THE DETERMINANTS OF NON-FARM MICRO AND SMALL ENTERPRISE EMPLOYMENT AND FINANCIAL PERFORMANCE IN GHANA

BY

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DECLARATION

I, Sylvester Nsobire Ayambila, the author of this thesis titled **"The Determinants of Non-Farm Micro and Small Enterprise Employment and Financial Performance in Ghana"** do hereby declare that, except for references to other people's work, which have been duly cited, this thesis is the result of my original work.This work has never been presented either in whole or in part for any other degree in this University or elsewhere.

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Sylvester Nsobire Ayambila(PhD Candidate)

We, the undersigned supervisors,certify that this is an original work we supervised the candidate to produce. We are also convinced that it (the thesis) meets all the required standards set by the University of Ghana for the award of Doctor of Philosophy degree.

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ABSTRACT

Micro and small enterprises play a significant role in the socio-economic development of many countries over the world. In Ghana, the bulk of these enterprises are in the informal sector providing employment and income, especially for the poorest members of society. Using data from the EGC/ISSER survey in 2009/10, the study employed a probit regression model in examining the determinants of individual participation in the non-farm sector and then estimated the intensity of participation using a truncated regression model. In examining the effects of firm-specific and non-firm factors on the financial performance of enterprises, the study employed quantile regressions.The study used the Sharpe Ratio in adjusting for risks in comparing the financial performance of male-owned and-female-owned enterprises. The results indicate that individual and household factors such as gender,household head, spouse of the household head, formal education, age, size of landholding,access to credit, electricity and mobile phones shaped the participation of the individual in non-farm self-employment and wage-employment. Enterprises located in the Savannah and Forest zones were less likely to participate in non-farm self-and wage-employment as compared to those located in the Coastal zone.The study found that firm-specific resources dominated market/industry factors in explaining enterprise financial performance. When risks are not adjusted for, female-owned enterprises underperform male-owned ones and when risks are adjusted for, women performed no differently from men. The study recommends technical education and formal registration of enterprises. The study recommends that deliberate policies should focus on addressing critical factors such as access to credit, mobile phone, electricity and education, which could serve as constraints to participation in the non-farm sector. The study also recommends a reorientation of the mindset regarding female-underperformance hypothesis.

DEDICATION

This thesis is dedicated to my wife, Rebecca Ayamga and to my children, Manasseh and Irene Ayambila.

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LIST OF ABBREVIATIONS

AfDB	African Development Bank
BAC	Business Advisory Centre
EC	European Commission
EGC	Economic Growth Centre
FAO	Food and Agriculture Organisation
GDP	Gross Domestic Product
GEDC	Ghana Enterprise Development Commission (GEDC)
GLSS	Ghana Living Standards Survey
GRATIS	Ghana Regional Appropriate Technology Industrial Service
GSS	Ghana Statistical Service
IFAD	International Fund for Agricultural Development
IFC	International Finance Corporation
ILO	International Labour Organisation
IO	Industrial Organisation
ISSER	Institute of Statistical, Social and Economic Research
MIF-IADB	Multilateral Investment Fund of the Inter-American Development Bank
MIGA	Multilateral Investment Guarantee Agency
MoTI	Ministry of Trade and Industry
MSE	Micro and small enterprise
NBSSI	National Board for Small Scale Industries
OLS	Ordinary Least Squares
PHC	Population and Housing Census

QR	Quantile Regression
RBV	Resource Based View
REP	Rural Enterprise Programme
SME	Small and Medium Enterprise
TLU	Tropical Livestock Units
UNDP	United Nations Development Programme
UNIDO	United Nations Industrial Development Organization
ZEF	Centre for Development Research

CHAPTER ONE

INTRODUCTION

1.1 Micro and Small Enterprise and Socio-economic Development

Micro and small enterprises (MSEs) play a significant role in the socio-economic development of many countries over the world. MSEs have contributed to the socio-economic development in both industrialised and developing countries (Carree &Thurik, 2008; Nichter & Goldmark, 2009). In developing countries, the bulk of MSEs are in the informal sector (Charmes, 1999; Maloney, 2003; Nichter & Goldmark, 2009; Roy & Wheeler, 2006), and are the major sources of employment and income, especially for the poorest members of society (Mead & Liedholm, 1998).

Agriculture and the non-farm are linked and supporting each other to grow. The extra income from agricultural growth can create demand for goods and services from non-farm sector, thus starting a virtuous cycle in which agricultural and rural off-farm income grow and sustain each other's growth (Stamoulis &Zezza, 2003). According to the Rural Poverty Report (2011), agriculture remains the key driver of non-farm economic development with each dollar of additional value added in agriculture generating another 30 to 80 cents in second-round gains elsewhere in the economy. The report identified four other drivers that play a role in stimulating the growth of the non-farm economy outlined as follows:

i. Urbanization and particularly the growth of small or medium-sized centers and the growing integration of rural and urban economies;

ii. The process of liberalization and globalization which can create new employment and service opportunities in rural areas;

iii. Improved communication and information systems, particularly the diffusion of mobile phone coverage in rural areas;

iv. Increasing investment in decentralized and renewable-based energy systems.

Diversification beyond agriculture is often considered a promising pathway out of poverty for impoverished rural economies, and there is a widespread belief that small enterprises may play an important role especially in the early stages of diversifying beyond agriculture (see for example Barrett, Reardon & Webb, 2001; Lanjouw & Lanjouw, 2001; Reardon, Stamoulis, Lanjuow & Balisacan, 2000). Prominent among the small enterprises expected to play a major role is the non-farm sector, which provides employment for majority of the poor and serves as a survival strategy and perhaps as a substitute for agriculture for the landless (Barrett et al., 2001). The results of the 2000 Population and Housing Census (PHC) showed that about 80 percent of the economically active population work in the informal sector (Ghana Statistical Service, 2002).

Traditionally, there are two contrasting perspectives on the role of non-farm household enterprises in economic development (Oostendorp, Trung & Tung, 2009). On the one hand, non-farm household enterprise is often viewed as a low-productivity sector producing low quality goods that is expected to decline with economic development. On the other hand, it is also viewed as a dynamic, flexible, and innovative sector contributing to industrial and economic development. Recently a third perspective on the role of non-farm household enterprises in economic development has gained popularity. This view holds that even if the sector would be a

low-productivity sector that will wither away in the long run, it still plays an important role in economic development. Within this perspective, non-farm household enterprises are important for their potential to absorb a growing labour force, slow down regional and rural–urban migration, promote a more equitable distribution of income and smooth income across periods (Ellis, 1998; Lanjouw & Lanjouw, 2001; Livingstone, 2000; Reardon, Stamoulis, Balisacan, Berdegue, & Banks, 1998; Reardon *et al*., 2000).

1.2 Characteristics of the Non-farm Sector in Ghana

According to the GLSS 5 report of 2008, majority of household enterprises are operated by a single individual without the assistance of family members. It is important to note that some studies define household enterprises to mean non-farm business enterprises operated by the household (Vijverberg & Mead, 2000). Household enterprises which can be described as micro and small enterprises have employed a great majority of Ghanaians. Across the manufacturing, distribution and service sectors in Ghana, micro and small enterprises account for a large proportion of business establishments and employment (ILO, 2000). According to the GLSS 5 report of 2008, approximately 3.2 million households representing 46.4 percent of households in Ghana operate a non-farm enterprise and about 72 percent of non-farm business enterprises are operated by females. The report further shows that approximately 5.4 million persons in Ghana, representing 20 percent of the total population operate a non-farm enterprise of one sort or another. About 52 percent of these households are found in urban localities. Most of the households are engaged mainly in trading (50 percent) and manufacturing (33 percent).Table 1.1 presents the characteristics of non-farm enterprises by industrial classification.

Table 1.1: Characteristics of Non-farm Enterprises by Industrial Classification

Locality	Proportion of households operating a business	Estimated number of businesses	Estimated number of businesses operated by industrial classification			% operated by females
			Manufacturing	Trading	Others	
Urban						
Accra	**52.3**	**1,536,262**	**375,585**	**861,747**	**298,930**	**68.5**
Other	46.8	440,591	94,876	263,158	82,557	70.5
urban	55	1,095,671	280,709	598,589	216,373	67.7
Rural	**41.9**	**1,654,292**	**687,975**	**718,809**	**247,508**	**75.3**
Coastal	41.1	318,041	117,532	143,287	57,222	77.4
Forest	41.2	784,216	303,766	351,420	129,030	72.5
Savannah	43.5	552,035	266,677	224,102	61,256	78.0
Ghana	**46.4**	**3,190,554**	**1,063,560**	**1,580,556**	**546,438**	**72.0**

Source: GLSS, 2008.

Despite the critical role of micro and small enterprises in the processes of socio-economic development in developing countries, they face problems of low growth rates and high failure rates (ILO, 2002). The sector is typified by stagnation and high rates of enterprise failure (Daniels & Mead, 1998; Hung Manh, Benzing&McGee, 2007; McPherson, 1996) suggesting the need to transform the sector in order to free micro-entrepreneurs from capture by a 'low level poverty trap' (McKenzie & Woodruff, 2006). The micro and small enterprise sector is also associated with poor and/or costly access to credit, problems acquiring new and more productive technologies, low levels of technical and/or managerial skills, high levels of competition among enterprises, etc (Livingstone, 1991, Daniels & Mead, 1998, Mead & Liedholm, 1998). Studies

have shown that in many countries, macroeconomic policies have also not favoured a vibrant micro and small enterprise sector (Atieno, 2001; Fisman & Raturi, 2003; Steel & Andah, 2004). Access to credit is often at the 'top of the list' of problems faced by micro and small enterprises especially among proponents of microcredit (Aryeetey, Hettige, Nissanke & Steel,1997).

1.3 Problem Statement

It has been argued that very little is known about the characteristics, constraints and opportunities of non-farm enterprises (Lanjouw & Lanjouw, 2001), which makes it difficult to assess how this class of enterprises might contribute to poverty reduction. Loening, Rijkers and Soderbom (2008) have debated the reasons for engaging in non-farm enterprises in the literature. There is dispute in the literature regarding precisely this issue as evidenced in the discussion from Barrett et al. (2001) and Davis and Bezemer (2003). One view is that non-farm activities provide a dynamic pathway out of poverty; a less optimistic view is that non-farm enterprises are set up by households primarily as a survival strategy, perhaps as a substitute for agriculture for the landless. These perspectives are largely undebated enough in the context of Ghana. The non-farm sector plays an important role in the Ghanaian economy and yet one area in the literature that has not received much attention, is a critical examination of the determinants and the intensity of individual participation in the non-farm sector. Some studies have been done on the determinants of household participation in non-farm enterprises in Ghana (Newman& Canagarajah, 2000; Owusu-Boateng, 2011; Ackah, 2013) but these studies did not examine the intensity/level of individual participation in the non-farm sector and which is important because of its effects on agricultural productivity (Matshe & Young, 2004)

The non-farm enterprise sector in Ghana is dominated by women entrepreneurs. About 72 percent of non-farm business enterprises are operated by females. A commonly held view is that female-owned businesses suffer from many disadvantages compared to male-owned businesses,and that these disadvantages lead, in turn, to relatively lower levels of efficiency and smaller firm-size among female-owned businesses (Amin, 2011) hence female-owned firms are hypothesized to under-performance. For example, Sabarwal and Terrell (2008) found that female-owned businesses in the formal sector in 26 transition countries are significantly less profitable than male-owned businesses. Female-owned businesses generally underperform those headed by males using financial performance measures such as earnings, survival or growth (Bird, Sapp & Lee, 2001; Brush & Hisrich, 1991; Du Rietz & Henrekson, 2000; Heck & Duncan, 2003).A recent study confirms the notion in literature that enterprises operated by males are more productive than those operated by women. Rijkers and Söderbom (2013) in studying the effects of risk and shocks on non-farm enterprise development in rural Ethiopia found that male-operated enterprises are more productive than enterprises managed by women.

According to Watson and Robinson (2003), past research into small and medium scale enterprise performance has generally focused on sales and/or profit (or growth in sales and/or profit) without any explicit control for risk, even though we know from finance theory that expected returns and risks are positively related. Robb and Watson (2012) similarly found that risk is typically not considered even though evidence suggests that women tend to be more risk averse than men.

A study by Marco (2012) suggest that the stereotype of underperformance attributed to female management may not be the result so much of poorer management skills as to using unsuitable comparative performance measures, as well as not taking into account structural characteristics that may be detrimental to the financial performance of companies managed by women. Marco indicated that, gender differences with regards to business goals can result in female underperformance when performance measures relate to firm size, such as total sales, assets, or profits. When appropriate measures of relative performance are used, women and men may prove to be equally effective business managers. It remains unclear as to whether females in non-farm micro and small enterprises in Ghana are under-performing or equally productive in that sector as compared to males even if adjustment is made for risks.

A number of studies, including Daniels and Mead (1998), Sleuwaegen and Goedhuys (2002), Fafchamps and Gabre-Madhin (2001), Soderbom and Teal (2004), Aworemi, Abdul-Azeez and Opoola (2010) and Mahmoud (2011) have examined the growth and performance of small and medium enterprises in Africa. Specific studies have examined the nature and determinants of non-farm work in rural areas of developing countries (Abdulai & Delgado, 1999; Abdulai & CroleRees, 2001; Barrett et al., 2001; and Canagarajah, Newman & Bhattanmishra, 2001). In Ghana, there have been a number of studies highlighting the constraints faced by microenterprises and determinants of performance (see for example Steel & Webster, 1992; Aryeetey et al., 1997; Baah-Nuakoh, 2003; Nissanke & Aryeetey, 2006; Steel & Webster, 1992)but these do not examine systematically how enterprise performance varies and the factors that determine the observed variation (Masakure, Cranfield & Henson, 2008). Few studies that focused on enterprise performance in Ghana include Frazer (2006), Masakure et al. (2008) and

Masakure, Henson and Cranfield (2009).It is worthy to note that, with the exception of Masakure et al. (2008), none of the studies examined how enterprise performance varies and the factors that determine the observed variation. Frazer (2006) and Masakure et al. (2009) studies focused on the manufacturing sector, with no emphasis on the non-farm sector. Although, Masakure et al. (2009) did not focus on the non-farm sector, they applied the resource-based view in analyzing the performance of microenterprises. Masakure et al. (2008) focused on non-farm microenterprises but did not apply the resource-based view, which according to Barney(1991) and Lockett and Thompson (2001), is an emerging body of thought in strategic management that has not received much attention in developing countries. Masakure et al. (2008) used data from the GLSS 4 which was collected between 1998/1999 and may not address the current trends in the sector. Masakure et al. (2008) concluded from their studies that there is need for further studies to validate the resource-based view of the firm. Little is known about the critical determinants of micro and small enterprise financial performance in Ghana.

Despite the immense contribution of non-farm micro and small enterprises to the wellbeing of society, several constraints that affect their operations need to be investigated. To this end, several questions remained unanswered in the minds of researchers, policy makers, government and other stakeholders. This study poses the following questions:

- What factors explain or influence an individual's participation in non-farm micro and small enterprises in Ghana? What factors influence/determine the intensity of an individual's participation in non-farm micro and small enterprises in rural Ghana?
- To what extent do firm-specific and non-firm factors determine the variation of non-farm micro and small enterprise performance in Ghana?

- Are female-owned micro and small enterprises under-performing as compared to male-owned ones with and without adjusting for risks?

Answers to the above questions will add to the sparse knowledge that exists about the determinants of non-farm micro and small enterprise participation and performance in Ghana. This study will particularly test the female-owned firms' under-performance hypothesis taking risks into account. Especially, the study will further test the resource-based theory about firm performance which according to Lockett and Thompson (2001) is an emerging body of thought in strategic management that has not received much attention in developing countries.

1.4 Objectives of the Study

The general objective of this study is to examine the determinants of non-farm micro and small enterprises employment and financial performance in Ghana.

The specific objectives are to:

1. Determine the factors influencing the individual's decision to participate and the intensity of participation in non-farm micro and small enterprises in rural Ghana.
2. Examine the effects of firm and non-firm factors on the variation of non-farm micro and small enterprise financial performance in Ghana.
3. Compare the financial performance of female-owned non-farm micro and small enterprises to male-owned ones with and without adjusting for risks in Ghana.

1.5 Justification and Relevance of the Study

This study focuses on non-farm micro and small enterprises because moving from farm to non-farm has been advocated as one way to improve the incomes of people. Ghana has experienced growth in income in the formal sector, but the informal sector has not yet experienced the expected reduction in size. The concentration on wage employment in the formal sector to reduce poverty will not yield much if attention is not paid to non-farm enterprises in the non-formal sector. If the intention is to focus on "big" industries in the formal sector, a great majority of the people will be left out because the informal economy is a big sector employing about 80 percent of the people. The informal economy will continue to stay and likely to continue to grow for the next two decades, necessitating the need to understand the determinants of participation and profits if the desire is to get people out of poverty.

