 0.24 |
| Geographical/location characteristics | | | | |
| Urban | Location of enterprise (1=urban, 0=otherwise) | 1887 | 67.0 | 0.50 |
| Savannah_zone | Ecological zone of enterprise (1=Savannah zone, 0=otherwise) | 1887 | 0.24 0.43 | |
| Forest_zone | Ecological zone of enterprise (1=Forest zone, 0=otherwise) | 1887 | 0.46 0.50 | |
| Coastal_zone | Ecological zone of enterprise (1=Coastal zone, 0=otherwise) | 1887 | 0.30 0.40 | |
| Sub-Sector | | | | |
| Manufacturing | Food products, beverages, apparel, footwear etc (1=manufacturing, 0=otherwise) | 1873 | 0.26 | 0.44 |
| Trade | Whole trade and retail enterprises (1=trade enterprise, 0=otherwise) | 1876 | 0.56 | 0.50 |
| Restaurants | Restaurants, bars and canteens (1=restaurant enterprise, 0=otherwise) | 1873 | 0.10 | 0.29 |
| Services | Road transport, hair dressing, carpentry, masonry (1=service enterprise, 0=otherwise) | 1886 | 0.10 | 0.30 |

| Table 2. OLS and qu | antile regress | ion estimates | of non-farm e | nterprise final | ncial performa | ınce in Ghana | | | | |
|------------------------------|----------------|---------------|---------------|-----------------|----------------|---------------|----------|----------|----------|----------------|
| Variable | OLS | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 |
| Entrepreneurial resources | | | | | | | | | | |
| Male | 964.4*** | 74.65** | 145.2*** | 204.9*** | 300.8*** | 412.5*** | 517.3*** | 825.2*** | 1,061*** | 1,660*** |
| | (199.40) | (37.83) | (33.36) | (48.75) | (62.16) | (75.01) | (107.50) | (152.30) | (232.50) | (367.00) |
| Age | 14.14 | 1.94 | 3.27 | 5.02 | 7.99 | 18.37** | 12.12 | 9.21 | 17.10 | -82.52** |
| | (22.71) | (5.29) | (4.95) | (00.9) | (96.9) | (9.04) | (12.61) | (15.30) | (26.54) | (37.89) |
| Age_squared | -0.377* | 0.03 | 0.06 | 60.0 | -0.129* | -0.239*** | -0.207* | 0.19 | 0.01 | 0.51 |
| | (0.23) | (0.06) | (0.05) | (0.06) | (0.07) | (60.0) | (0.12) | (0.16) | (0.25) | (0.34) |
| No_education | 217.10 | 30.42 | 0.81 | 13.70 | 22.42 | 17.18 | 14.49 | 25.98 | 224.20 | 172.00 |
| | (207.80) | (26.02) | (24.92) | (32.04) | (43.34) | (51.13) | (74.87) | (100.80) | (142.70) | (277.40) |
| Technical | 243.10 | 150.60 | 257.0** | 272.9** | 323.7** | 259.7* | 184.20 | 228.00 | 201.80 | 356.70 |
| | (308.00) | (139.80) | (100.50) | (129.10) | (142.20) | (149.20) | (198.30) | (305.40) | (605.80) | (840.00) |
| Tertiary | 428.70 | 1048.00 | 64.50 | 11.74 | 1.22 | 206.30 | 208.70 | 612.70 | 339.60 | 214.60 |
| | (553.10) | (1828.00) | (535.30) | (228.40) | (246.20) | (314.90) | (433.60) | (472.60) | (569.30) | (1321.00) |
| Enterprise resources | | | | | | | | | | |
| age_enterprise | 57.33*** | 0.17 | 2.48 | 9.199* | 11.05 | 9.60 | 12.38 | 28.66** | 49.63*** | 136.7*** |
| | (19.12) | (3.90) | (3.62) | (4.77) | (6.77) | (7.46) | (9.19) | (12.14) | (18.14) | (31.20) |
| age_enterprise ² | -0.941** | 0.03 | 0.01 | 0.14 | 0.13 | 0.01 | 0.04 | 0.40 | -0.835** | -2.181^{***} |
| | (0.42) | (0.11) | (60.0) | (0.14) | (0.19) | (0.21) | (0.23) | (0.26) | (0.38) | (0.66) |
| Months_operated | 51.23 | 9.29 | 17.19*** | 25.18*** | 36.97*** | 49.41*** | 55.42*** | 59.98** | 73.78*** | 54.85 |
| | (49.91) | (6.53) | (5.82) | (7.31) | (10.43) | (13.65) | (19.22) | (24.41) | (27.51) | (78.23) |
| Credit | 48.72 | 2.04 | 14.67 | 2.91 | 6.51 | 8.18 | 15.53 | 72.42 | 15.88 | 85.25 |
| | (229.90) | (69.55) | (33.71) | (35.24) | (47.30) | (61.54) | (76.47) | (110.30) | (151.50) | (356.80) |
| Assets | 0.159** | 0.01 | 0.07 | 0.112*** | 0.160*** | 0.187*** | 0.185*** | 0.159** | 0.19 | 0.45 |
| | (0.07) | (0.05) | (0.05) | (0.04) | (0.05) | (0.04) | (0.03) | (0.06) | (0.13) | (0.44) |
| | | | | | | | | | | (Continued) |

| ι αριε 7. (ςουτινηεα) | | | | | | | | | | |
|-----------------------|----------|---------|----------|----------|--------------|----------|----------|----------|----------|-------------|
| Variable | OLS | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 |
| Registered | 304.80 | 19.52 | 36.24 | -82.47* | -123.3^{*} | 94.41 | 6.43 | 185.10 | 684.3* | 591.70 |
| | (226.40) | (58.96) | (38.01) | (45.73) | (68.13) | (89.27) | (154.90) | (192.80) | (360.80) | (512.20) |
| Apprentices | 46.65 | 6.26 | 7.03 | 8.56 | 23.76 | 36.17 | 29.87 | 29.03 | 69.91 | 142.50 |
| | (106.50) | (66.15) | (28.00) | (34.22) | (35.83) | (34.87) | (44.92) | (68.40) | (105.30) | (508.60) |
| Casual_labour | 345.3** | 31.34 | 28.71 | 19.23 | 20.30 | 69.95 | 133.30 | 241.3* | 356.10 | 824.3* |
| | (168.90) | (49.60) | (30.93) | (46.91) | (60.71) | (64.41) | (105.20) | (130.10) | (312.90) | (482.60) |
| Hired_labour | 276.9** | 53.39** | 86.38*** | 113.9*** | 170.6*** | 222.1*** | 289.7*** | 339.6*** | 510.8*** | 761.6*** |
| | (109.20) | (24.56) | (27.15) | (28.36) | (38.65) | (48.36) | (64.19) | (66.96) | (145.20) | (188.20) |
| Household_labour | 210.90 | 15.12 | 44.40 | 19.09 | 25.51 | 31.21 | 40.25 | 96.37 | 121.30 | 325.20 |
| | (298.10) | (65.96) | (53.83) | (102.20) | (81.79) | (101.20) | (144.20) | (245.00) | (371.00) | (551.30) |
| Location factors | | | | | | | | | | |
| Urban | 562.6*** | 31.73 | 61.70** | 97.64*** | 162.2*** | 240.7*** | 351.8*** | 436.8*** | 517.5*** | 658.3*** |
| | (147.60) | (25.52) | (27.18) | (36.92) | (45.25) | (52.89) | (78.51) | (98.23) | (134.70) | (220.70) |
| Savannah | 262.00 | 27.11 | 38.36 | -74.23* | -128.4** | -156.6** | 94.23 | 62.53 | 125.90 | 275.90 |
| | (192.00) | (35.98) | (30.18) | (39.03) | (50.00) | (63.40) | (86.31) | (121.80) | (167.60) | (338.40) |
| Forest | 40.19 | 1.48 | 18.19 | 53.93 | 76.08 | -114.5** | 121.60 | 157.10 | -368.8** | 314.10 |
| | (143.70) | (33.32) | (29.63) | (40.91) | (49.07) | (55.86) | (74.36) | (96.05) | (143.10) | (235.10) |
| Sub-Sector variables | | | | | | | | | | |
| Manufacturing | 372.0* | 72.41 | 84.09 | 32.74 | 121.1^{*} | 161.8** | 179.40 | 293.4* | 561.0*** | 754.9** |
| | (217.00) | (49.49) | (58.16) | (57.03) | (63.85) | (70.40) | (120.60) | (151.90) | (208.40) | (371.80) |
| Trade | 903.6*** | 33.50 | 85.49 | 90.36 | 178.4*** | 279.4*** | 408.9*** | 550.7*** | 886.6*** | 1,407*** |
| | (248.50) | (48.54) | (61.76) | (56.99) | (59.55) | (68.82) | (125.30) | (146.30) | (216.80) | (346.00) |
| Restaurants | 624.9** | 18.98 | 59.72 | 49.61 | 198.7** | 261.7*** | 390.7*** | 429.1** | 646.5*** | 1,318*** |
| | (263.80) | (72.46) | (09.60) | (73.63) | (78.28) | (98.52) | (137.80) | (173.40) | (249.70) | (460.60) |
| | | | | | | | | | | (Continued) |