This study is particularly important as it complements and validates previous studies of enterprise performance in Ghana. Most of the studies done in Ghana on enterprise performance depended on data from the Ghana Living Standards Survey Fourth Round (GLSS 4), which was conducted between 1998 and 1999. This study used recent data collected in 2009/2010. In Ghana, the non-farm sector plays an important role as the major source of employment and income for the majority of the poorest members of society, especially women. The GLSS 5 report of 2008 indicates that approximately three million two hundred households in Ghana operate a non-farm enterprise, with women operating 72 percent of these businesses. Assessing the performance of these enterprises that are mostly operated by women will thus afford the opportunity to improve the lot of women, who are mostly the poor in society. Unraveling the

female-owned firm under-performance hypothesis will constitute an important empirical endeavour.

The results from this study are expected to be of interest to stakeholders in the micro and small enterprise sector and policymakers concerned with poverty alleviation and promotion of private sector development. Understanding the determinants of small enterprise performance is important since such firms account for the bulk of non-agricultural employment in the country. The study will inform government as to the specific investment to be made in the non-farm business sector.The study will serve as a reference material for students and researchers in entrepreneurship and will further investigates the resource-based theory of the firm.

1.6 Organisation of the Study

The dissertation is organized into seven chapters. Chapter one contains the introduction, problem statement, objectives, study justification and organization of the study. Chapter two reviews relevant literature on non-farm micro and small enterprises in Ghana, non-farm income diversification, participation in non-farm enterprises, determinants of non-farm participation, motives for participating non-farm enterprises, policy framework of the micro and small enterprise sector in Ghana, public institutions supporting micro and small enterprise development in Ghana, definitions and classification of micro, small and medium enterprises, measurement of enterprise performance, gender and firm performance, gender and attitudes to risks and constraints of micro and small enterprises in Ghana and summary of the literature reviewed. Chapter three presents the study‘s theoretical framework and methodology. The chapter highlights the theoretical foundations of the methods, the conceptual framework of the study, the analytical models employed by the study, and provides an overview of the study area as well as

the data used by the study. The study results are presented in chapters four, five and six. Chapter four presents the results of the analysis of the determinants of non-farm micro and small enterprise participation in rural Ghana. Chapter five examined the effects of firm-specific and non-firm factors on the financial performance of non-farm micro and small enterprises in Ghana. Chapter six contains results of the comparison of female-owned and male-owned non-farm micro and small enterprises with and without adjusting for risks. Chapter seven contains the conclusions, policy implications and recommendations of the study.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter reviews relevant literature for the study. It reviews literature on the participation of individuals in non-farm employment (determinants of participation and the intensity of participation), enterprise performance and its determinants, gender and firm performance and constraints of micro and small enterprises. It highlights the measurement of performance and risks and reviews relevant theoretical frameworks for the study.

2.2 Non-farm Income Diversification

Diversification is a tool to make income portfolios less vulnerable to shocks and to enable households to protect themselves against adverse shocks (Reardon, 1997; Barrett & Arcese, 1998; Ellis & Freeman, 2004; Fafchamps & Lund, 1999; Barrett et al., 2001; Freese, 2010). Risk strategies and coping mechanisms are diverse in developing countries since formal insurance mechanisms are often insufficient and thus income diversification is one tool to reach the goal of smooth consumption and income patterns (Freese, 2010). Freese identifies three factors that will determine the outcome of a households' portfolio of activities and income sources. These are given as below:

i. the capital stock a household is endowed with. This capital stock consists of the natural, physical, human, financial and social capital;
ii. the portfolio of activities the household chooses based on this endowment;

iii. the external environment determined by the institutional and policy arrangement, exposure to shocks, economic trends as well as the social context.

In his view, these three factors will determine the success of a household in creating a livelihood. In answering the question "why do households diversify?",Barrett et al. (2001) provided the following explanations:

i. diminishing returns to productive assets such as labour, land etc;
ii. market failures (e.g. for credit) or frictions (e.g. for mobility or entry into high-return niches);
iii. risks reduction and coping with ex ante and ex post adverse shocks;
iv. Where returns to productive assets vary across time or among individuals within a household or households within a community, data aggregated across time, individuals, or households will exhibit diverse assets, activities and incomes even if there is complete Ricardian specialization according to comparative advantage at the level of individuals.
v. Missing or incomplete markets for land, labour, credit, insurance etc.

2.3Participation in Non-farm Enterprises as a Risk Mitigating Measure

A lot of studies have suggested that rural households engage in non-farm enterprises to reduce the risks associated with farming and perhaps as an income smoothening measure. A major factor underlying households' decision to participate in the non-farm sector is the scarcity of risk mitigation mechanisms which enable farmers to offset fluctuations in income and cope with shocks in the agricultural sector (Islam, 1997). Thus households participate in the non-farm sector as risk mitigating measures. Participation in the non-farm sector among developing countries is largely viewed as an ex-ante risk mitigation measure (Bardhan & Udry, 1999; Carter, 1997; Escobal, 2001) and ex-post coping strategy in response to the risk factors in agriculture

(Barrett et al., 2001; Lanjuow, 2001). In this regard, households predicting unfavourable conditions develop and undertake several risk management strategies to smooth consumption and hedge against unforeseen occurrences (Ersado, 2003).

Murdoch (1995) identified a variety of risk coping strategies pursued by households and classified as ex-ante and ex-post. Ex-post measures include cuts in consumption and spending on children's health and schooling, human capital, nutrition or the employment of child labour (Fafchamps, 1999).Ex-ante measures involves undertaking a non-farm activity to smoothen income (Freese, 2010). As noted by Freese (2010), a risk-averse choice of activities is often associated with an inefficient factor allocation (the avoidance of riskier but potentially higher expected return ventures). Dercon (2002) notes that income smoothing strategies of poor households are likely to include diversification into inefficient tasks with low entry costs and low returns, such as the collection of firewood or casual low-wage employment.

A recent finding on risk-mitigating measures of households presents mixed findings. Rijkers and Soderbom (2013), in analyzing the effects of risk and shocks on non-farm enterprise development in rural Ethiopia concluded that participation in non-farm enterprise activity is positively correlated with predicted contemporaneous agricultural performance. They further stated that risk does not affect the decision to diversify per se because diversification into non-farm enterprise activity is not an effective ex-ante means of mitigating fluctuations in agricultural performance, since non-farm enterprise sales covary strongly with predicted agricultural performance.

2.4 Motives for Participation in Non-farm Sector

Rural farm households are expected to focus exclusively on agriculture and do little of non-farm activities. According to FAO (1998), the traditional image of farm households in developing countries has been that they focus almost exclusively on farming and undertake little rural non-farm activity, and that policy debate still tends to equate farm income with rural incomes, and rural/urban relations with farm/non-farm relations. Income diversification activities in the rural areas are being recognised as constituting the rural non-farm sector (Eliss, 1998; Lanjuow & Lanjuow, 2001). Barrett et al.(2001) noted that despite the persistent image of Africa as a continent of "subsistence farmers", non-farm sources may already account for as much as 40– 45 percent of average household income and seem to be growing in importance (Bryceson & Jamal, 1997; Reardon, 1997; Little, Smith, Cellarius, Coppock & Barrett, 2001).

In the review of literature on the motivations of household to enter the non-farm sector, two main factors are identified: "pull" and "push" factors. The point of emphasis is that households are either "pushed" into or "pulled" out of non-farm activities. Barrett et al. (2001) recognized that multiple motives prompt households to diversify assets, incomes, and activities. The first set of motives comprise what are traditionally termed "push factors", and these include risk reduction, response to diminishing factor returns, presence of land constraints driven by population pressure and fragmented landholdings, reaction to crisis or liquidity constraints and high transactions, among others. The second set of motives comprise "pull factors", which include the realization of strategic complementarities between activities, such as crop-livestock integration or milling and hog production, specialization according to comparative advantage accorded by superior technologies, skills or endowments among and others.

Reardon et al. (1998) have categorised these factors into "Distress Push" and "Demand Pull". Distress push factors are described as the conditions which create the need for households to diversify into alternate sources of livelihood. Reasons for this include the ability of households to smoothen consumption and insure against risk factors in the absence of well functioning credit, insurance, land and labour markets as well as social safety net programmes (Dercon & Krishnan, 1996; Little et al., 2001; Barrett et al., 2001; Haggblade, Hazell & Reardon, 2007). Participation in the non-farm sector as a way to cope with risk is described as "Survival-Led" diversification (Lay et al., 2007), "Involuntary diversification" (Freese, 2010) or "Distress-Push" diversification (Reardon et al., 1998).

Factors such as inadequate on-farm opportunities, plus risk factors like pest and diseases infestations, erratic rainfall patterns, post harvest losses and the seasonal nature of agriculture push households into the non-farm sector (Lanjuow, 2001; Woldenhanna & Oskam, 2001; Owusu, Abdulai & Abdul-Rahman, 2011). Under these trying conditions, households have no option than to engage in non-farm enterprises as ex-ante and ex-post risk mitigation measures (Little et al., 2001; Wanyama et al., 2010). Reardon (1997) and Lanjuow (2001) demonstrate that inadequate on-farm opportunities caused by increasing family labour supply in the presence of land constraints will compel households to reallocate labour to the non-farm sector due to diminishing returns to the scarce land. In countries that experience erratic rainfall pattern of single rainfall regimes with prolonged periods of drought especially in Africa, one usually finds people migrating from these places to urban centers in search of jobs. In Ghana, Abdulai and Delgado (1999) and Wouterse (2010) noted that these conditions coupled with under-developed irrigation facilities do not allow for agricultural activities all year round, thus pushing farm

households to run to the non-farm sector for economic activity and income till the next farming season.Usually men migrate from rural areas to urban centers during agriculture off seasons and return in time to prepare for the next farming season. The lack of mechanisms to deal with ex-ante and ex-post risk factors in the agriculture sector motivate households to undertake non-farm activities (Haggblade, Hazell & Reardon, 2007; Olali & Nazli, 2010; Lanjuow, 2001; Dermujer, Fournier & Yang, 2010).

Poor households which are 'pushed' into income diversification often end up in low return ventures, while households who are pulled into the sector are often households endowed with enough capital assets to enable them to participate in the higher return niches of thenon-farm sector (Lanjuow & Ferder, 2001; Haggblade et al., 2007). Dercon (2002) stated that income smoothing strategies of poor households are likely to include diversification into inefficient tasks with low entry costs and low returns such as the collection of firewood or casual low-wage employment.

Demand pull factors are described as "opportunity-led" (Lay, M'Mukaria, & Mahmoud, 2007) or "Voluntary diversification" (Freese, 2010). Demand pull factors according to (Barrett et al., 2001; Reardon, Delgado & Malton, 1992) represent opportunities for livelihoods improvements in the non-farm sector which attract or 'pull' households to participate in the non-farm economy. Opportunities for improvement in livelihoods may arise due to proximity to urban centers, which creates opportunities for trade whose returns may be higher than prices in the agricultural sector (Abdulai & Usami, 2009; Sadoulet & de Janvry, 1995) and through local engines of growth created through backward and forward linkages with the agriculture sector (Barrett et al., 2001).

Reardon et al. (2001) recognized that from the "pull factor perspective", local engines of growth such as commercial agriculture or proximity to an urban area create opportunities for income diversification in production- and expenditure-linkage activities. Pull factors include benefits from complementarities between activities (Norman, 1974), new income opportunities created by market development (Davis & Pearce, 2001), improvement of infrastructure (Jalan & Ravallion, 1998), and diversification for asset accumulation (Hart, 1994).

2.5 Determinants of Non-farm Participation

There are several factors that influence the participation of individuals in non-farm enterprises, but the literature indicates that traditionally, one can categorize the determinants of participation in the non-farm enterprise into three namely: local characteristics, household characteristics, and individual characteristics. In the analysis of non-farm employment in rural Ghana, Ackah (2013) concludes that women more likely to engage in non-farm enterprises compared to men. Education was found to be important for participation in the non-farm sector. He noted that persons who have completed at least primary education have a higher probability of working on non-farm, ceteris paribus. He further found that land scarcity is a driving force in participation in non-farm employment.

Owusu-Boateng (2011), in studying the determinants of household participation in non-farm enterprises in Ghana, highlights the importance of individual and household characteristics, capital assets and location factors as determinants of participation in the non-farm enterprise sector. He concludes that factors such as gender, female headship, educational level of household head, number of working age adults and age of household head are important in determining the participation in the non-farm sector. He further noted that household access to electricity, access

to land and access to non-labour income are important determinants of participation in the non-farm sector.

The incentive to diversify into the non-farm sector depends on the level of development of the local environment, the size and dynamism of the local market and the proximity of an urban centre. The proximity of an urban centre may enhance the non-agricultural sector, first as an outlet for its products, second by subcontracting some activities (Ferreira & Lanjouw, 2001). Escobal (2001) finds that the distance to the closest town and its number of inhabitants have a negative and positive impact, respectively on non-farm wage employment in Peru. Corral and Reardon (2001) used the type of roads (paths, paved roads) in their work on Nicaragua and found that access to paved roads increases the likelihood of undertaking a non-agricultural wage job, but has no impact on self-employment.

Participation in the labour market seems to be segmented by gender, age and education and this implies that studying participation in the non-farm sector should similarly be segmented. Gender is an important determinant of an individual engaging in activities. Females in most developing countries find it difficult to access productive resources. There is compelling evidence that female micro-entrepreneurs are at a relative disadvantage in terms of access to resources (Boohene, 2009; Boohene, 2005; Daniels & Mead, 1998; Fafchamps, 2000; Fafchamps, 2003; Goedhuys & Sleuwaegen, 2000). Newman and Canagarajah (2000) investigated the determinants of household participation in non-farm enterprises in Ghana and Uganda and found that women have a significantly lower likelihood of engaging in a non-farm wage activity than men, but higher when it comes to self-employment. They also found that the range of non-agricultural

activities open to women (petty sales of agricultural products or crafts) was much narrower than that to men (public administration, business, manufacture, construction, transport).Variables included in previous studies as influencing participation in non-farm activities include individual, household and location/regional characteristics (see for example, Deininger & Okidi (1999); Abdulai & Delgado (1999) and Lanjouw (1998). These included regional dummies, age, education, distance to markets, non-labour income, land acreage, the ratio of dependents to working adults, and gender. Bigsten and Kayizzi-Mugerwa (1995) stress the importance of life-cycle aspects. Arguing that the youngest are often better endowed with human capital (such as health or education) but have not yet accumulated assets (land or cattle), Escobal (2001) obtained the same result. Contrarily, Corral and Reardon (2001), Lanjouw (1999) and Ferreira and Lanjouw (2001) find that the likelihood of undertaking a non-agricultural activity, whether self-employed or not, increases with age.

2.6 Participation in Non-farm Employment

There are disputes in the literature regarding the participation of individuals and households in non-farm enterprises. According to Loening et al. (2008), one view is that non-farm activities provide a dynamic pathway out of poverty; a less optimistic view is that non-farm enterprises are set up by households primarily as a survival strategy, perhaps as a substitute for agriculture for the landless. There are several factors that influence the participation of individuals in non-farm enterprises, but the literature indicates that, traditionally, one can categorize the determinants of participation in the non-farm enterprise into three, namely: location characteristics, household characteristics, and individual characteristics.

2.7 Location Characteristics Influencing Participation

The incentive to diversify into the non-farm sector depends on the level of development of the local environment, the size and dynamism of the local market and the proximity of an urban centre. There is a link between the agricultural sector and the non-farm economy. According to Stamoulis and Zezza, (2003), extra income from agricultural growth can create demand for goods and services from non-farm sector, thus starting a virtuous cycle in which agricultural and rural off-farm income grow and sustain each other's growth. Haggblade, Hazell and Brown, (1989) found that a $1 increase in agricultural added value could generate 50 cents increase in non-farm revenues in Africa. The proximity of an urban centre may enhance the non-agricultural sector, first as an outlet for its products, second by subcontracting some activities (Ferreira & Lanjouw, 2001). Escobal (2001) finds that the distance to the closest town and its number of inhabitants respectively has a negative and positive impact on non-farm wage employment in Peru. Corral and Reardon (2001) used the type of roads (paths, paved roads) in their work on Nicaragua and found that access to paved roads increases the likelihood of undertaking a non-agricultural wage job, but has no impact on self-employment.

2.8 Household Characteristics Influencing Participation in Non-farm Enterprises

Although it is argued that local factors influence the type of opportunities and incentives faced by households, it is worth knowing that household characteristics also to some extent determine households' desire and capacity to diversify. Regarding the capacities of households to engage in non-farm enterprises, it is argued that households less endowed with human, physical and social capital mostly diversify into low value-added activities because of low entry barriers, whereas

the higher value-added sector is open to more endowed households. It has been found that land ownership is important in influencing households' engagement in non-farm work. Corral and Reardon (2001) find that acres owned reduce individual engagement in non-agricultural wage labour in Nicaragua. While Ruben and van den berg (2001) find the opposite in Honduras. Nonetheless, land ownership seems to have no impact on non-agricultural self-employment (Escobal, 2001; Ruben & van den Berg, 2001; Corral & Reardon, 2001; de Janvry & Sadoulet, 2001). The size of the household, once the quantity of land is controlled for, may enhance non-agricultural sector participation (Ferreira & Lanjouw, 2001). But the size of the household may also have the opposite impact (Escobal, 2001), as large families are often those with the lowest education level.

2.9 Individual Characteristics Influencing Participation in Non-farm Enterprises

The literature indicates that the decision to enter into the labour market can be segmented by gender, age and education and this implies that studying the participation into the non-farm sector should be on individual basis. Gender is an important determinant of an individual engaging in activities. Females in most developing countries find it difficult to access productive resources. There is compelling evidence that female micro-entrepreneurs are at a relative disadvantage in terms of access to resources (Boohene, 2009; Boohene, 2005; Daniels & Mead, 1998; Fafchamps, 2000; Fafchamps, 2003; Goedhuys & Sleuwaegen, 2000). Newman and Canagarajah (2000) investigated the determinants of households participation in non-farm enterprises in Ghana and Uganda and found that women have a significantly lower likelihood of engaging in a non-farm wage activity than men, but higher when it comes to self-employment. They also found that the range of non-agricultural activities opened to women (petty sales of

agricultural products or crafts) was much narrower than that to men (public administration, business, manufacture, construction, transport).Variables included in their study that influence participation include those usually used in non-farm participation (see for example, Deininger & Okidi, 1999; Abdulai and Delgado, 1999 and Lanjouw (1998). These included regional dummies, age, education, distance to markets, non-labour income, land acreage, the ratio of dependents to working adults, and gender. Bigsten and Kayizzi-Mugerwa (1995) stress the importance of life-cycle aspects. Arguing that the youngest are often better endowed with human capital (such as health or education) but have not yet accumulated assets (land or cattle). Escobal (2001) obtained the same result. Contrarily, Corral and Reardon (2001), Lanjouw (1999) and Ferreira and Lanjouw (2001) find that the likelihood of undertaking a non-agricultural activity, whether self-employed or not, increases with age.

2.10 Determinants of Enterprise Performance

Several enterprise characteristics are reported in literature as having impact or effect on the performance of micro and small enterprises performance. These include firm size and age, gender, access to capital and/or appropriate technologies, location, sector, level of managerial skills and other forms of human capital, social capital and access to labour, formal registration of firms etc. These are discussed below.

2.10.1 Firm Size and Age

One of the earliest theoretical foundations in the literature on firm growth is Gibrat's law of proportional growth. Gibrat (1931) emphasized the random nature of growth processes such that firms of all sizes face the same probability of growth. Gibrat argued that firm growth is not

affected by firm size but rather a random process resulting from the interaction of several factors including political trends and entrepreneurs relative risk aversion. This argument was contested by scholars like Jovanovic in his seminal article in 1982. Jovanovic (1982) proposed a model in which managers of firms learn about their efficiency over time, with firms expanding when managers suppositions about their efficiency prove to be understatements of the true efficiency level. Pakes and Ericson (1989) extended the learning theory to allow proprietors not only to learn their true efficiency level but also to increase their firms' efficiency by means of investing in their own human capital. This implies there exists a negative relationship between firm growth, size and age. While empirical literature largely supports this hypothesis, the negative effect of enterprise size on growth is observed to diminish as firms get larger (Goedhuys & Sleuwaegen, 2000; Liedholm, 2002; Mead & Liedholm, 1998).

2.10.2 Gender and Firm Performance

In examining the literature on gender and enterprise performance, issues relating to marginalization and the reproductive role of women are often mentioned. Moser (1989) argues that women perform three roles in society: reproductive; productive; and community management roles. Moser argument is that women have been marginalized in society and motherhood has been assumed their important role. Gender differences in access to and control over resources also exacerbate inequities in performance of micro and small enterprises (von Masson, 1999). Loscocco et al. (1991) observe that women relative to men have less access to financial capital; and because of past credit discrimination, women's lower earning power and their traditional dependence on men, women are likely to have fewer resources to invest in business activities. The different socialisation, training and other experience of men and women

may therefore lead to different outcomes in business performance (Loscocco et al.,1991).

Studies have shown that on the average, women's micro enterprises had lower sales revenue, fewer assets, smaller profit margins and lower likelihood of survival than men's enterprises (Mead and Liedholm, 1998; Daniels, 1999). Daniels(1999) in studying micro and small enterprises in Kenya, found that although women formed 43 percent of entrepreneurs the percentage contributed to gross domestic product of the total micro and small enterprise contribution was 30percent for female proprietors, 50 percent for male proprietors and 20 percent for jointly owned enterprises.

Loscocco et al. (1991) found evidence of gender differences in the factors influencing business outcomes; and that female-owned enterprises generated less profits than male-owned enterprises. Rosa et al. (1996) noted that the relationship between gender and small business performance is complex, but found that gender appeared to be an important factor even after controlling for other factors. McPherson (1996) explores determinants of employment growth among micro and small enterprises in Southern Africa and found that female proprietors grow at lower rates than male-owned enterprises. McPherson also found that age, size and location of enterprises are negatively related to firm growth. Daniels and Mead (1998) found that net profits per person per months for female-owned enterprises were significantly lower than net profits from male counterparts or mixed ownership enterprises. Their results also show that age, paid workers and education were positively and significantly associated with profits while unpaid workers and working proprietors were negatively associated with net profits.

Literature is not clear regarding the relationship between gender and micro and small enterprise performance. In fact, there is convincing evidence in literature suggesting that female micro-entrepreneurs are at a relative disadvantage in terms of access to resources (Boohene, 2009; Boohene, 2005; Daniels & Mead, 1998; Fafchamps, 2000; Fafchamps, 2003; Goedhuys & Sleuwaegen, 2000). Evidence suggests that firms with female proprietors do grow more slowly (Mcpherson, 1996; Goedhuys & Sleuwaegen, 2000).Others have argued that that male-owned enterprises are more oriented towards growth than those operated by women and that this is reflected in better financial performance (Boden Jr & Nucci, 2000; Brush, 2000; Fischer, Reuber & Dyke, 1993; Rosa, Carter & Hamilton, 1996; Singh, Reynolds & Muhammad, 2001). Sabarwal and Terrell (2008) find that female-owned businesses in the formal sector in 26 transition countries are significantly less profitable than male-owned businesses. A recent study by Rijkers and Söderbom (2013) finds that male-operated enterprises were more productive than enterprises managed by women in Ethiopia. However, other studies suggest that, once account has been taken of other explanatory factors (for example enterprise size, age, sector, level of education of the entrepreneur and the number of days the business operates annually), female-operated enterprises perform just as well as their male counterparts (Du Rietz & Henrekson, 2000; Watson, 2003). While micro and small enterprises operated by women may have lower average sales than enterprises operated by men, they tend to be more stable and exhibit higher rates of survival (see for example: Johnson & Storey, 1993; Loscocco, Robinson, Hall & Allen, 1991; Singh, et al., 2001).

2.10.3 Access to Capital/Credit

There are documented claims that lack of access to credit and other financial services are constraints to the growth and expansion of micro and small enterprises (Akoten, Sawada,

&Otsuka, 2006; Bigsten, et al., 2003). Females are mostly involved in sole-proprietorship businesses, whichare mainly microenterprises and as such may lack the necessary collateral to qualify for loans (Aryeetey et al., 1994; Abor & Biekpe, 2006).

There is evidence that suggest that the performance of micro and small enterprises is related to access to start-up capital and the accumulation of capital over time through the retention of profits (Fafchamps & Minten, 2002). Enterprises that operate under challenging economic conditions coupled with high interest rates may be hindered by the inability to access credit (Atieno, 2001; Bigsten, et al., 2003; Steel & Andah, 2004). However, the level of capitalization of many micro and small enterprises suggest that they have a limited demand for credit and that the claims that the level of access and/or cost of external finance as limiting constraints may be exaggerated (Masakure, et al., 2008; Nichter and Goldmark, 2009). Literature is not clear as to whether access to formal credit through banks or microfinance facilities necessarily translates into better enterprise performance and in many cases informal credit which is readilyavailable becomes a substitute source of finance (Akoten et al., 2006; Daniels & Mead, 1998; Loening et al., 2008). The extent to which most micro and small enterprises operate in informal markets acts as a global constraint on the ability of enterprises to access the assets and skills required to succeed (McKenzie & Woodruff, 2006; Nichter & Goldmark, 2009). A recent study by Mcpherson, Molina and Jewel (2010) suggests that access to credit does not appear to have a significant influence on firm growth. Access to formal credit seems to have no clear impact on enterprise performance relative to cheaper informal credit (Daniels & Mead, 1998; Akoten et al., 2006).

2.10.4 Access to Technology/innovations

Studies have shown a positive correlation between technology/innovation and enterprise profits, while the performance of such firms is less vulnerable to cyclical factors (Geroski, 1995; Daniels, 2003; Sleuwaegen & Goedhuys, 2002; Goedhuys & Sleuwaegen, 2000). However, it has been observed that among micro and small enterprises where the magnitude of capital stock is generally small, the level and nature of technology-related gains is less clear (Daniels & Mead, 1998). There are indications from the strategic management literature that some enterprises possess dynamic capabilities that give them a comparative advantage in innovations (Barney, 1991; Lockett & Thompson, 2001; Jacobides & Winter, 2007).

2.10.5 Firm Location and Sector of Enterprise

The physical location of an enterprise can affect its performance. A firm's location plays a role in determining how much competition it faces and how costly it may be to buy inputs (Mcpherson et al., 2010). Enterprises in urban areas tend to enjoy better access to a range of resources and infrastructure than those in rural areas (Barr, 1999; Barr, 2002; Bogetic & Sanogo, 2005; Eberts & McMillen, 1999; Fafchamps, 2000). Enterprises located in urban areas tend also to have better and less costly access to inputs, larger and more dynamic markets, opportunities for networking with larger firms and within fellow enterprises, and a greater pool of information which are crucial for enterprise performance (Fafchamps & Minten, 2002; Shields, 2005; Sleuwaegen & Goedhuys, 2002). The sector in which the enterprise operates also affects the performance of micro and small enterprises. Enterprises across sectors may face different product demands and encounter distinct cost structures may cause differences in enterprise performance (Liedholm & Mead, 1998; Nissanke & Aryeetey, 2006; Steel & Andah, 2004).

Whiles empirical literature to a large extent fails to identify distinct sectoral growth patterns, it rather emphasizes inter-country variations in sectors according to resource endowments (Liedholm, 2002; Mead & Liedholm, 1998). In this regard, while manufacturing enterprises have been noted to perform better than trading and service enterprises in Africa and Latin America (Mead & Liedholm, 1998),evidence from rural Ethiopia indicates otherwise(Loening, et al., 2008).

2.10.6 Human Capital and Performance

Human resource practices can only be a source of sustained competitive advantage when they support resources or competencies that provide value to a firm (Wright, Dunford &Snell , 2001). Undoubtedly, human resource input plays a significant role in enhancing firms' competitiveness (Barney, 1995). Studies carried out on human capital and the implications for firm performance showed that human capital enhancement will result in greater competitiveness and performance (Agarwala, 2003). A number of studies (Mead and Liedholm (1998), Van der Sluis, Van Praag and Vijverberg (2005) and Akoten and Otsuka (2007)) have found evidence that human capital embodied in the proprietor or workers promotes firm growth. Some studies have highlighted the influence of human capital generally as reflected in the level of education and age of the entrepreneur on enterprise growth (Bates, 1990; McPherson, 1996). There is evidence to suggest that the level of education of the entrepreneur may have an adverse impact on enterprise survival due to the preferential access to better income-earning opportunities elsewhere (Nafziger & Terrell, 1996).

Differences in the managerial skills of micro-entrepreneurs have been noted to have a significant effect/impact on enterprise performance (Brockhaus, 1980; Chrisman, Bauerschmidt

&Hofer,1998; Kalleberg & Leicht, 1991; Verheul, Wennekers, Audretsch & Thurik, 2002). Entrepreneurial ability is often highlighted as critical for the performance of micro and small enterprises (Bates, 1990; Brockhaus, 1980; Chrisman et al., 1998; Kalleberg & Leicht, 1991; Nafziger & Terrell, 1996), many have failed to differentiate between entrepreneurial ability and managerial skills such that few studies in developing countries have explored its distinct influence (Udry & Anagol, 2006).

2.10.7 Formal Status of Firms (Registration)

Registration of firms is found to have an effect on firm performance. A number of studies including Sleuwaegen and Goedhuys (2002), Sleuwaegen and Goedhuys (2000), and Deininger, Jin and Sur (2007) find that formalized microenterprises grow faster than those that are informal. Registered enterprises gain credibility with licensing and taxation and enhanced access to rationed resources; registration can also act to reduce transaction costs when dealing with other firms, thus contributing to improved performance (Sleuwaegen & Goedhuys, 2002). However, enterprises may remain informal if the net gain to registration is less than the cost of remaining informal (Liedholm & Mead, 1996).

2.10.8 Access to Labour

Nichter and Goldmark (2009 observed that one dominant characteristic of micro and small enterprises is high rate of labour intensity and this suggest that the ability to access a low cost supply of labour with the required skills is a key factor influencing enterprise performance. Most MSEs use a mixture of unpaid family members, paid workers and apprentices as labour force (Frazer, 2006). Evidence suggest that paid labour tends to be more productive thus reflecting higher levels of skills and experience, even though the use of family labour can increase enterprise profitability because it is less costly (Frazer, 2006). Hired labour has been found to

exert a postitve effect on financial performance. Masakure et al. (2009) in their study of microenterprise performance in Ghana found hired labour having a positive effect on financial performance. Previous studies showed that hired labour is generally more skilled, experienced and productive in microenterprises in Kenya (Daniels & Mead, 1998) and agricultural traders in Madagascar (Fafchamps & Minten, 2002).

2.11 The Importance of the Non-farm Sector

The MSEs sector is recognized to be critical to the processes of poverty alleviation, and more general economic and social development (Maloney, 2003; Mead & Liedholm, 1998). Reardon (1999) documents that the non-agricultural sector often has an important role to play in rural areas of developing countries and it contributes on the average 42 percent of total households' income in rural Africa, 40 percent in Latin America and 32 percent in Asia. He further notes that the engagement in non-agricultural activities and, most importantly, the predominant types of activities, vary from one country to the other. In Mali, about 61 percent of total non-agricultural activities are in manufacturing, and about 39 percent and 40% in services in Cameroon and Rwanda respectively. In terms of gender differences, 74 percent of female engaged in non-agricultural activities are in services as against 32 percent for males in the Brazilian, Northeast for instance.

Haggblade, Hazell and Reardon (2005) observed that non-agricultural income contributes between 30 to 45 percent of rural household incomes in the developing world. Reardon et al. (1998) indicated that non-agricultural income contributes about 42 percent to rural household income for sub-Saharan Africa, while Reardon (1999) gave estimates of 32 per cent and 40 per

cent for Asia and Latin America, respectively. Ellis (2000) reported higher figures from case studies in sub-Saharan Africa and puts the figure in a range of 30 to 50 per cent. Most authors have concluded that non-farm activities can be seen as a route out of poverty, and that the impacts of non-farm growth on inequality depend on the type of non-farm activity, land tenure patterns, and physical and human capital requirements in question (Newman & Canagarajah (2000).

Micro and small enterprise have contributed tremendously to the economies of developing countries. In Ghana, micro and small enterprises contributed around 22 percent of Gross Domestic Product (GDP), principally in the agricultural, and transport sectors (AfDB, 2005). In 2003, Kenyan micro and small enterprises employ 3.2 million people and accounted for 18 percent of national GDP. In Nigeria, small and medium enterprises (SMEs) account for 95 percent of formal manufacturing activity and 70 per cent of industrial employment whiles in Morocco, 93 percent of industrial firms are small and medium enterprises, contributing 38 percent of production, 33 per cent of investment, 30 percent of exports and 46 per cent of all jobs (Masakure et al., 2009). In South Africa, MSEs provided more than 55 percent of total employment and 22 per cent of GDP in 2003 (Kauffman, 2005). Studies in five African countries (Botswana, Kenya, Malawi, Swaziland, and Zimbabwe) found that micro and small enterprises generate nearly twice the level of employment that registered large-scale enterprises and the public sector do (Mead & Liedholm, 1998).

Research has shown that the share of income from non-farm sources has increased over the last decade in some continents. Studies suggest that non-farm sources account for 40-45 percent of

average rural household income in Sub-Saharan Africa and Latin America and 30-40 percent in South Asia with the majority of this coming from local rural sources rather than urban migration (Barrett et al., 2001; Reardon et al., 2001; and Seddon & Subedi, 2000). Evidence provided by Haggblade et al., (2002) suggests that most rural communities in Africa derive about 42 percent of their income from rural non-farm activities; this is a high share considering that only about 10 percent of the rural labour force is employed in the rural non-farm sector. Reardon (1997) documents that in a typical rural household in Africa; more than one member is employed in a non-farm enterprise. Non-farm work offers the poor a potential escape route from poverty, since they usually require little capital or training to set up and are labour intensive (Owusu et al., 2011).