| I ADIE 2. (CONTINUACU) | | | | | | | | | | |
|--|--------------|----------|----------|----------|----------|-----------|----------|----------|----------|-----------|
| Variable | OLS | 0.1 | 0.2 | 0.3 | 7.0 | 0.5 | 9:0 | 2.0 | 8.0 | 6.0 |
| Constant | $-1,233^{*}$ | -137.20 | -216.0* | -264.6* | -486.4** | -865.0*** | -773.** | -766.5* | 197.80 | 1290.00 |
| | (718.90) | (136.30) | (127.80) | (156.30) | (195.80) | (241.70) | (342.60) | (460.70) | (618.20) | (1280.00) |
| Observations | 1479 | 1479 | 1479 | 1479 | 1479 | 1479 | 1479 | 1479 | 1479 | 1479 |
| R sq (Pseudo) | 0.12 | 0.01 | 0.03 | 0.04 | 0.06 | 0.08 | 0.10 | 0.11 | 0.12 | 0.18 |
| Entrepreneurial resources | 7.97*** | | | | | | | | | |
| Enterprise resources | 3.07*** | | | | | | | | | |
| Both entrepreneurial and enterprise | 4.84*** | | | | | | | | | |
| Sub-sector characteristics | 5.47*** | | | | | | | | | |
| Joint F-test of location variables | 5.49*** | | | | | | | | | |

GHS 1,306 but not important for those at the upper quantile. The coefficient changed to negative at the 0.9 quantile suggesting that age may not be relevant for enterprises operating at a higher quantile. To cater for the non-linear effects of the age of the enterprise owner on enterprise profits, the age variable was thus squared. The coefficient of the age of the enterprise owner squared was negative and significant in the OLS model and at 0.4, 0.5 and 0.6 quantiles thus indicating that older enterprise owners received lower profits as compared to enterprises owned by younger entrepreneurs. This is reflected in the belief that most enterprises are owned by those who founded them and as they grow in age, they become less ambitious and active and this may affect their ability to adopt technology and seize opportunities which may affect enterprise performance (Daniels & Mead, 1998). The study found that over 70% of the businesses are owned and managed by a single person and most of the time the founder.

The results further revealed that having formal education in itself does not affect enterprise profits. However, having technical education has a positive and significant relationship with enterprise profits from 0.2 to 0.5 quantiles. Enterprises operating within these quantiles include manufacturing and the service sub-sectors and this is reflective of the nature of jobs in those subsectors. According to Ghana Statistical Service (GSS) (2002), there are low returns to education until after the junior secondary school level.

4.4. Effects of enterprise resources on enterprise profits

Enterprise resources significantly influenced enterprise profits. The F-test shows significance at a 1% level. The coefficient of the age of enterprise was positive and significant in both OLS and quantile regressions at 0.3, 0.7, 0.8 and 0.9 quantiles. Older enterprises realized more profits as compared to younger ones. This is not surprising as it is expected that older enterprises are able to make returns on their investments and also learn to navigate the system as compared to younger ones.

It is also anticipated that businesses that existed for longer periods build trust and social networks which are likely to influence their profitability. The expectation is that a higher level of trust and social capital will influence enterprise performance positively (Fafchamps, 2003). Conversely, the square of the age of the enterprise variable is negative and significant in both the OLS and at the higher deciles (0.8 and 0.9) in the quantile regressions indicating a non-linear effect of enterprise age on enterprise performance and thus suggesting that businesses grow older and will reach a point where profits will begin to fall.

On average, most enterprises had operated for about 51 months preceding the survey. The length of time enterprises had been in operation was positive and insignificant in the OLS but was positive and significant beginning from the 0.2 to 0.8 quantiles. Over 80% of all enterprises surveyed had their businesses running throughout the 12 months preceding the survey. The coefficient for number of months enterprises had operated increases from lower quantiles to higher ones. This implies that the returns to older enterprises are contingent on the distribution of the enterprise profits. Some enterprises are not active during certain periods of the year. For instance, most businesses in the Savannah zone become active during the offseason (November to March) but are less active during the raining season because of the competition with crop production. Figure 1 shows profit distributions by enterprise age and the number of months operated.