The non-farm economy plays a crucial role in ensuring food security for majority of rural households especially during agriculture off season. In addressing food security needs in developing countries, Gladwin, Thomson, Paterson and Anderson (2001) find that increasing food production as well as ensuring access to non-farm incomes will ensure food security during the lean seasons and harvest shortfalls. The non-farm sector provides employment, household income diversification and security, market linkages for agriculture, and thus, the potential for reducing poverty and inequality (Newman & Canagarajah (2000). In Ghana, Abdulai (1999) noted that access to arable land is a major problem owing to the system of land ownership. The problems in the agricultural sector compel individuals to look for opportunities in the non-farm sector. The rural non-farm sector provides the opportunities for the poor households to smoothen incomes by offering alternate sources of income for households to rely on in the event of crop failure (Abdulai & Delgado, 1999).

In the manufacturing sector, small and medium enterprises have contributed about 85 percent of employment (Steel & Webster, 1991). SMEs are believed to contribute about 70 percent to Ghana's GDP and account for about 92 percent of businesses in Ghana (Abor & Quartey, 2010). SMEs have been identified as the catalyst for the economic growth of the Ghanaian economy, as they make major contributions to employment generation and poverty reduction (Mensah, 2004). The SME sector is regarded in certain situations as a valve for absorbing the teeming unemployed youth in the Ghanaian economy (Mensah, 2004). The major activities within the SMEs sector in Ghana include: soap and detergents, fabrics, clothing and tailoring, textile and leather, village blacksmiths, tin-smithing, ceramics, timber and mining, bricks and cement, beverages, food processing, bakeries, wood furniture, electronic assembly, agro processing, chemical-based products and mechanics (Osei, Baah-Nuakoh, Tutu & Sowa, 1993; Kayanula & Quartey, 2000).

The rural non-farm economy sustains the farmers in agriculture by offering them market avenues to sell their produce on the one hand and, on the other hand, agriculture creates opportunities for those in the manufacturing sector. Stamoulis and Zezza (2003) observed that this creates a virtuous cycle in which the agricultural and rural non-farm income grow and sustain each other's growth' thereby ensuring growth in the rural economy. Non-farm income has positive spin-off in agricultural performance by providing cash for productivity-enhancing inputs, thus easing credit constraints, and in turn, a more dynamic agricultural sector enhances the scope and scale of the non-farm sector (Matshe & Young, 2004).

Aryeetey (2004) has observed that access to credit and liquidity constitutes a major constraint for agriculture development in rural Ghana, and that 'credit constraint perpetuates the cycle of poverty by pushing famers to sub-optimal paths'. In this regard, the non-farm sector plays a role by enabling poor farmers to acquire additives to boost agriculture output (Gordon & Craig, 2001). Incomes from the non-farm sector constitute one important source of capital for investment in productivity enhancing inputs (Gordon & Craig, 2001). Having a stream of income generating activities will help convince most microfinance institutions to provide loans to clients (Armendariz & Morduch, 2005).

A majority of the rural households are involved in farm activities, but many of them get their income from non-farm activities (World Bank, 2008). In the developing countries and economies in transition, between one third and half of the households generate their income from a non-farm source and the share of this type of income is between 20 and 70 percent of the total household income (Adams, 2001; Benjamin, 1992; Rizov, Mathijs & Swinnen, 2000; Rosenzweig, 1980). The World Bank (2008) has indicated that the growth of non-farm activities can ease the constraint on credit and liquid assets required for agricultural production and can boost agricultural competitiveness and that the savings generated by farm activities can also serve as the basis for non-farm investment.

2.12 The Non-farm Sector in Ghana: An Overview

There is substantial evidence in Ghana to suggest that more households, including rural, are moving into the non-farm sector. The Ghana Living Standards Survey in 1998 reported that about 1.9 million households in Ghana representing 49 percent operated a non-farm enterprise

(Ghana Statistical Service, 2008). A closer look at the statistics revealed that more than one enterprise may be present in a household. Ghana has about 2.3 million non-farm enterprises, with Accra and other urban areas accounting for about 1.1 million (44 percent) of these, and the remainder in rural areas (Ghana Statistical Service, 2000). This means that about 1.2 million (56%) non-farm enterprises are in the rural areas. According to the GLSS 5 report of 2008, approximately 3.2 million households representing 46.4 percent of households in Ghana operate a non-farm enterprise. The report further stated that approximately 5.4 million persons in Ghana, representing 20 percent of the total population, operate a non-farm enterprise of one sort or another. About 2.8 million (52%) of these households are found in urban localities, whiles 2.6 million (48%) of these households are in the rural areas. Details of the statistics of non-farm enterprises in the GLSS report of 2005 are presented in Table 1. The number of rural households operating non-farm enterprises between 1998 and 2005 has more than doubled (from 1.2 million in 1998 to 2.6 million in 2005). This demonstrates that the non-farm sector in Ghana is rapidly growing. As population increases the number of households engaged in non-farm is expected to increase as more households enter into the non-farm sector. In view of the fact that rural households are moving into the non-farm sector instead of concentrating on their traditional image as farmers, it is thus imperative to restrict the discussions on non-farm participation to the rural households because urban households are expected to do more of non-farm businesses and therefore studying participation in urban households will not be interesting.

The reasons for the growing of the non-farm sector in Ghana are not far-fetched. Several studies have demonstrated that the non-farm sector is relevant in reducing poverty. According to Newman and Canagarajah (2000), non-farm activities play an important role for women in rural

Ghana in many ways, but perhaps most importantly, in yielding the lowest as well as the most rapidly declining poverty rates and that participation in non-farm activities is strongly linked to reduced poverty. In their study on gender, poverty and non-farm employment in Ghana and Uganda, they found that non-farm participation led to the largest declines in female poverty rates in Ghana and Uganda. In a recent study, Ackah (2013), notes that non-farm employment appears to be crucial for the alleviation of rural poverty in Ghana, and that with limited opportunities in agriculture, non-farm employment is necessary to augment or supplement farm incomes. Ackah further stated that households who receive income from non-farm sources tend to be better off than similar households who are specialised in agricultural activities, even after controlling for the fact that households that receive income from non-farm activities are a nonrandom sample of Ghanaian households. He also found that on the average, non-farm income accounts for about a third of total household income.

2.13 Policy Framework of the Micro and Small Enterprise Sector in Ghana

The micro and small enterprise sector is very important to the economy of Ghana. This is buttressed by the fact that the industrial and business sectors are dominated by a large informal sector (Tetteh &Frempong, 2008). Micro and small enterprises operate largely in the informal sector and employs a greater majority of people especially in the rural areas. Ghana Living Standard Survey-3 report indicates that about 69 percent of the population is employed in the micro and small enterprise sector with a significant number of them located in the rural areas (Ghana Statistical Service, 2000). Ghana Growth and Poverty Reduction Strategy I and II documents have recognized micro and small enterprises as engines of growth, employment creation and wealth creation. Ghana government has since created a policy document to target

micro and small enterprise sector. Government policy for micro and small enterprise has the objective of creating a conducive environment for growth and to facilitate the development of a vibrant, productive and competitive MSE sector in the country (MoTI, 2002). The policy among others seeks to:

- Promote dynamic enterprise culture for innovation;
- Promote employment growth within the informal sector;
- Develop MSE to serve as a means to establish linkages between the formal and informal sectors of the economy;
- Improve the technology base, product quality and productivity of the MSE sector;
- Upgrade the application of indigenous technologies.

Ghana's industrial Policy is set within the context of Ghana's long-term strategic vision of achieving middle income status by 2020, through transformation into an industry-driven economy capable of delivering decent jobs with widespread, equitable and sustainable growth and development. The Policy provides clear and transparent guidelines for the implementation of Government's industrial development agenda, with particular respect to the growth, diversification, upgrading and competitiveness of Ghana's manufacturing sector. In order to achieve the objectives set, the Industrial Policy instruments cut across 21 policy thematic areas which have been categorized into four main components, namely:

- Production and Distribution
- Technology and Innovation
- Incentives and Regulatory Regime
- Cross-cutting Issues

In line with this, the Ministry of Trade and Industry launched Ghana's Industrial Policy on the 1st of June 2011 in Accra. Key development objectives of the policy include expansion of productive employment in the manufacturing sector, promotion of agro-based industrial development, and ensuring spatial distribution of industries to achieve reduction in poverty and income inequalities. The implementation of the policy will be done through an Industrial Sector Support Programme, which is a time-bound intervention to speed up the rate of industrialisation over the next five years. Ghana has realized that small-scale enterprises are the backbone of the manufacturing sector, but most of these businesses are not formalized, and this has affected their access to business support services and incentives. The policy objective is to formalize small scale businesses to help them get access to business support services and incentives (Ghana Industrial Policy, 2011). The policy prescriptions include instituting incentives to encourage the formalization of the informal sector enterprises and encouraging cluster development of micro and small enterprises.

2.14 Public Institutions Supporting Micro and Small Enterprise Development in Ghana

There are several institutions that play major roles in providing support for the growth and development of the micro and small enterprise sector. Key among them include the National Board for Small Scale Industries (NBSSI), Ghana Regional Ghana Appropriate Technology Industrial Service GRATIS Foundation, and the Rural Enterprise Programme (REP). The Ghana Enterprise Development Commission (GEDC) was set up to assist small and medium enterprise with the objective of assisting Ghanaian businessmen to enter into fields where foreigners mainly

operated (Abor & Biekpe, 2006). The GEDC also included packages for strengthening small scale industry in general, both technically and financially (Kayanula & Quartey, 2000).

The National Board for Small Scale Industries (NBSSI) was established in 1985 under the NBSSI Act 1981 (Act 434). It was established to identify and define the types of small-scale industries in the country, develop and support small-scale industries, implement policies in relation to small-scale industries duly approved by the Government, establish the infrastructure required to accelerate the implementation of policies or execution of programmes, monitor the utilization of funds derived from Ghana Government budget and subsidies earmarked for small-scale industries, and ensure that programmes related to the development of small-scale industries meet the national objectives, among others. NBSSI was charged with the responsibility for the promotion and development of the micro and small enterprises in Ghana. The NBSSI provides technical support and advisory services through its Business and Advisory Centres (BAC) located in all the regions in Ghana. The objectives of the NBSSI include the following:

- Contributing to the creation of an enabling environment for small-scale enterprise development;
- Contributing to the development of an enterprise culture in Ghana;
- Providing non-financial support for small-scale business development;
- Facilitating access to credit for small-scale enterprises;
- Promoting micro and small enterprise sectoral associations.

The Ghana Regional Appropriate Technology Industrial Service (GRATIS) was established in 1987 by the Government of Ghana with support from the European Union and the Canadian

International Development Agency to promote small-scale industrialization in Ghana. GRATIS supervised the operations of the Intermediate Technology Transfer Units (ITTUs) in the country to upgrade small scale industrial concerns by transferring appropriate technology to small scale industries. ITTUs were established in the regions to help develop the engineering abilities of small scale manufacturing and service industries engaged in vehicle repairs and other related trades. The ITTUs are now designated Regional Technology Transfer Centres (RTTCs) with the mandate to transfer appropriate technologies to small scale industries through training, manufacturing and the supply of machine tools, plants and equipments. GRATIS Foundation evolved from GRATIS and was incorporated in December 1999. GRATIS Foundation was incorporated with a mission to develop, promote and disseminate marketable technologies and skills for the growth of industry, particularly, micro, small and medium scale enterprises in Ghana and the West Africa Sub Region. SMEs have not taken full advantage of Government-sponsored business support services such as the NBSSI, which operates in the 10 regional capitals under the Ministry of Trade and Industries and the GRATIS foundation that provides skill training and basic working capital tools for start-ups (Mensah, 2004).

The Rural Enterprise Project (REP) is supported by the International Fund for Agricultural Development (IFAD), the Agricultural Development Bank (AfDB) and the Government of Ghana. It has the objective of creating wealth and improving living conditions in rural areas, especially the incomes of women and vulnerable groups through increased self-employment. The Project provides micro and small enterprises with a package, which includes a mix of business development services, technology transfer, support for apprenticeship training, and rural finance services. In collaboration with NBSSI, the rural banks, district assemblies, GRATIS, it provides

training programmes in areas such as business management, record keeping, book keeping and banking procedures, marketing, credit management, costing and pricing, business ethics and negotiation skills etc.

The establishment of the Ministry of Private Sector Development and President's Special Initiative under the New Patriotic People's Party (NPP) administration was meant to provide an enabling environment for the development of business enterprises including small and medium enterprises. The current government, National Democratic Congress (NDC) has established a division within the Ministry of Trade and Industry called SME and Technology. The core activity of the division is to enhance the production capacities of firms in the country with special focus on small and medium enterprises.

2.15 International Definitions and Classification of Micro, Small and Medium Enterprises

In reviewing literature about the definition of what a micro, small, medium and large enterprise is, one would come to the conclusion that there is no universally acceptable definition. Many authors, researchers, national governments, commissions and several organized bodies have given several and different definitions. According to Storey (1994), there is no single, uniformly acceptable, definition of a small firm. There are a number of definitions some which are based on the number of people employed and others based on the turnover and value of fixed assets. Storey (1994) stated that there is a danger in trying to define firms using size stressing that in some sectors all firms may be regarded as small, whilst in other sectors there is the possibility of not finding firms which are small.

One of the earliest attempts to define what constitutes a small firm is the Bolton Committee (1971). The committee first formulated what is called an "economic" and "statistical" definition of a small firm. Under the "economic" definition, a firm qualifies to be small if it meets the following three criteria:

i. It has a relatively small share of their market place;
ii. It is managed by owners or part owners in a personalized way, and not through the medium of a formalized management structure;
iii. It is independent, in the sense of not forming part of a large enterprise.

Under the "statistical" definition, the following criteria were proposed:

i. The size of the small firm sector and its contribution to GDP, employment, exports, etc.;
ii. The extent to which the small firm sector's economic contribution has changed over time;
iii. Applying the statistical definition in a cross-country comparison of the small firms' economic contribution.

There were inconsistencies associated with the definitions given by the Bolton Committee. The Committee applied different definitions of the small firm to different sectors. For instance, firms in the manufacturing, construction and mining sectors were defined in terms of number of employees whiles firms in the retail, services and wholesale were defined in terms of turnover in monetary value. The European Commission (EC) came out with its own definition of small and medium scale enterprises (SMEs). The definitions followed the following categories;

i. Micro enterprises (firms employing between 0 to 9 people)
ii. Small enterprise (firms employing between 10 to 99 people)

iii. Medium enterprises (firms employing between 100 to 499 people)

The EC definition was only based on the number of people employed. According to Storey (1994), the use of 100 employees as the small firm's upper limit is more appropriate, given the increase in productivity over the last two decades. The EC definition did not consider the SME group to be homogenous and went ahead to classify them into micro, small, and medium-sized enterprises. The recommendation establishing a first common small and medium enterprise definition was adopted by the Commission in 1996 and has been widely applied throughout the European Union. Further, the Commission on the 6th of May 2003 adopted a new recommendation to take account of economic developments since 1996. The new definition considers the number of employees and turnover or balance sheet total as the main factors. The details are presented in Table 2.1.

Table 2.1: European Commission (EC) Definition of SMEs

Company category	Employees	Turnover	Balance sheet total
Medium-sized	<250	≤ € 50m	≤ € 43m
Small	< 50	≤ € 10m	≤ € 10m
Micro	<10	≤ € 2m	≤ € 2m

Source: European Commission, 2005.

Some multilaterals had different definitions of small and medium size enterprises. In the discussions of Gibson and van der Vaart (2008), substantial differences exist among the various definitions given. The African Development Bank and the UNDP definition did not include the maximum turnover SMEs and maximum asset. What is lacking in all the definitions is that they

failed to include the minimum number of employees, maximum turnover and assets. There exist a large variation in terms of the number of people employed and the turnover as defined across. For instance, in the context of the African Development bank, a company having a maximum of 50 employees is qualified to be an SME whiles another company using the World Bank definition can even have six times the number of employees and will still be classified as an SME. If one were to use the UNDP and World Bank definitions of an SME in the context of a country like Ghana, the definitions are likely to include the top 100 Ghanaian companies which are seen in Ghana as large scale. The definitions are presented in Table 2.2.

Table 2.2: Multilateral Institutions Definition of SMEs

Institution	**Maximum number of employees**	**Maximum revenues/turnover ($)**	**Maximum assets ($)**
World Bank	300	15,000,000	15,000,000
MIF-IADB	100	3,000,000	None
African Dev't Bank	50	None	None
UNDP	200	None	none

Source: Gibson and van der Vaart, 2008.

The Multilateral Investment Guarantee Agency (MIGA) and International Finance Corporation (IFC) have defined small and medium size enterprises as follows; for an enterprise to qualify as a small enterprise it should meet the following conditions:

1. Less than 50 employees
2. Less than $3 million total assets
3. Less than $3 million total annual sales

But for medium size enterprises they should meet the following conditions:

1. Less than 300 employees

2. Less than $15 million total assets

3. Less than $15 million total annual sales

The United Nations Industrial Development Organisation (UNIDO) defines SMEs using the number of employees and further classified SMEs into industrialized and developing countries (see Abor & Quartey, 2010, Elaian, 1996). The definition for industrialized countries is given as follows:

• Large - firms with 500 or more workers;

• Medium - firms with 100-499 workers;

• Small - firms with 99 or less workers.