Most enterprises rely greatly on household savings to cater for their businesses. Over 70% of business owners used their household savings to support their enterprises and this figure is higher than the 60% contained in the GLSS 5 report. Only 5% of the enterprise owners made attempts to access credit from the banks and out of this 2.3% were successful and this is a bit higher than the 1.3% as indicated in the GLSS 5 report. One would have expected that the figures in this study

Figure 1. Profit distribution by enterprise age and number of months operated.



would have been higher since the GLSS data was collected in 2005/2006 but this low percentage is an indication that MSEs are gradually being pushed out of the formal financial markets.

Some MSEs operators rely on friends and relatives to finance their businesses. This explains why credit was not an important determinant of enterprise profits. Enterprises' value of assets positively and significantly influenced enterprise profits in both the OLS and quantile regressions. It is expected that enterprises that invested capital in their businesses will have a positive return on their investment. The coefficients of the assets variable appear smaller thus emphasising the point that the assets of the enterprises are very low.

Formal registration of enterprises is important as it affects the performance of enterprises. The study revealed that 18% of registered businesses were able to access credit from financial institutions. Even though this figure is low, it reflects the general situation in which enterprises are constrained with access to credit. The results showed that the coefficient for the registration of enterprises is positive and not significant for the OLS model. Conversely, the coefficient of registration is negative but significant for 0.3 and 0.4 quantiles implying that registration is not important for businesses performing poorly at the lower quantiles. This is not surprising given the low level of capitalisation for enterprises operating at the lower quantiles. However, Ojonta (2023) revealed that official registration with government authorities significantly impedes total sales performance of enterprises in Nigeria. The coefficient for registration is positive and significant at the upper quantile (0.8) suggesting that registration is important for enterprises performing better in terms of profits.

Most activities of MSEs are labour-intensive owing to the nature of business and scale of production. One key feature of MSEs is that they are high labour intensive indicating that the capability of accessing cheap but skilled labour is key to business performance. Majority of the enterprises employ a mixture of labour and this depends on many factors. For example, Mensah et al. (2007) argued that MSEs in Ghana exhibit significant capacity underutilization during certain periods of the year across various industries due to the nature of market demands in the rural or urban areas, lack of working capital and scarce raw materials. Most of the enterprises (65%) in the study area engaged hired labour. Only 10% employed casual labour whiles 6% engaged family labour. This mixture of labour (hired, casual and family labour) is common among enterprises in Ghana. For example, Frazer (2006) found that MSEs in Ghana engage a combination of unpaid family labour, hired employees and apprentices as labour force. The effects of labour use on the performance of enterprises were captured by the inclusion of apprentices, casual workers and hired workers. The use of family labour was captured by a dummy variable (one indicating the use of family labour and zero indicating otherwise).

The coefficients for casual labour and hired labour use are positive and significant in both the OLS and quantile regression models suggesting that both casual and hired labour have positive

Figure 2. Distribution of enterprise profits in deciles with respect to hired and casual labour.



effects on enterprise profits. Masakure et al. (2009) found that hired labour exerts a positive effect on the financial performance of microenterprises in Ghana. Unlike causal labour, the effect of hired labour was strong and significant across all the quantiles and thus an indication that hired labour is important for both poor-performing and better-performing businesses. This is expected given that most enterprises (65%) used hired labour. The use of causal labour becomes a second choice. Frazer (2006) argued that the use of hired labour appears more productive because it reflects a higher level of skills and experience. Hired labour coefficients become larger from lower quantiles to higher ones and this means enterprises performing better engage more productive workforce or that hired workers tend to exhibit high skills and experiences which improves the performance of enterprises. The distribution of profit for hired and causal labour is presented in Figure 2.

4.5. Location and industry effects on enterprise profits

The ecological zone enterprises are located may influence enterprise profits. The different agroecological zones in Ghana offer varied opportunities for non-farm enterprises. Locations effects were captured using three dummy variables which represent Coastal, Savannah and Forest zones. The industry or sub-sector from which the enterprise functions also affect the performance of the enterprise. The study involved four industries or sub-sectors which include, manufacturing, trade, restaurants and service. These sub-sectors were assigned dummy variables to capture the effects of industry or sub-sector influence on enterprise performance.