The classification given for developing countries is as follows:

• Large - firms with 100 or more workers;

• Medium - firms with 20-99 workers;

• Small - firms with 5-19 workers;

• Micro - firms with less than 5 workers.

Several others gave definitions of small and medium enterprises. Weston and Copeland (1998) hold the view that defining firms in terms of size of suffers from a lack of universal applicability since enterprises may be conceived of in varying terms. Michaelas, Chittenden and Poutziouris (1999) consider small enterprises as independent private limited companies with fewer than 200 employees. López and Aybar (2000) considered small enterprises as considered companies with

sales below €15 million as small. Van der Wijst (1989) defines small and medium businesses are privately held firms with 1- 9 and 10 - 99 people employed respectively. Jordan, Lowe and Taylor (1998) define small and medium enterprises as firms with fewer than 100 employees and less than €15 million turnover.

2.16 Defining Micro and Small Enterprises-the Case of Ghana

In Ghana, there are several definitions of micro, small and medium size enterprises. Some definitions are based on the number of people employed whiles others consider the turnover and value of fixed assets. There have been various definitions given for small-scale enterprises in Ghana, but the most commonly used criterion is the number of employees of the enterprise (Kayanula & Quartey, 2000). However, the National Board for Small Scale Industries (NBSSI) considers both fixed assets and number of employees. It defines a small scale enterprise as one with not more than 9 workers, has plant and machinery (excluding land, buildings and vehicles) not exceeding 10 million Cedis (US$ 9506, using 1994 exchange rate) (ibid). Based on the number of people employed, NBSSI has categorized enterprises into micro, small, medium and large as follows;

i. Micro enterprises employing 1-5 people
ii. Small enterprises employing 6-29 people
iii. Medium enterprise employing 30-99 people and
iv. Large enterprises employing 100 or more people.

Ghana Enterprise Development Commission (GEDC), on the other hand, uses a 10 million Ghanaian cedis upper limit definition for plant and machinery. It is important to caution that the

process of valuing fixed assets poses a problem and that the continuous depreciation of the local currency as against major trading currencies often makes such definitions outdated (Kayanula & Quartey, 2000).

Masakure et al. (2009) described the definitions given by the AfDB, OECD and Bruks et al. in 2005 as the official definition of micro and small enterprises in Ghana. Micro and small enterprises refer to activities capitalized at not more than ¢10 million (US$1,419 using 2,000 exchange rates; IMF, 2005) and with a labour force of not more than nine persons (Bruks et al., 2005; AfDB and OECD, 2005). Ghana Statistical Service (GSS) considers firms with less than 10 employees as small scale enterprises and those having more than 10 employees as medium and large-sized enterprises. Microenterprises are considered as businesses employing not more than four persons (Mensah, Tribe and Wess, 2007). Steel and Webster (1990), Osei et al. (1993) in defining small scale enterprises in Ghana used an employment cut off point of 30 employees. Osei et al. (1993) in defining, small scale enterprises categorized small scale enterprises into three:

i. micro-employing less than 6 people;
ii. very small, those employing 6-9 people;
iii. small-between 10 and 29 employees.

The Regional Project on Enterprise Development Ghana manufacturing survey report classified firms into the following:

i. micro enterprise, less than 5 employees;
ii. small enterprise, 5 -29 employees;

iii. medium enterprise, 30 – 99 employees;

iv. large enterprise, 100 and more employees.

Small and medium enterprises in Ghana can be categorized into urban and rural enterprises with the former subdivided into "organized" and "unorganized" enterprises (Kayanula and Quartey, 2000). The organized ones mostly have paid employees with a registered office, whereas the unorganized category is mainly made up of artisans who work in open spaces, temporary wooden structures, or at home, and employ few or in some cases no salaried workers and rely mostly on family members or apprentices. In Ghana, SMEs represent about 80% of the private sector and account for about 92 percent of businesses in Ghana (Abor & Biekpe, 2006). It is clear from the literature review that there are inconsistencies in defining a micro and small enterprise. This study considered a micro and small enterprise as an enterprise employing not more than nine persons as defined by NBSSI, Bruks et al. (2005) AfDB and OECD (2005).

2.17 Measurement of Micro and Small Enterprise Performance

The micro and small enterprise sector is critical in providing income and employment to a majority of the people in the developing countries especially the poor. Micro and small enterprises in particular are a major of income and employment in the poorest economies (Mead & Liedholm, 1998) especially for the poorest members of society. Thus, there is a great deal of interest in the performance of firms in the microenterprise sector and its scope to generate employment, both through new business start-ups and the expansion of existing businesses (Masakure et al., 2008).

Enterprise performance can be measured using various approaches. In reviewing literature, one would come to the conclusion that enterprise performance, especially for micro and small is measured based on financial performance (see Daniels, 1999, 2003; Daniels & Mead, 1998; Fafchamps & Gabre-Madhin, 2001; Masakure et al., 2008, 2009; de Mel, McKenzie & Woodruff, 2009), employment growth (Daniels & Mead, 1998; Livingstone, 1991; McPherson, 1996; Mead, 1994), sales growth (Sleuwaegen & Goedhuys, 2002; Vijverberg, 1991) and productivity growth (Chapelle & Plane,2005). Changes in level of employment is arguably the most frequently used measure of micro and small enterprise performance (Liedholm & Mead, 1998). The number of employees working at a particular time in the enterprise can be easily recollected, and therefore errors associated with recollections are reduced. In measuring the performance of micro and small enterprises, one needs to proceed cautiously, because unlike the medium and large scale enterprises and other and well established enterprises, a majority of micro and small enterprises do not keep accurate financial records. As de Mel et al. (2009) noted, the majority of microenterprises in developing countries do not keep financial records, making data collection generally reliant on recall.

Masakure et al. (2008) note that the evidence presented to date suggests that, while growth and performance varies by firm characteristics and institutional environment, the bulk of microenterprises (and also small enterprises) does not grow into larger economic entities. High aggregate growth, often registered in employment in the microenterprise sector, stems from high rates of ‘‘start up,’’ many of which eventually fail, rather than the expansion of established enterprises (Daniels, 1998, 2003; Daniels & Mead, 1998; Livingstone, 1991; McPherson, 1996; Mead, 1994, 1999; Mead & Liedholm, 1998; Sleuwaegen & Goedhuys, 2002). Several empirical

studies of enterprise performance in developing countries have resorted to the use of profit as a performance measure. Accurate measurement of profits from microenterprises is critical for studying poverty and inequality, measuring the returns to education, evaluating the success of microfinance interventions, and many other important questions of interest (de Mel et al., 2009). Information on micro enterprise profits is critical in evaluating the impact of microenterprise support programmes and will guide governments and donors policies towards microenterprises (Daniels, 2001).

However, there are several difficulties associated with the accurate measurement and estimation of financial performance of micro and small enterprises (de Mel et al., 2009; Daniels, 2001; Vijverberg, 1992; Daniels & Mead, 1998). The difficulties associated with accurate estimation of profits in most micro and small enterprises include poor record keeping, heavy reliance on memory recall, using enterprise resources for household consumption without accounting for it, seasonality in production and fear of being taxed. As observed by de Mel et al. (2009), a myriad of potential problems plague the measurement of microenterprises profits. In their view, the majority of microenterprises in developing countries do not keep financial records, making data collection generally reliant on recall. Money and goods are fungible between the business and the household. Inputs may be purchased in one period and sold in another, and production can be highly seasonal. They further stated that, as with income, individuals may be sensitive about revealing how much they earn and are concerned about the information being used for tax purposes. According to Daniels and Mead (1998), some of the factors causing difficulties in estimating financial performance of micro and small enterprises are the following; the fact that most small businesses do not keep records and follow only rudimentary accounting procedures.

The result is a heavy reliance on memory recall which can be relatively accurate for recent events but becomes more imprecise for more distant transactions.A review of previous empirical measures of micro and small enterprise performance in developing countries is illustrated in Table 2.3 below. From the table, the simplest measure asks the owner of the enterprise how much profit he/she makes after deducting all costs associated with it. The more complex methods involve a detailed account of operating costs (listing items and activities and how much the costs are) and deducting from the total sales or value added.

Table 2.3: Measurement of Profit from Literature Reviewed

Author (s)	Estimation of Profit
1. De Mel et al. (2009)	1.Reported revenues - reported expenses 2.Total income - total expenses
2.Masakure et al. (2009)	Gross revenue - operating costs in the last 12 months
3.Masakure et al. (2008)	1.Gross revenue - operating costs in the last 12 months 2. Gross revenue - operating costs - depreciation in the last 12 months
4. Daniels (2001)	1. Profit in the month preceding the survey 2. Value of products consumed + money from enterprise used by the household + any money left 3. Sales revenue-operating costs in the month preceding the survey 4. Sales revenue - operating cost - depreciation cost within 12 months preceding the survey 5. Proxy 4 plus output consumed by the household or given away and adjustments in depreciation, labor use, and asset sharing.
5. Barnes and Keogh (1999)	Profit for last month as estimated by proprietor in a single question
6.MkNelly and Lippold (1998)	Total revenue - explicit costs
7. Copestake et al.(1998)	Total sales last month - total operating costs last month
8. Minot (1996)	Sales revenue - input costs - electrical costs - depreciation
9.Daniels et al. (1995)	Sales - operating costs - depreciation
10. Daniels (1994)	Annual sales -{[(costs last week) / sales last week]*annual sales}
11. Vijverberg (1991)	1. Total revenue - total expenditure 2. Value of products consumed + money from enterprise used by the household + any money left over from enterprise 3. Income earned by all family members that work in the business
12.Liedholm and Chuta (1976)	Value added - Capital services - non-family labour - family labour
13. Little et al. (1987)	[(Gross value added - wage bill)] / capital

Source: Adapted from Daniels, 2001.

Daniels (2001) reviewed 14 different approaches adopted in previous studies and applied five of these to the analysis of microenterprises in Zimbabwe. These proxies are illustrated in Table 2.3. Daniels recommended proxy 2 as the most accurate measure of enterprise profits followed by proxy 4. Other recent studies measuring enterprise performance in developing countries include Masakure et al. (2008; 2009) and de Mel et al. (2009). Masakure and others in 2008 and 2009, measured enterprise performance in Ghana using sales revenue minus depreciation cost within 12 months preceding the survey as given in Daniels (2001). The study also measured profit as the difference between total average sales minus total average costs. Enterprise owners were asked to first indicate from January to December of the preceding year, which months they had high, medium, low and no sales at all. The same procedure was done for the costs. They were then asked to give the average sales in high, medium and low months. Months that had no sales were represented by zero. This was done similarly for the costs. Profit was then calculated as total sales minus total costs. This method makes adjustments for months that enterprise owners did not work.

De Mel et al. (2009) examined two measures of profits in Sri Lanka; the first profit measure was obtained by asking the firm owner for the revenue and expenses of the firm, and then calculating profits as the difference between reported revenue and reported expenses. Firm owners were asked the total revenues of the firm in the last month, and then for the total expenses in each of eleven categories (purchases of inventories; purchase of electricity, water, gas and fuel; interest paid; wages and salaries for employees; rent for machinery and equipment; rent for land and buildings; telephone or cellphone charges; taxes; maintenance and general repairs; traveling expenses; and other expenses). In the second measure, firm owners were asked directly for their

monthly profits. As an illustration for the month of March; "What was the total income the business earned during the month of March after paying all expenses including the wages of employees, but not including any income you paid yourself. That is, what were the profits of your business during March?" The conclusion was that asking firm owners directly for their profits (including using business revenues used to pay household expenses) provides a measure which appears at least as reasonable as asking for all the ingredients in terms of detailed revenue and expenses. They also concluded that carefully asking more detailed questions about revenue, expenses, mark-ups, and household uses can also provide an accurate measure of profits, and in many applications, one is also interested in these sub-components.

After a thorough review of literature relating to enterprises performance, the following have been noted. Using the level of employment (the number of people employed), which is arguably the most frequently used measure of micro and small enterprise performance, is not possible because the data employed for this study was collected in a particular time period. The data is cross sectional; collected between 2009 and 2010. Using proxy 2 by Daniels (2001) would have been the most accurate measure, but the data did not adequately capture money from enterprise used by the household plus and any money left. However, the data permitted the use of proxy 4 which is equally an accurate measure of profit. De Mel et al. (2009) concluded that carefully asking more detailed questions about revenue, expenses, mark-ups, and household uses can also provide an accurate measure of profits and in many applications, one is also interested in these sub-components.

2.18 Gender and Attitudes towards Risks

There have been several discussions about gender differences and risk perception, but it appears that there is considerable evidence to suggest that females may be more risk-averse than their male counterparts. It has been noted in general and business-specific literature that females exhibit a lower preference for risk (Powell & Ansic (1997). A study by Jianakoplos and Bernasek (1998) examining household holdings of risky assets in the United States found that single women exhibited relatively more risk aversion in financial decision-making than single men. Sexton and Bowman-Upton (1990) found that female entrepreneurs were ‘‘less willing than their male counterparts to become involved in situations with uncertain outcomes (risk taking)’’.

As noted by Powell and Ansic (1997), females tended to focus on strategies that would avoid the worst situation in order to gain security. In a similar study Cliff (1998), found that female entrepreneurs are more likely to establish maximum business size thresholds beyond which they would prefer not to expand, and that these thresholds are smaller than those set by their male counterparts. They also seem to be more concerned than male entrepreneurs about the risks of fast-paced growth and tend to deliberately adopt a slow and steady rate of expansion. This attitude of risk aversion may translate into the type of businesses that females are likely to engage in, and this might explain the reasons why female businesses have lower profits. It has been well established in finance theory that more risky assets must compensate risk averse investors with higher expected returns’’ (Jianakoplos & Bernasek, 1998).

2.19 Constraints of Micro and small enterprise Performance

Significant literature is devoted to the constraints of microenterprise growth and factors that determine rates of enterprise survival (King & McGrath, 1999; Livingstone, 1991; Mead & Liedholm, 1998; Snodgrass & Biggs, 1996). Despite the critical role of micro and small enterprises in processes of socio-economic development in developing countries, they face problems of low growth rates and high failure rates (ILO, 2002). The sector is typified by stagnation and high rates of enterprise failure (Daniels & Mead, 1998; Hung Manh et al., 2007; McPherson, 1996), suggesting the need to transform the sector in order to free micro-entrepreneurs from capture by a 'low level poverty trap' (McKenzie & Woodruff, 2006). The micro and small enterprise sector is also associated with poor and/or costly access to credit, problems acquiring new and more productive technologies, low levels of technical and/or managerial skills, high levels of competition among enterprises, etc (Livingstone, 1991; Daniels &Mead, 1998; Mead & Liedholm, 1998).

Formal banks are believed to offer larger size and longer term loans, but they have long restricted access by micro and small enterprises because of perception of risks and high transaction costs of delivery (Beck & Demirguc-Kunt, 2006). This phenomenon has forced micro and small enterprises to rely on limited household savings, remittances or even donation from charitable organisations as well as sometimes on informal finance, which is known to charge relatively high interest rates (Osei-Assibey, 2010).

Micro and small enterprises in developing countries especially play key roles in sustaining a majority of the poor by providing them income and employment. It is thus expected that as these

enterprises grow in size, their contributions will thus increase. However, their productivity remains low and their sizes remain small (Mead & Lieadholm, 1998; Tybout, 2000). Some previous studies have attributed the low performance of these enterprises to unfavorable circumstances surrounding them, while recent empirical studies have identified these problems as relating to management within firms (Bloom, Mahajan, McKenzie, & Roberts, 2010; Bruhn, Karlan, & Schoar, 2010; Sonobe, Akoten, & Otsuka, 2011). In analyzing the impacts of experimental basic training on the performance of micro and small enterprises in Ghana, Mano, Iddrisu Yoshino and Sonobe (2012) concluded that entrepreneurs in developing countries can improve the productivity of their micro and small enterprises by learning management techniques. Mano and his colleagues further stated that participating in a rudimentary management training program will improve the business practices.

2.20 Firm Resources

There are several classifications of firm resources (see for example, Barney, 1991; Grant, 1991; Hunt, 1995).They have argued that it is most useful to divide firm resources into four categories: physical capital resources (plant, raw materials, location, cash, access to capital, intellectual property);human capital resources (skills, knowledge, training, relationships);organizational capital resources (competencies, controls, policies, culture, information, technology), and process capital resources (knowledge, skills, disposition, and commitment to communication, leadership, and the team). Resources to a firm may be classified as either tangible or intangible. Andersen and Kheam (1998) argue that there is generally no disagreement over what encompasses tangible resources. Although several classification schemes exist for intangible resources, virtually no theoretical guidance has been offered to determine how to classify

intangible resources or why they should be classified or categorized in any certain way (Galbreath, 2005). Hall (1992, 1993) is one of the few who offer a method for determining how and why one might go about classifying intangible resources. Hall suggested that intangible resources essentially fall into two categories: assets (what the firm has) and capabilities (what the firm does). Thus the resource constructs are conceptualized as:

1. Tangible resources, which include (a) financial assets (Grant, 1991) and (b) physical assets (Grant, 1991).
2. Intangible resources that are assets, which include (a) intellectual property assets (Hall, 1992), (b) organizational assets (Barney, 1991) and (c) reputational assets (Roberts & Dowling, 2002).
3. Intangible resources that are skills, which include capabilities (Hall, 1992; Amit & Schoemaker, 1993).