Previous research found that sectoral variables affect the performance of MSEs. In estimating the models, the Coastal zone was set as the reference zone to enable comparison across zones. The results indicate that both Forest and Savannah zones variables were insignificant in the OLS model but negative and significant starting at 0.3 quantile and above thus suggesting that enterprises located within these zones performed poorer as compared to those found in the Coastal zone. This is not out of place because Ghana's capital city (Accra) which has the biggest harbour (Tema harbour) is found in the Coastal zone. The coastal zone enjoys better access to better and improved services, technology, resources and infrastructure and these will result in better performance as compared to enterprises in the Forest and Savannah zones. The physical location of enterprises, that is whether enterprises are located in urban or rural areas was captured by dummy variables. The coefficient for the urban variable is positive and significant in both the OLS and quantile regression models except for 0.1 quantile and this implies that enterprises located in the urban centres performed better as compared to those in the rural areas. Again, the coefficients for the urban variable increase from lower quantiles to higher quantiles indicating a wide gap in enterprise profits between urban and rural businesses.



Enterprises located in urban centres enjoy better services and have access to cheaper inputs, bigger and dynamic markets, opportunities to network with larger industries and access to information and all these are critical to the performance of enterprises (Sleuwaegen & Goedhuys, 2002).

For the sub-sector variables, the services sub-sector was set as the reference point. The subsector variables for manufacturing, trade and restaurants are all positive and significant in the OLS results but significant starting from the 0.4 quantile giving the indication there is little difference in profits between the sub-sectors at the lower quantiles. The significance levels differ among the quantiles and this further justifies the use of quantile regression. It is imperative to learn that the three sub-sectors (trade, restaurants and manufacturing) performed better in terms of profits when compared to the service sub-sector. The sub-sector variables for trade, manufacturing and restaurants were positive and significant beginning at the 0.4 quantile and the coefficients increase from lower quantiles to higher ones indicating a bigger gap in profits recorded between these three sub-sectors and the services sub-sector. These are illustrated in Figure 3 where the profit coefficients are plotted against the quantiles for the subsectors.

Robustness checks were done by using inter-quantile regressions and running OLS on subsamples of the data based on the sex of the enterprise owner and enterprise physical location. Inter-quantile regressions were done to test whether an individual variable exerts an equal effect across successive quantiles. The results indicate being a male entrepreneur was statistically significant across six inter-quantiles. The age of the enterprise, trade sub-sector and hired were registered significance across four inter-quantiles. These are presented in Table A1 (in appendix).

Further analysis based on gender revealed that male-owned enterprises recorded higher profits across urban and rural areas. Older enterprises realised higher profits as compared to new ones. The coefficient for assets value is positive and significant for only enterprises located in rural areas whiles the use of hired labour is important for both urban and rural locations. Causal labour is found to be relevant for enterprises in urban centres. The following variables significantly influenced enterprise financial performance similar to the results obtained from main OLS model; gender of the entrepreneur, enterprise years in operation, the value of assets, causal and hired workers, and trade and manufacturing sub-sectors. Table A2 (in the appendix) contains the results of the OLS regressions by gender and location.

5. Conclusions and policy implications

The financial performance of micro and small businesses is influenced by the gender of the enterprise owner (male-owned enterprise owners recorded higher profits as compared to female-owned enterprise owners), the age of the enterprise owner, having obtained technical education, the number of years the enterprise had been in operation, the physical location of enterprises, the sub-sector or industry of the business, number of casual and hired labour and the value of assets.

The results showed that resources specific to the enterprise were more pronounced than subsector or industry factors on enterprise profitability and this confirms the hypothesis tested. Nevertheless, the sub-sector of enterprise and physical location variables also influenced the financial performance of enterprises. This implies that resources specific to the enterprise, the enterprise sub-sector and the physical location of enterprises jointly influence the profits of enterprises.

The paper contributes to the resource-based view literature by revealing that entrepreneurial characteristics are important determinants of enterprise performance in Ghana. Distinct from previous studies such as Masakure et al. (2009) who found that entrepreneurial characteristics were not important determinants of enterprise financial performance, this study found that entrepreneurial characteristics such as gender of enterprise owner, age of enterprise owner and technical education are important determinants of enterprise financial performance. The results from the quantile regression justify its use in determining enterprise financial performance. For example, whiles having technical education is insignificant in the OLS model it is positive and significant from the 0.2 quantile to 0.5 quantile implying technical education is relevant for enterprises operating around those quantiles.

This study rejects the belief that a collective set of factors shape the enterprise profits of micro and small businesses and that these factors remain the same irrespective of how the enterprise performs (whether the enterprise performs well or not). Enterprises in the manufacturing, trade and restaurants sub-sectors recorded more profits relative to enterprises in the services industry. The coefficients of the sub-sector variables (manufacturing, trade and restaurants) increase from lower quantiles to higher ones indicating there are larger gaps between the profits from these subsectors and that of the services sub-sector.

The study recommends the promotion of technical education, especially for enterprises operating at the lower spectrum of the profit spectrum (0.2 to 0.5 quantiles). The service sub-sector was the worse sub-sector and thus special attention is required to tackle the problems identified. Formal registration of businesses is important for businesses performing well at the upper part of the profit spectrum (0.8 quantile). Ghana Enterprises Agency (GEA) should pay attention to issues of formal registration of enterprises and the services sub-sector to improve enterprise financial performance.

The more profitable enterprises (trade, manufacturing and restaurants) experienced variation in profits which are due to the use of casual and hired workers, having technical education, the number of months of operation of the enterprise and the value of assets. Policies should gear towards the promotion of sector-wide interventions as well as specific constraints in the sub-sectors taking into consideration enterprises performing at lower quantiles and those at the upper quantiles.

The study could not test all the concepts of the resource-based view theory mainly due to limitation of data. For example, the study could not capture the implicit knowledge of the enterprise owner and also the likely impact of knowledge and skill acquired by training. In a realworld situation, the issue is even more complicated. For instance, merely receiving knowledge or training may not necessarily improve enterprise performance if the relevance of the knowledge or training is not evaluated. The paper suggest that further research should be done focusing on these variables as well as others factors that influence the financial performance of micro and small enterprises. Nonetheless, this study adequately captured the salient measures which are mostly applied in enterprise performance literature.

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Disclosure statement

No potential conflict of interest was reported by the author(s).

Availability of data

Data is supplied solely for statistical and research purposes, and will not be made available to other organizations or individuals. Other organizations or individuals may request the data directly. Users who download the data may not pass the data to third parties. The database cannot be used for commercial ends, nor can it be sold. Contact: LSMS Data Manager, the World Bank. Email: lsms@worldbank.org.

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| Table A1. Inter-quar | itile range regres | ssion for selected | quantiles | | | | | |
|------------------------------|--------------------|--------------------|------------|--------------|------------|------------|------------|-------------|
| Variable | 0.1 0.2 | 0.2 0.3 | 0.3 0.4 | 0.4 0.5 | 0.5 0.6 | 0.6 0.7 | 0.7 0.8 | 0.8 0.9 |
| Entrepreneurial resources | | | | | | | | |
| Male | 70.55** | 59.71* | 95.91** | 111.7** | 104.80 | 307.9*** | 235.60 | 599.5** |
| | (33.70) | (34.25) | (41.10) | (48.07) | (65.48) | (06.66) | (160.40) | (291.00) |
| Age | 1.32 | 1.75 | 2.97 | 10.39* | -6.26 | -2.91 | -26.31 | -65.42** |
| | (4.49) | (4.30) | (4.47) | (6.03) | (7.98) | (10.96) | (19.59) | (32.02) |
| Age_square | (-0.02) | -0.03 | -0.04 | -0.110^{*} | 0.03 | 0.02 | 0.20 | 0.498* |
| | (0.05) | (0.04) | (0.05) | (0.06) | (0.08) | (0.11) | (0.18) | (0.29) |
| No_education | -31.23 | -12.89 | -8.73 | 39.61 | -2.69 | -40.47 | -198.2* | 52.22 |
| | (24.33) | (25.30) | (31.96) | (33.38) | (49.41) | (66.85) | (103.90) | (211.70) |
| Technical | 106.40 | 15.87 | 50.86 | -64.05 | -75.46 | 43.75 | -26.20 | 155.00 |
| | (116.60) | (89.34) | (96.89) | (101.70) | (141.00) | (209.80) | (469.30) | (634.80) |
| Tertiary | 983.63 | 76.24 | -12.96 | 207.50 | 2.46 | 404.00 | -273.10 | -125.00 |
| | (1673.99) | (570.00) | (206.90) | (197.90) | (275.00) | (323.10) | (463.30) | (1149.00) |
| Enterprise resources | | | | | | | | |
| age_enterprise | 2.30 | 6.724* | 1.85 | -1.45 | 2.78 | 16.28** | 20.98* | 87.09*** |
| | (3.22) | (3.50) | (4.23) | (4.64) | (6.03) | (8.24) | (12.65) | (25.12) |
| age_enterprise2 | -0.04 | -0.13 | 0.01 | 0.13 | -0.03 | -0.362** | -0.435* | -1.346*** |
| | 60.0 | (0.10) | (0.12) | (0.13) | (0.16) | (0.18) | (0.26) | (0.50) |
| Months_operations | 7.90 | 7.99 | 11.79* | 12.44 | 6.01 | 4.56 | 13.80 | -18.93 |
| | (6.85) | (5.28) | (6.83) | (8.25) | (11.72) | (15.39) | (20.07) | (60.96) |
| Credit | 12.63 | -11.76 | 3.60 | 1.67 | 7.35 | -87.96 | 88.30 | -101.10 |
| | | | | | | | | (Continued) |