Huang et al. (2010) categorize firm-specific resources into three elements: productive resources, human capital, and tacit knowledge acquisition.

1. Productive resources include physical, intangible and financial resources. Physical resources include plant, production equipment, land and raw materials. Intangible resources include patents, trademarks and other forms of intellectual property, contracts, client databases, strategic alliance systems, distribution networks and supplier relationships. Financial resources include internal capital and external financial resources.
2. Human capital has long been argued to be a critical resource for differentiating financial performance amongst firms (Chen & Lin, 2003; Hatch & Dyer, 2004; Carpenter, Sanders & Gregersen, 2001).

3. Knowledge seems to have become a critical source of sustained organizational competitive advantage (Leonard & Insch, 2005; Berman,Down& Hill, 2002). Nonaka (1994) highlights that it is important to distinguish between two different types of knowledge within organizations: explicit knowledge and tacit knowledge. Explicit knowledge is knowledge that can be formally and systematically stored, articulated and disseminated in certain codified forms (Becerra-Fernandez & Sabherwal, 2001). In contrast, tacit knowledge is deeply rooted in action, experience, thought and involvement in a particular context (Alavi & Leidner, 2001) and is thus difficult to transform into explicit form to allow such knowledge to be easily transferred and shared (Berman et al., 2002).

2.21 Human Capital Theory

The theory of human capital is rooted from the field of macroeconomic development theory (Schultz, 1993). Becker's (1993) classic book, Human Capital: A Theoretical and Empirical Analysis with special reference to education, illustrates this domain. Becker argues that there are different kinds of capitals, including schooling, computer training course, expenditures on medical care, and even punctuality and honesty are capital too. In the true sense, they improve health, raise earnings, or add to a person's appreciation of literature over a lifetime. According to Marimuthu, Arokiasamy and Ismail(2009), human capital refers to the knowledge, expertise, and skill one accumulates through education and training. Becker (1993) noted the most valuable of all capital is investment in human beings. Becker distinguishes firm-specific human capital from general-purpose human capital. Examples of firm-specific human capital include expertise obtained through education and training in management information systems, accounting

procedures, or other expertise specific to a particular firm. General-purpose human capital is knowledge gained through education and training in areas of value to a variety of firms such as generic skills in human resource development. Regardless of the application, Becker considers education and training to be the most important investment in human capital social and economic importance of human capital theory.

According to Schultz (1993), the term "human capital" has been defined as a key element in improving a firm's assets and employees in order to increase productivity as well as sustain competitive advantage. Rastogi (2000) stated that human capital is an important input for organizations, especially for employees' continuous improvement in knowledge, skills, and abilities. Thus, the definition of human capital is referred to as "the knowledge, skills, competencies, and attributes embodied in individuals that facilitate the creation of personal, social and economic well-being" (OECD, 2001: 18). Human capital theory suggests that education or training raises the productivity of workers by imparting useful knowledge and skills, hence raising workers' future income by increasing their lifetime earnings. Becker (1964) and Mincer (1974) provide an explanation that links investment in training with workers' wages. In particular, their theory draws a crucial distinction between general education and firm-specific training. Over the past thirty years or so, hundreds of studies have been conducted to estimate rates of return to education (RORE); most such studies show that formal schooling is a crucial factor in explaining variations of salary and wages in well developed countries (Cohn & Addison, 1998). Theoretical research on strategic human resource management (SHRM) has suggested that systems of human resource practices may lead to higher firm performance and be sources of sustained competitive advantage because these systems of practices are often unique,

causally ambiguous, and difficult to imitate (Lado & Wilson, 1994). However, human resource practices can only be a source of sustained competitive advantage when they support resources or competencies that provide value to a firm (Wright et al., 2001). Undoubtedly, human resource input plays a significant role in enhancing firms' competitiveness (Barney, 1995).

2.22 Resource-Based View and the Industrial Organization Theories-Empirical Studies

Empirical studies were conducted to examine the role of industry and firm effects on performance. The initial works were done by Schmalensee (1985) and Rumelt (1991). Schmalensee's (1985) study was a first attempt to analyze empirically the contribution of industry and firm factors to firm performance. The study used 1975 Federal Trade Commission (FTC) Line of Business data and return on assets (ROA) as a performance measure. Schmalensee's (1985) study examined the accounting profits of American manufacturing firms, and he found that industry effects accounted for about 20 percent of variation in business-unit profits. The study concluded that industry effects played a central role in determining profitability while, in comparison, firm factors were insignificant. Hansen and Wernerfelt (1989) decomposed the inter-firm variance in profit rates into economic (industry) and organizational (firm) components. They found that both sets of factors were significant determinants of firm performance and the two effects were roughly independent, but organizational factors explained about twice as much variance in profit rates as economic factors.

Brush, Bromiley and Margaretha (1999) found that both corporations and industries influenced business unit profitability, but corporations had the larger influence. Hawawini, Subramanian and Verdin(2003) found that on the average, industry factors had little impact on performance,

and when they had removed the top and bottom two performers from each industry, they concluded that industry mattered only for firms that did not manage to be the leader or the loser, i.e., for firms with average managerial capabilities and performance. Ruefli and Wiggins (2003) found that corporate factors were better predictors of business unit profit than were industry factors, which were found not to have been significant predictors. McNamara, Aime and Vaaler(2005) concluded that firm effects were significantly larger than industry effects in understanding firm profitability, even when true outlier firms were excluded from the analysis. Using the data from 1995 to 1999, Hough (2006) found that (i) business segment effects explained twice as much variance in business segment performance as did corporate effects; (ii) corporate effects explained almost four times more variance in business segment performance than industry effects; and (iii) segments explained almost eight times more variation than industry effects.

Makhija (2003), compared the Resource-Based View and the Market-Based View and found that resource-based view (RBV) driven variables are remarkably better at explaining share values of Czech firms in the period of privatization than market-based view (MBV)-driven variables. Galbreath, and Galvin, (2008) explored the relative importance of distinct resources and industry structure variables in explaining firm-level performance variation across 285 Australian firms and the results demonstrate that resources are more important than industry structure. They found that in service firms, resources are found to be much more important to explaining performance variation than in manufacturing firms.

In the context of developing countries, some studies have been done focusing on the contribution of microenterprises to employment, income, and livelihoods, as well as the different measures employed in assessing enterprise performance (Daniels & Mead, 1998; Fafchamps & Gabre-Madhin, 2001). Rijkers et al.(2010) studied Rural–Urban Comparison of Manufacturing Enterprise Performance in Ethiopia. They found that urban firms are larger, more capital intensive and have higher labor productivity than rural firms, yet there is no strong evidence of increasing returns to scale.Loening et al. (2008) studied "Non-farm Microenterprise Performance and the Investment Climate: Evidence from Rural Ethiopia" and found that local fluctuations in predicted crop performance affect the performance of non-farm enterprises, because of the predominant role played by the agricultural sector. Enterprise performance is also affected by the localized nature of sales and limited market integration for non-farm enterprises.Dethier, Hirn and Straub (2008) studied the topic "Explaining Enterprise Performance in Developing Countrieswith Business Climate Survey Data" and found that various infrastructure, finance, security, competitionand regulation variables significantly impacted firm performance.

In Ghana, there have been a number of studies highlighting the constraints faced by microenterprises and determinants of performance (see for example Aryeetey et al., 1997; Baah-Nuakoh, 2003a; 2003b;Nissanke& Aryeetey, 2006; Steel &Webster, 1992). Frazer (2006) studied enterprise performance in Ghana but concentrated on the manufacturing sector. Recent studies that focused on microenterprise performance include Masakure et al. (2008) and Masakure et al. (2009). Masakure *et al.*, 2009, employed the resource based-view in analysing the performance of microenterprises in Ghana. Masakure et al. (2008) studied the "Financial Performance of Non-farm Microenterprises in Ghana" and found that firm characteristics,

including urban and regional location, significantly affect the incidence and intensity of improved performance, but entrepreneurial characteristics are unimportant. They also found that factors embodied in firm-specific resources jointly impact enterprise performance and that sector/market factors also play a role, suggesting that the interaction between microenterprise, sector, and market factors helps explain enterprise performance.

2.23 Summary

From the literature reviewed, there are several reasons why individuals and households diversify their livelihoods. Individuals are either "push" or "pull" into the non-farm enterprises. The factors that "push" individuals into non-farm include the desire to reduce risk, response to diminishing factor returns, presence of land constraints with increasing population growth and fragmented landholdings, reaction to crisis or liquidity constraints, high transactions among others. The "pull factors" include the realization of strategic complementarities between activities, such as crop-livestock integration, new income opportunities created by market development and diversification for asset accumulation (Hart, 1994). Factors influencing the individual to participate in non-farm activities are categorized into the following: individual (age, gender, education, assets etc) household (household size, landholding, livestock ownership etc), community (community social capital) and location/geographical (regions or ecological zones).

In reviewing literature on enterprise performance, several methodologies or approaches have been employed. In the case of micro and small enterprises, performance are usually measured based on financial, employment growth, sales growth and productivity growth. Several empirical studies of enterprise performance in developing countries have resorted to the use of profit as a

performance measure. Accurate measurement of profits from microenterprises is critical for studying poverty and inequality, measuring the returns to education, evaluating the success of microfinance interventions, and many other important questions of interest (de Mel et al., 2009). Daniels (2001) argues that information on micro enterprise profits is critical in evaluating the impact of microenterprise support programmes and will guide governments and donors policies towards microenterprises. Difficulties associated with accurate measurement and estimation of financial performance of micro and small enterprises are well documented.

Among several factors reported in literature to have significant effect on enterprise performance include enterprise size, age of the enterprise, gender of firm owner, access to capital and/or appropriate technologies, location of enterprise, sector in which the enterprise competes, level of managerial skills and other forms of human capital, social capital, access to labour, enterprise assets and formal registration of firms. These have been thoroughly reviewed in the literature and summarized here. Literature has reported two major streams of research on determinants of enterprise performance. The first set of theory is described as the industrial organization (IO) perspective which argues that market structure/industry factors are the primary determinants of enterprise performance. The second is the resource-based view (RBV) which in contrast, emphasizes the firm's internal dynamic competences resources as major determinants of performance. These two perspectives have largely become the central focus in strategic management in examining differences in firm performance. Lockett and Thompson (2001) have argued that the resource-based theory of firm performance is an emerging body of thought in strategic management which has not received much attention in developing countries. Studies comparing the RBVand the MBV have found that RBV driven variables are remarkably better at

explaining enterprise performance than the MBV-driven variables. Characteristic industry structures of the industrial organization theory include market share, market entry and exit barriers, market concentration, cost structure and firm size. But in the context of a developing countries and especially the micro enterprise sector where entry and exit barriers tends to be low with minimal innovation with large numbers of microenterprises. According to Daniels, there are limited barriers to entry in the micro and small enterprise sector in labour intensive industries and that the microenterprise sector in Ghana tends to exhibit minimal barriers to entry and exit.

In examining gender and enterprise nexus, several studies have tried to explain the differences in enterprise performance. Literature presents mixed evidence on the relationship between gender and micro and small enterprise performance. Moser (1989) argues that women perform three important roles in society and have been marginalized and confined to motherhood. Von Masson (1999) attributes the differences in enterprise performance to access to and control over resources which tend to exacerbate inequities in performance. Loscocco et al. (1991) argues that the different socialisation, training and other experience of men and women may lead to different outcomes in business performance. Studies have shown that on the average, women's micro enterprises had lower sales revenue, fewer assets, smaller profit margins and lower likelihood of survival than men's enterprises (Mead and Liedholm, 1998; Daniels, 1999). Loscocco et al. (1991) found evidence of gender differences in the factors influencing business outcomes; and that female-owned enterprises generated less profits than male-owned enterprises. Rosa et al. (1996) noted that the relationship between gender and small business performance is complex, but found that gender appeared to be an important factor even after controlling for other factors.

There is abundant literature supporting the evidence that female micro-entrepreneurs are at a relative disadvantage in terms of access to resources. Some studies have suggested that female proprietors do grow their businesses more slowly (Mcpherson, 1996; Goedhuys & Sleuwaegen, 2000). Others argued that male-owned enterprises are more oriented towards growth than those operated by women and that this is reflected in better financial performance (Boden Jr & Nucci, 2000; Brush, 2000; Fischer, Reuber & Dyke, 1993; Rosa, Carter & Hamilton, 1996; Singh, Reynolds & Muhammad, 2001).

CHAPTER THREE

THEORETICAL FRAMEWORK AND METHODOLOGY

3.1Introduction

This chapter discusses the theoretical and conceptual frameworks underpinning the study and describes the data, sampling techniques and the analytical models used in achieving the objectives. It also outlines the operational definitions of concepts and the measurement of key variables used in the study.

3.2 Theoretical Framework

There are three main theoretical foundations that underpin this study. The study draws from the theory of the agricultural household by Sadoulet and de Janvry (1995) in addressing household participation in the non-farm sector. At the micro level, Sadoulet and de Janvry recognize the dual role of the household as a production and consumption unit. The study also draws from the theory of enterprise performance, which is rooted in strategic management theory. In strategic management literature, there are two major streams of research on determinants of enterprise performance. The first and the oldest theory is the industrial organization (IO) perspective, which argues that market structure/industry factors are the primary determinants of firm strategy and performance. The second is the resource-based view (RBV) of the firm, which in contrast, emphasizes the firm's internal resources as major determinants of performance. These two theories have become central in strategic management and in examining differences in firm performance. Lastly, the study draws from liberal and social feminism theory to analyse the gender differences in enterprise performance.

3.3 Theory of the Household

Theoretical approaches in analyzing participation in non-farm employment have their roots in the household model relating to the theory of the household. The theory of the household describes the household as a semi-commercialised entity that combines in a single institution, decisions relating to production, consumption, and reproduction over time (Sadoulet &de Janvry, 1995). In order to analyse individual participation in non-farm enterprises, this study uses a utility maximization framework under the theory of the household as given by Sadoulet and de Janvry (1995). In the case where there are perfect markets, the household maximizes profit by selecting different sets of income activities based on household endowments (resources) and prices and maximizes utility by selecting different levels of consumption and leisure. However, in the case of market imperfections, production and consumption decisions become non-separable (Taylor & Adelman, 2003). This implies that households maximise utility, given their resources, the available technology, and (often household-specific) market-access and prices (Sadoulet & de Janvry, 1995).

According to Caillavet, (1994), the household approach is justified when both production and consumption decisions are interrelated and when household characteristics play an important role in determining household behavior, as is the case in imperfect markets (Lofgren & Robinson, 1999). The household fundamentally is confronted with the problem of simultaneously dealing with production, consumption and work decisions. Sadoulet and de Janvry (1995) specify the structural form of the model as follows:

$Max \quad U \quad (c_a, c_m, c_l; z^h)$ q_a, x, l, c_a, c_m, c_i	Utility function
$s.t.: g(q_a, x, l; z^q)=0$	Production function
$p_x x+p_m c_m=p_a(q_a-c_a)+w(l^s-l)$	Cash constraint
$C_1+l^s=E$	Time constraint

Where: z^hdenotes household characteristics, p_a and p_m represent prices of commodities c_a and c_m consumed by the household, and p_a denotes the market price for q_a output produced by the household. C_1 *and* l^s denote time spent at home and work, respectively, out of a total time endowment E. represents Firm characteristics are represented by Z^q and $p_x$is the price of input x that the household employs in production. Sadoulet and de Janvry (1995) derive a labour supply function from the constrained utility maximization problem. This is stated in the form:

L^s= f (P, K, Z),

Where: L^s= Labour supply

P=Variable capturing input and output prices

K=Variable capturing capital available to the household

Z=Variable capturing household characteristics

Corral and Reardon (2001), explain the variables in the labour supply function in terms of household's incentives and capacities. In explaining the variables in the model, incentives are expressed as the "returns and risks" in the form of prices of inputs and outputs, wages, and production risks, whiles capacities are expressed as the vectors of capital and household characteristics which make it able to respond to the incentives. Capital assets are described here as the level of education, amount of cattle owned, and amount of land owned, for example (Corral & Reardon, 2001). An earlier study by Reardon (1998) explains that incentives either

"pull" or "push" individuals into the labour market. The potentially higher returns to labour that could be obtained from working off the farm would "pull" or lure households into diversifying. Lanjouw and Lanjouw (2001) similarly explain that households which are "pulled" into non-farm activities participate as a means of obtaining more income and improving their current living conditions. Factors such as risk to the farm production, and lack of access to credit, for example tend to "push" households into nonagricultural activities and that households that are "pushed" into nonagricultural activities resort to diversification as a safety net. Capacities are regarded as assets at the individual and household level which are vectors of capital including human capital, physical capital, social capital and organizational capital. The various capacities a household possesses affect its ability to take advantage of the incentives. For example, a household may have the incentive to participate in non-farm enterprise, given a higher wage rate but if the capacities are not in place to qualify for the job, then it means that even though the incentives are in place, the household lacks the capacity to take advantage of them.