Appendices

| Table A1. (Continued) | | | | | | | | |
|-----------------------|------------|------------|------------|------------|--------------|------------|------------|-------------|
| Variable | 0.1 0.2 | 0.2 0.3 | 0.3 0.4 | 0.4 0.5 | 0.5 0.6 | 0.6 0.7 | 0.7 0.8 | 0.8 0.9 |
| | (53.10) | (29.18) | (31.38) | (40.83) | (51.26) | (77.35) | (111.60) | (287.10) |
| Assets | 0.06 | 0.05 | 0.05 | 0.03 | 0.00 | -0.03 | 0.03 | 0.27 |
| | (0.04) | (0.03) | (0.04) | -1.45 | (0.03) | (0.05) | (0.12) | (0.36) |
| Registered | -55.75 | -46.23 | -40.86 | 28.92 | 100.80 | 178.70 | 499.2* | -92.64 |
| | (42.99) | (33.65) | (49.26) | (59.87) | (112.80) | (132.70) | (271.30) | (446.20) |
| Apprentices | 0.77 | 1.53 | 15.20 | 12.41 | -6.30 | -58.90 | -40.88 | -72.56 |
| | (58.82) | (22.35) | (25.00) | (25.91) | (32.25) | (48.10) | (129.60) | (466.40) |
| Casual_labour | 2.62 | 9.49 | 39.53 | 49.65 | 63.39 | 108.00 | 114.70 | 468.20 |
| | (38.17) | (34.28) | (38.59) | (39.12) | (62.74) | (102.90) | (254.80) | (379.50) |
| Hired_labour | 32.99 | 27.55 | 56.63** | 51.49* | 67.60* | 49.96 | 171.20 | 250.8* |
| | (23.33) | (18.54) | (25.41) | (28.79) | (36.44) | (44.56) | (104.40) | (141.50) |
| Household_labour | -59.52 | 63.49 | 6.42 | 5.70 | -71.47 | 136.60 | -217.70 | -203.90 |
| | (57.74) | (76.47) | (72.25) | (71.14) | (102.40) | (167.80) | (271.40) | (400.40) |
| Location factors | | | | | | | | |
| Urban | 29.97 | 35.94 | 64.60** | 78.46** | 111.1^{**} | 85.01 | 80.70 | 140.80 |
| | (24.13) | (26.00) | (30.59) | (34.66) | (50.53) | (64.42) | (96.28) | (176.50) |
| Savannah | -11.25 | -35.87 | -54.16 | -28.19 | 62.35 | 31.70 | -63.35 | 401.80 |
| | (30.78) | (29.95) | (33.95) | (39.79) | (55.96) | (79.53) | (123.00) | (261.40) |
| Forest | -19.67 | -35.74 | -22.15 | -38.43 | -7.05 | -35.51 | -211.7** | 54.65 |
| | (29.42) | (27.88) | (31.97) | (36.20) | (49.00) | (63.40) | (103.50) | (188.10) |
| Sub-Sector variables | | | | | | | | |
| Manufacturing | 11.68 | -51.36 | 88.33* | 40.70 | 17.65 | 114.00 | 267.5* | 193.90 |
| | (49.12) | (44.70) | (47.21) | (50.15) | (82.00) | (108.80) | (153.70) | (287.60) |
| Trade | 51.99 | 4.87 | 88.02* | 101.0** | 129.50 | 141.80 | 335.9** | 520.6* |
| | | | | | | | | (Continued) |

| I UDIE AT. (CONUMA | (n) | | | | | | | |
|--|--|---|-----------------------|------------------------|-------------------------|--------------------------|------------------------|-------------------------|
| | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 |
| Variable | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 |
| | (49.29) | (45.00) | (46.06) | (48.17) | (82.73) | (104.70) | (151.70) | (274.80) |
| Restaurants | 40.73 | -10.10 | 149.0** | 63.03 | 129.10 | 38.36 | 217.40 | 671.4* |
| | (63.49) | (57.62) | (60.91) | (66.79) | (94.49) | (122.40) | (172.50) | (391.20) |
| Constant | -78.77 | -48.63 | -221.8* | -378.6** | 91.73 | 6.82 | 568.70 | 1488.00 |
| | (129.18) | (114.50) | (124.70) | (159.80) | (224.70) | (304.00) | (469.30) | (1022.00) |
| Observations | 1479 | 1479 | 1479 | 1479 | 1479 | 1479 | 1479 | 1479 |
| Standard errors are repo and *** are levels of sigr | rted below the estimat nificance at 10%, 5% a | tes in parenthesis. OLS nd 1%, respectively. | was estimated using I | robust standard errors | : whiles standard error | rs for quantiles are boo | otstrapped based on 1(| 000 replications. *, ** |