3.4 Theory of Firm Performance

In strategic management theory, there are two major streams of research on determinants of enterprise performance. The first and the oldest theory is the industrial organization (IO) perspective which argues that market structure/industry factors are the primary determinants of firm strategy and performance. The second is the resource-based view (RBV) of the firm, which, in contrast, emphasizes the firm's internal dynamic competences resources as major determinants of performance. These two theories have become central in strategic management and in examining differences in firm performance. The two theories are discussed in detail below.

3.4.1 Industrial Organization (IO) View

Traditional industrial organisation theory is based upon the Structure-Conduct-Performance (SCP) framework originally posited by Bain (1959) and later modified by Porter (1980) and his 'five forces' model. In SCP, the main determinant of firm performance is market structure, which drives a firm's behaviour. From the late 1970s, industry organization (IO) economics has provided the main theoretical basis for strategic management research into the determinants of firm performance. The key argument was that the structural characteristics of industries were the main determinants of performance (Porter, 1980). Several studies investigated factors explaining the differences in performance between industries. Industrial organization economists'favoured the SCP model, which proposed the existence of a relationship between market structure and profitability. The structural characteristics of an industry constrained the behavior (i.e., the strategies) of its component firms, which in turn led to industry-specific performance differentials between firms (Mason, 1939). It was recognized that the industry structure in which a firm operates is the main driver of performance variations. An important line of research within this stream concerned the role of firm size as a factor explaining differences in profitability (Hall and Weiss, 1967). Firm size was a major source of competitive advantage because larger firms are presumed to be relatively more efficient than smaller firms (Hawawini et al., 2003).

In the field of strategic management, Porter (1980) led the SCP framework of the industrial organization theory creatively and advanced competitive strategy theory based on the analysis of industrial structure. Porter (1980) proposed that the firm's competitive strategy determined the firm performance, and the firm's competitive advantage was derived from the industry in which

the firm operated and the firm's position in the industry. In the 1980s, there were major shifts in the strategic management field regarding the unit of analysis. While industrial organization economics considers industry as the primary unit of analysis, strategic management increasingly focuses on the firm itself to explain profitability differentials. The main reason for this shift was attributed to the inability of the industrial organization theory to provide a rigorous explanation for intra-industry differences in performance. This gave rise to the resource-based view theory of the firm.

The long-standing focus of the IO literature is the role of favorable industry environments for above-normal profitability of firms (Makhija, 2003). Taking their cue from the IO literature, early widely cited works in the area of strategic management invoked industry characteristics to explain differences in the profitability of firms (e.g., Caves & Porter, 1978; Porter, 1979).The theory typically stressed privileged end-product market positions as a basis for above-normal future returns and thus higher current firm value (Chamberlain, 1932; Bain, 1956; Porter, 1979; Gilbert, 1989; Tallman, 1991). The IO posited that competitive advantage was due to barriers to competition arising from the structure of the market.

The SCP school of thought that forms part of the IO literature argued that enterprise conduct is determined by structure, and that conduct in turn determines enterprise performance (Bain, 1956; Mason, 1957). In turn, superior enterprise performance is correlated with distinct market and industry factors (Porter, 1980). Characteristic industry structures include market share, market entry and exit barriers, market concentration, cost structure and firm size. In the context of a developing country like Ghana and especially in the microenterprise sector, entry and exit

barriers tends to be low with minimal innovation resulting in large numbers of microenterprises. According to Daniels (2003) there are limited barriers to entry in the micro and small enterprise sector in labour intensive industries.

Several aspects of market power have been discussed in literature regarding the IO view. It is seen that a firm's market power explain its relative performance. Although many aspects of market power are discussed in the literature (Chamberlain, 1932; Bain, 1956; Caves & Porter, 1977, 1978; Porter, 1979; Gilbert, 1989; Tallman, 1991), three sources of market power are frequently highlighted: monopoly, barriers to entry, and bargaining power (Grant, 1991). When a market environment is characterized by the presence of monopoly or a strong market position, a firm's performance is expected to be higher. Similarly, an industry that has high barriers to entry for new competitors implies better long-run performance since the firm faces less competition. Higher bargaining power within the industry relative to suppliers and customers also suggests that the firm will be associated with higher expected performance, since the firm's power over its constituents indicates that fewer alternatives within the industry to which they can turn. The structural attributes of industries have been observed to change very slowly (Geroski &Masson, 1987; Mueller, 1986; Caves & Porter, 1980), suggesting that market power and its observed reflection, profitability of incumbent firms, does not erode rapidly. Even in a changing environment, past market power of incumbents provides a (temporary) cushion from new competition, which can be used to regain market power. For these reasons, greater market power is associated with higher firm value.

3.4.2 Resource-based View (RBV)

Conner (1991) thought that the RBV first appeared in the early writings of Barnard (1938). Others believed the RBV started with the contributions by Selznick (1957), Penrose (1959), Pfeffer and Salancik (1978), Rumelt (1984), or Wernerfelt (1984). The evolution of the RBV is intertwined throughout three major research programs: strategy research, organizational economics, and industrial organization (Mahoney & Pandian, 1992). In strategy research, studies that operationalized RBV (Cool & Schendel, 1988; Hansen & Wernerfelt, 1989; Henderson & Cockburn, 1994; Montgomery & Wernerfelt, 1988; Rumelt, 1991) varied but were successful in bringing the focus to firm level capabilities and competencies. As a fifth component to organizational economics (Mahoney & Pandian, 1992), or as a subset of the field of behavioral economics (Anderson, 1982), the RBV incorporates agency theory (Eisenhardt, 1989), the theory of property rights (Coase, 1960), transaction cost theory (Williamson, 1975), and evolutionary economics (Nelson & Winter, 1982). Wernerfelt (1984) and Barney (1991) articles are seminal works in the RBV stream (Priem & Butler, 2001). While Wernerfelt emphasizes resources and diversification, Barney provides what is arguably the most detailed and formalized depiction of the business-level resource-based perspective. His "organizing framework"—"that organizational resources that are valuable, rare, difficult to imitate and non-substitutable can yield sustained competitive advantage" (Meyer, 1991)—has supplied the footing for many RBV studies, with subsequent work based on either his framework or an extension.

Representatives of the RBV proposed that rent-producing resources determined the profit level of firms; for profits to be sustainable, the resources had to be scarce, difficult to copy or substitute, and difficult to trade in factor markets (Cool & Schendel, 1988). The RBV of the firm

is built upon the theory that a firm's success is largely determined by the resources it owns and controls. The RBV theory of the firm focuses inwardly on the firm's resources and capabilities to explain firm profitability and value (Barney, 1991; Grant, 1991; Peteraf, 1993; Wernerfelt, 1984). According to the theory, competitive advantage is provided by distinctive, valuable firm-level resources that competitors are unable to reproduce (Barney, 1986, 1991; Peteraf, 1993). The RBV approaches the concept of enterprise performance at the micro level, focusing on the unique resource combinations and competences of the enterprise and not its product/market conditions (Barney 1991; Rumelt, 1991; Lockett & Thompson 2001; Hawawini et al., 2003).

In theory, it is expected that firms that face similar external environments (i.e competition, product and factor markets, market entry and exit barriers, etc), and those firms with similar initial resource and capital endowments, all things being equal, should exhibit similar characteristics and performance. However, firm heterogeneity and competitive advantage come from the enterprise's internal structure/organization, its strategy and core capabilities (Barney, 1991; Nelson, 1991; Jacobides & Winter, 2007; Kor, Mahoney & Michael, 2007). These characteristics are a function of the firm's specific assets, including physical and intangible assets such as organizational routines and dynamic capabilities (Witt, 2007) and are path dependent and inimitable such that these differences can be long-lasting (Barney, 1991).

The resource-based view of the firm argues that sustained competitive advantage is caused by heterogeneous resource combinations, which can prevail over long periods of time and thus can help to explain persistent differences in enterprise performance (Barney 2001; Hawawini et al., 2003). Furthermore, enterprise performance depends not only on returns to firm-specific

strategies but also on the cost of implementing these strategies, which may be prohibitive for competing firms (Barney, 1986). This perspective suggests that it is not surprising to observe wide variations in performance even among enterprises that are engaged in the same sector or activity (Barney 1991; Peteraf 1993; Lockett & Thompson 2001).

The success of a micro and small enterprise under this perspective, is dependent on the decisions and actions of the entrepreneur with respect to products, production processes, human resources, marketing, finance, etc. (Frese & Kruif 2000). This suggests that in assessing the performance of an enterprise, one needs to factor in the competence of the entrepreneur and the resources available to the enterprise as well as the external environment in which the enterprise operates. This warrants the inclusion of relevant variables such as the level of education, age and gender of the entrepreneur (as indicators of levels of human capital), enterprise size, age, social networks and access to capital (as indicators of firm-level resources) and sector, location and state of local infrastructure as indicators of external factors(Daniels & Mead 1998; Goedhuys & Sleuwaegen 2000; Barney 2001; Fafchamps & Gabre-Madhin 2001; Mitra 2002; Sleuwaegen & Goedhuys 2002; Fafchamps 2003; Cressy 2006; Nichter & Goldmark 2009).

With the RBV, resources are regarded as the main concept to be analyzed, but scholars have been inconsistent in the terminology use to describe firm resources. Different researchers have referred to resources (Barney, 1991), intangible resources (Hall, 1992), capabilities (Grant, 1991), distinctive competences (Selznick, 1957), core competences (Prahalad & Hamel, 1990), strategic assets or strategic resources (Amit & Schoemaker, 1993), critical resources (Wernerfelt, 1989), firm-specific competences (Pavitt, 1991) and valuable resources (Collis & Montgomery,

1995; Grant, 1991). The RBV concept has been challenged on the grounds of instability of the industrial structure as a whole, whereby the competitive market landscape is undergoing constant rapid change (Eisenhardt & Martin, 2000). Huang et al. (2010) proposed that firms should build up a distinctive capacity and seek to integrate and reconfigure their internal and external resources to allow them to respond to dynamic changes in today's competitive environment.

It is argued that the performance of an enterprise is a function of its ability to develop and combine the resources to which it has access, both internal to the enterprise itself and externally (Barney 1991; Conner 1991). These resources consist of bundles of intangible and physical resources, which are often acquired in imperfect markets characterized by information asymmetry, typical of the informal sector in developing countries. Not all resources can be traded on markets and often individual competencies are not documented. The path dependence in garnering these resources and the associated social complexities result in inimitability (Barney, 1986).The RBV of the firm implies that the differential endowment of organizational resources is an important determinant of strategy and performance (Lin, Yang & Arya, 2009). Resources include the assets, capabilities, information, knowledge and technologies that a company controls and that enable it to conceive of and implement strategies designed to improve its effectiveness and efficiency, and to obtain differential advantage (Porter, 1991; Wernerfelt, 1984).

3.4.3 Major Shifts and Challenges of Theories

In the 1980s, there were major shifts in the strategic management field regarding the unit of analysis. The shift was attributed to the inability of the IO theory to provide a rigorous explanation for intra-industry differences in performance. It is expected that firms that face

similar industry factors with similar initial resource and capital endowments, all things being equal, should exhibit similar characteristics and performance. Yet firms exhibited differences in performance. This among others led to the RBV. The RBV has been challenged on the basis of definition of what constitutes competitive advantage and of derivation of heterogeneity and tautology (Priem & Butler, 2001). Peteraf and Barney (2003) redefined competitive advantage to mean creating more economic value than a competitor in its product market. Researchers in the field of strategic human resource management have increasingly relied on the resource-based view of the firm to explain the role of human resource practices in firm performance (Wright et al., 2001).

According to the RBV theory, firm heterogeneity and competitive advantage come from the enterprise's internal structure/organization, its strategy and core capabilities (Barney, 1991; Nelson, 1991; Jacobides & Winter, 2007; Kor et al., 2007). According to Barney (1991), for resources to confer a competitive advantage, they should exhibit the following:

1. they must be valuable, in the sense that it exploits opportunities and/or neutralizes threats in a firm's environment;
2. they must be rare among a firm's current and potential competition;
3. they must be imperfectly imitable and
4. There cannot be strategically equivalent substitutes for this resource.

According to Barney (1991), Grant (1991) and Hunt (1995), firm resources can be categorized into the following:

1. Physical capital resources (plant, raw materials, location, cash, access to capital, intellectual property)

2. Human capital resources (skills, knowledge, training, relationships)
3. Organizational capital resources (competencies, controls, policies, culture, information, technology)
4. Process capital resources (knowledge, skills, disposition, and commitment to communication, leadership, and the team).

According to Barney (1991), firm-specific resources that are valuable, rare, difficult to imitate and non-substitutable offer competitive advantage. Firm-specific resources depend on the firm's capabilities (what the firm does), which offers competitive advantage, which leads to increase profits/sales (performance). It is important to determine which firm resources could offer competitive advantage to the performance of firms. An enterprise has a competitive advantage if it is able to create more economic value than the marginal (breakeven) competitor in its product market (Peteraf & Barney, 2003). Performance differences are viewed as derived from rent differentials, attributable to resources having intrinsically different levels of efficiency (Barney, 1991; Peteraf, 1993). Superior resources are more 'efficient' in the sense that they enable a firm to produce more economically and/or better satisfy customer wants. In other words, firms with superior resources can deliver greater benefits to their customers for a given cost (or can deliver the same benefit levels for a lower cost).

3.5 Gender Difference in Firm Performance

Gender differences in firm performance have been long recognized in literature. There are two major schools of thought that appear to prevail in the literature that compares the performances of female- and male-owned firms, namely: liberal feminism and social feminism (Black, 1989).

Liberal feminism is 'rooted in liberal political philosophy', while the roots of social feminism are more diverse 'ranging from social learning theory to psychoanalysis' (Fischer et al., 1993). Literature has recognized several factors which may be responsible for the relative poor performance of women operated enterprises. These factors include inaccessibility to credit from the formal financial system, lack of capital, poor technical and managerial know-how, poor access to markets, raw material procurement problems, unfavourable legal systems, competition from state enterprises, diversion of business capital to men, poor government policies, and inadequate institutional framework (Berger, 1989; Jiggins, 1989; Buvinic 1993, Daniels & Ngwira, 1993).

3.5.1 Liberal Feminism

Liberal feminism followers believe in equal rights and opportunities for all. They believe that not everybody is born with access to the same level of rights and opportunities in the world, and that some political or market intervention is required to rectify this. Fischer et al. (1993) note that liberal feminist theory is predicated on a belief that women and men are equally capable and, therefore, any observed female under-performance must be because women are overtly discriminated against (for example, by lenders) and/or because of other systematic factors that deprive women of important resources (for example, lack of an appropriate education). Ahl (2006) indicates that studies that adopt a liberal feminist perspective appear to assume (either implicitly or explicitly) that female-owned firms underperform male-owned firms and then set out to explain this under-performance on the basis of potential discrimination.