| Table A2. OLS regr | ession results by | gender and location | n | |
|--------------------------|-------------------|---------------------|----------|-----------|
| Variable | Male | Female | Urban | Rural |
| Entrepreneurial resource | | | | |
| Male | - | - | 1,239*** | 610.8*** |
| | - | - | (349.80) | (181.00) |
| Age | -5.39 | 23.50 | -10.52 | 42.29** |
| | (49.83) | (24.39) | (46.14) | (20.84) |
| Age_square | (0.25) | -0.422* | (0.28) | -0.525** |
| | (0.51) | (0.24) | (0.46) | (0.22) |
| No_education | 390.80 | 116.00 | 146.10 | 211.30 |
| | (524.00) | (199.60) | (433.30) | (221.90) |
| Technical | 529.50 | 169.40 | -24.96 | 625.50 |
| | (632.30) | (264.10) | (444.70) | (465.70) |
| Tertiary | -1314.00 | -80.47 | -211.10 | -1697.00 |
| | (1107.00) | (584.10) | (633.20) | (1293.00) |
| Enterprise resources | | | | |
| age_enterprise | 108.7*** | 40.72 | 100.1*** | 17.65 |
| | (41.59) | (25.13) | (34.83) | (20.31) |
| age_enterprise2 | -1.671** | -0.85 | -1.671* | -0.18 |
| | (0.77) | (0.79) | (0.87) | (0.38) |
| Months_operations | 100.90 | 46.85 | 42.08 | 42.38 |
| | (169.80) | (35.25) | (110.30) | (40.87) |
| Credit | 72.11 | -126.10 | -422.10 | 173.20 |
| | (587.70) | (244.80) | (410.20) | (194.40) |
| Assets | 0.136* | 0.19 | 0.12 | 0.259* |
| | (0.08) | (0.12) | (0.07) | (0.15) |
| Registered | 311.40 | 292.60 | 435.90 | 49.34 |
| | (426.00) | (250.70) | (343.50) | (306.50) |
| Apprentices | 227.40 | -90.22* | (16.96) | 194.30 |
| | (245.40) | (51.37) | (146.30) | (173.40) |
| Casual_labour | 511.8** | 279.90 | 651.9** | 24.94 |
| | (232.20) | (223.10) | (314.50) | (100.50) |
| Hired_labour | 165.70 | 327.3*** | 304.3* | 314.7** |
| | (204.10) | (125.40) | (158.10) | (139.40) |
| Household_labour | 461.20 | 81.59 | 39.96 | 507.00 |
| | (766.50) | (329.60) | (361.30) | (509.70) |
| Location | | | | |
| Savannah | 728.00 | 2.43 | 494.30 | 157.80 |
| | (538.00) | (176.60) | (403.80) | (182.60) |
| Forest | 253.90 | (144.40) | 71.11 | (42.64) |
| | (343.70) | (153.40) | (253.80) | (133.00) |
| Sub-Sector | | | | |
| Manufacturing | 100.60 | 286.10 | 621.3* | 29.67 |
| | (325.00) | (223.60) | (340.90) | (275.10) |
| Trade | 1,502*** | 448.9** | 1,202*** | 442.90 |

(Continued)

| Table A2. (Contine | ued) | | | |
|--------------------|-----------|----------|-----------|----------|
| Variable | Male | Female | Urban | Rural |
| | (423.40) | (221.90) | (352.50) | (320.00) |
| Restaurants | (580.60) | 397.20 | 667.80 | 224.60 |
| | (430.60) | (257.70) | (452.00) | (315.30) |
| Urban | 1,033*** | 388.8*** | - | - |
| | (387.60) | (129.40) | - | - |
| Constant | (1265.00) | (833.50) | (405.90) | -1,313* |
| | (2110.00) | (601.90) | (1526.00) | (750.50) |
| Observations | 414.00 | 1065.00 | 707.00 | 772.00 |
| R-squared | 0.14 | 0.09 | 0.12 | 0.14 |
| F | 2.64*** | 3.37*** | 4.13*** | 2.82*** |