3.5.2 Social Feminism

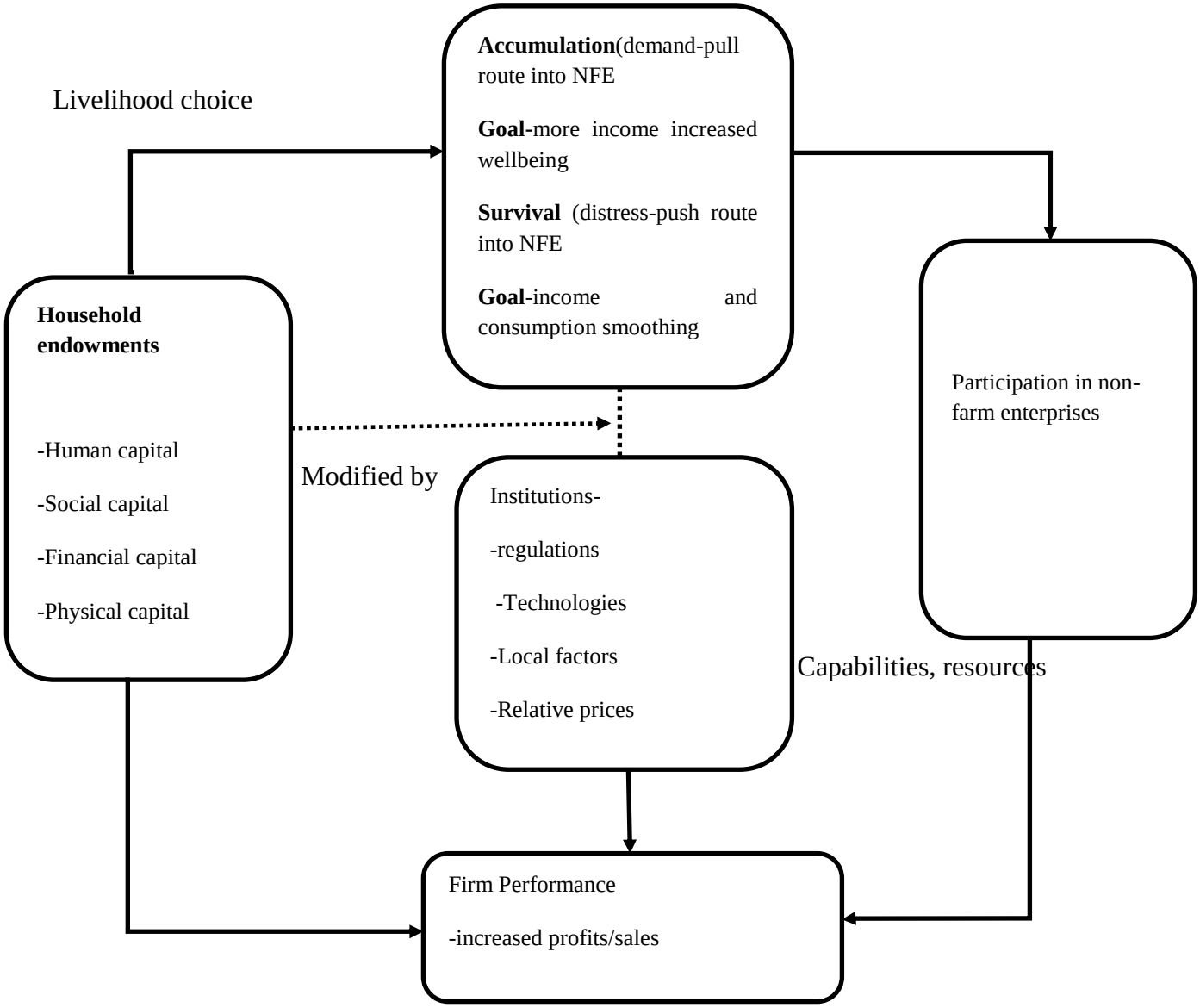
Social feminism holds the belief that women's liberation must be sought in conjunction with the social and economic justice of all people. Socialist feminists see the fight to end male supremacy as key to social justice, but not the only issue, but rather one of many forms of oppression that are mutually reinforcing (Lapovsky, 2008). In contrast to liberal feminist theory, social feminist theory suggests that men and women are inherently different by nature and these differences (rather than discrimination) will cause them to operate their ventures differently; for example women might seek to take fewer risks (Kepler & Shane, 2007; Watson & Robinson, 2003); grow their businesses more slowly (Cliff, 1998; Morris, Miyasaki, Watters & Coombes, 2006; Orser & Hogarth-Scott, 2002); and/or attain a better balance between their work and family life (Boden, 1999; Buttner & Moore, 1997; Jennings & McDougald, 2007; Kepler &Shane, 2007). They could also be less inclined to seek funds from a financial institution (Watson, 2006; Watson, Newby & Mahuka, 2009). Social feminist theory recognizes that men and female by nature are different, but it does not predict that difference should result in females underperforming as compared to men. This proposition, however, is contrary to much of the established literature, which typically concludes that female-owned businesses underperform relative to male-owned businesses (Klapper & Parker, 2011). Both liberal and social feminist theories believe that female-owned businesses should perform equally well as compared to male-owned ones.

3.6 Conceptual Framework

The study draws from the concept of sustainable livelihood framework developed by Ellis (2000) in conceptualizing the participation of households in the non-farm sector. Freese (2010) modified the concept of the sustainable livelihood used it in analyzing the rural non-farm sector participation and incomes in Burkina Faso. The conceptual framework in figure 3.1 was designed by the author based on Ellis (2000) and Freese (2010). From the discussions of Freese (2010), rural livelihoods are influenced by three factors: first is the capital stock a household is endowed with; second is the portfolio of activities the household chooses based on this endowment and third, is the influence of the external environment. These factors will determine the success of the household in creating a livelihood. Based on the level of the household endowments, the household will either seek to accumulate income to increase well-being (described as "demand-pull") or engage in a survival strategy to smoothen income and consumption (also referred to as "distress-push"). Depending on the goal or motive of the household, the performance of the livelihood activity (non-farm enterprise in this case). Factors such as the institutions, regulatory framework, technologies, local factors, relative prices and seasonality modify the motive for engaging in the enterprise. Depending on the capabilities and the resources that the enterprise is endowed with, performance of such an enterprise will be affected. In this case, the RBV proposes that enterprises' internal resources will dominate industry factors in shaping the performance of the enterprises. According to Barney (1991), for firm resources to have a competitive advantage, they must be valuable in the sense that it exploits opportunities and/or neutralizes threats in a firm's environment, they must be rare among a firm's current and potential competition, they must be difficult for other firms to reproduce and they should not be strategic equivalent substitutes for them. The enterprise's

capabilities, characteristics and intensity of the participation will affect the enterprise performance. The relationship between household endowments, livelihood choice, participation and enterprise performance is illustrated in figure 3.1.

Figure 3.1: The relationship between household endowments, livelihood choice, participation and enterprise performance



Source: Author designed based on Ellis (2000) and Freese (2010)

3.7 Operationalisation of Concepts

This section captures the operationalisation of certain key concepts and definitions used in the study. It outlines the working definitions of key variables used in this study and also describes how they were measured.

3.7.1 Non-farm Micro and Small Enterprise Employment

Non-farm employment can be divided into two categories: self-employment and wage employment. Ackah (2013) distinguishes between two types of non-farm activities: wage workers, which include salaried workers in the public service and private (formal and informal); and self-employment, which includes commerce and other artisanal services. Self-employment in this study refers to owners of enterprises, which could be in general/manufacturing, trade, restaurants/hotels and services. Wage employment refers to those who provide labour and receive wages in non-farm activities. This study refers to the factors that determine the individual decision to be engaged in either self or wage employment as determinants of individual's participation in non-farm enterprises.

3.7.2 Micro and Small Enterprise Performance (Profits)

Micro and small enterprise performance can be measured using various approaches. Some studies are based on financial indicators, employment growth, sales growth and productivity. This study measures enterprise performance based on financial indicators. Difficulties are associated with measuring the financial performance of micro and small enterprises (de Mel et al., 2009; Daniels, 2001; Vijverberg, 1992; Daniels & Mead, 1998). According to De Mel et al. (2009), accurate measurement of profits from microenterprises is critical for studying poverty and inequality, measuring the returns to education, evaluating the success of microfinance

interventions, and many other important questions of interest. Information on micro enterprise profits is critical in evaluating the impact of microenterprise support programmes to guide government and donor policies towards microenterprises (Daniels, 2001). De Mel et al. (2009) examined two measures of profits in Sri Lanka. The first profit measure was obtained by asking the firm owner for the revenue and expenses of the firm, and then calculating profits as the difference between reported revenue and reported expenses. Firm owners were asked to give a detailed account of revenues and expenses in the last month. The second measure asked firm owners directly for their monthly profits without asking for detailed revenues and costs. They concluded in their study that asking firm owners directly for their profits (including using business revenues used to pay household expenses) provides a measure which appears at least as reasonable as asking for all the ingredients in terms of detailed revenues and expenses. The method employed in this study in measuring enterprise performance is similar to the method employed by De Mel et al. (2009) except that this study asked for sales and costs associated with the enterprise for each month of operation.

In addition, this method adjusts for seasonality of enterprise operation. The approach involved estimating sales revenues in high, average and low months and estimating costs in high, average and low months. Owners of the enterprises were asked to indicate the various months throughout the year in which sales and costs were high, average and low. This implies that the owner of the enterprise was able to recall sales and costs in all the months from January to December of the year preceding the survey. One is able to estimate profitability by adding up the various sales (be they high, average or low) for the various months in a year and deducting from the costs (be they high, average or low) associated with the various months in the year. This method caters for

seasonality of operation- that is periods of the year when the enterprise is under performing due to constraints of raw materials and working capital, among others. Mensah et al. (2007) found that micro and small enterprise in Ghana shows considerable capacity underutilization at certain times of the year across industries due to either the nature of market demand (rural/urban), lack of working capital and/or scarcity of raw materials. The challenge with this method of asking for sales and costs in measuring enterprise profitability is the possible problems with recall of enterprise operation throughout the year.

3.7.3 Measuring Micro and Small Enterprise Risks

In economic literature, risk is typically defined as variability (Forlani & Mullins, 2000), Risk may mean different things to different people. For example, Shepherd, Douglas and Shanley (2000) noted that ‘‘mortality risk is quite different from business risk or investment risk. It is concerned with survival, not the variance of profits around expected levels, except insofar as this would jeopardize solvency.’’ Forlani and Mullins (2000), in an experimental study, asked a sample of entrepreneurs leading America’s fastest growing firms to make choices among a series of hypothetical new ventures. They found that although their subjects ‘‘tended to shun high levels of variability they appeared willing to accept a considerable degree of hazard, or possible downside presumably in pursuit of potentially significant gains’’ (ibid). Sharpe (1975) suggested the reward-to-variability ratio as an appropriate unambiguous measure of performance that controls for risk. ‘‘The reward-to-variability ratio is simply the ratio of reward (which is good) to variability (which is bad). The higher the ratio, the better the performance. Although Sharpe (1975) discussed the reward-to-variability ratio in the context of comparing the performances of individual securities and portfolios, it appears to be an appropriate measure in

assessing the performance of business enterprises. In measuring the Sharpe ratio, it is normal to measure the ‘‘reward’’ in terms of stock price returns and the ‘‘variability’’ as the standard deviation in those returns.

3.8 Analytical Framework and Empirical Models

This section reviews the various analytical approaches used in achieving the stated objectives. It outlines how the variables were measured and included in the models as well as specify the empirical models used. The analytical models are outlined for the three objectives stated earlier.

3.8.1 Modeling the Determinants of Participation and Participation Intensity

The study employed probit and truncated regression models to determine the factors influencing individual participation and intensity of participation in non-farm micro and small enterprises in rural Ghana. The main data for this study is the EGC/ISSER Socio-Economic Panel Survey Wave One collected in 2009/10. In order to enrich the discussions and to have a better understanding of the issues, the study conducted focus group discussions with selected individuals in rural households. The focus group discussions targeted individuals who own enterprises as well as those who do not own enterprises. Separate discussions were done for men and women and youth. The essence was to capture first hand information regarding the motives for participating in non-farm enterprises as well as the constraints and challenges facing them. The focus group discussions were conducted in selected rural households and individuals across ecological zones in the country.

Based on previous studies, including Dabalen, Paternestro and Pierre (2004); Woldenhanna and Oskam, (2001); Reardon (1997); Lanjouw et al. (2001), four sets of variables which influence individual participation in non-farm enterprises are identified. First, the individual characteristics, which include education, age, gender, parental and migration history and household member status; the personal assets of individuals. These factors to some extent will influence the quality of jobs that one expects to get. Second, household level characteristics, which include the number of dependents, number of household members, land holdings, and livestock. Third, community level variables which include community social capital, and lastly, location characteristics of the enterprise captured by a dummy variable, which may be regional or ecological.

According to Dabalen et al. (2004), an individual's decision to participate in the non-farm sector is a function of his productive assets (ability, skills and motivation, the financial and structural status of his household) and the array of opportunities available in the environment in which he/she lives. According to Ackah (2013), the following sets of factors influence the individual decision to participate in non-farm enterprises in Ghana: the individual characteristics (age of the individual, gender, education, marital status, status as household head, status as spouse of household head; household characteristics (land size, access to electricity, distance to drinking water source; and a location variable (Northern zone, Afram Basin and Southern zone). This study followed Ackah (2013) in specifying the variables, but included three other equally important variables (access to credit, use of mobile phone and total livestock units). Senadza (2012) found that access to credit is an important determinant of multiple non-farm activities as well as non-farm income in rural Ghana. According to the Rural Poverty Report

(2011),improved communication and information systems, particularly the diffusion of mobile phone coverage in rural areas played a role in stimulating the rural non-farm sector.Sanchez (2005) found that owning more livestock reduces the number of days worked in non-farm wage employment and that ownership of livestock is not important for wage-employment.

From the labour supply function by Sadoulet and de Janvry (1995), the individual characteristics correspond to the individual capital that is available to the household. These factors condition the household and put it in a better position to either participate in non-farm activity or not. Household access to certain essential services such as electricity and drinking water further enhances its ability to engage in non-farm. The physical location of the enterprise is also relevant. The location variable captures the expected effect of household access to labour and product markets.

In order to model the factors that determine the participation of individuals in non-farm enterprises in Ghana, the study employed a standard probit model. The dependent variable is dichotomous in that it takes two modalities, zero and one, depending on whether the individual participates in a non-farm enterprise or not. Since the dependent variable is not continuous, the application of linear regression models is not appropriate. This means that the use of probit or logit models is more appropriate. Probit model was chosen for its appropriateness in allowing for the estimation of marginal effects and its fitness to the data. This model is specified as;

$$P(y=1/x)=\beta_o+\beta_1 X_1+\beta_2 X_2+\beta_3 X_3+u \qquad (3.1)$$

Where: **y** is the 0-1 outcome with 1 corresponding to an individual participating in non-farm

activities (either as self-employed or wage earner) as the primary occupation and 0 corresponding to an individual participating in agriculture as the main occupation. X_1-X_3 correspond to sets of individual, household and community (location) characteristics, respectively. β_1-β_3 are the parameters to be estimated, and u is the error term, which is assumed to follow a standard normal distribution with mean zero and variance 1. The estimated sample is restricted to persons in the working age bracket of 15-65 years of age.

To model the factors influencing the intensity of participation, the study used a truncated regression as in the case of the second stage of the Double-hurdle model. The use of truncated regression is to address the bias introduced when using ordinary least squares (OLS) regression on truncated data. The double-hurdle approach allows distinction between the determinants of participation and the level of participation through two separate stages. The first stage involved the use of a probit model. The second approach is the use of a truncated regression which determine the intensity of participation or otherwise analyse the determinants of how many days per year an individual allocates to the non-farm enterprise. Following Sanchez (2005), the model is specified following equation 3.1. as follows;

$L=L^*$ if $L^*>0$ and $P^*>0$, $L=0$ otherwise

$$L^* = \beta_o + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + u \qquad (3.2)$$

Where: L* is the observed level of participation (number of days worked on non-farm enterprises) in non-farm micro and small enterprise, P* is the probability of participation, and X_1-X_3 correspond to sets of individual, household and community (location) characteristics, respectively. β_1-β_3 are the parameters to be estimated and u is the error term.

The individual first decides whether to participate in non-farm enterprise or not, and based on that decision, chooses the number of days to commit to non-farm work. Using a single stage procedure to estimate the factors that influence individual participation in non-farm enterprise and the number of days one would commit to working on non-farm activity could raise the issue of sample selection bias. The study therefore tested for the presence of sample selection bias using the Heckman selection model (Heckman, 1979). The decision to estimate the two equations separately or together was determined based on the significance of the statistical independence between the two (the decision to participate in non-farm enterprise equation and the number of days one would commit to working on the non-farm enterprises). If the null hypothesis is rejected based on the statistical independence between the two, then a multistage procedure must be used in the estimation.

3.8.2 Hypothesis and Description of Variables used in the Analysis

Based on the theoretical and conceptual framework, people residing in populated centers, where individuals have greater access to electricity, infrastructural capital assets, will have a positive and significant effect on non-farm participation in both wage and self-employment. There are two dependent variables. The first one is a dichotomous variable which takes on the value one if the individual participates in non-farm activities (either as self-employed or wage earner) as the primary occupation and 0 corresponding to an individual participating in agriculture as the main occupation. In this study an individual participates in non-farm enterprises if the individual owns at least a non-farm enterprise. Participation in wage employment means the individual earns a wage by working on non-farm enterprises. The dichotomous variable is the dependent variable

for modeling the determinants of individual participation in non-farm enterprises. The second dependent variable is a continuous variable which is used in modeling the intensity of individual participation in non-farm enterprises. It is the number of days an individual commits to working on non-farm either as owner or wage earner.

3.8.3Independent Variables

The study considers a set of independent variables that corresponds to the theoretical frameworks in the labour supply equation as described in this study. These include the variables as reviewed in literature which influences the participation of individual in non-farm activities (either ownership of enterprise or wage earner). These variables include individual characteristics, household characteristics and community or location variables. The individual characteristics are considered as assets and capabilities that the household possesses. According to the theoretical framework, these will motivate the individual to participate in the non-farm enterprise. The independent variables considered in this section are outlined below.

3.8.4Independent Variables and Characteristics

i. *Gender of the individual*: This variable is coded as female and takes the value one if the gender of the participant is a female and zero if male. Literature revealed that the majority of those employed in non-farm enterprises are female. Women are expected to participate more in non-farm enterprises as compared to men. But women are less likely compared to men to engage in non-farm wage enterprises. Wage employment seems to be more accessible to men than women. Given that women strive to balance their work with that of family duties, a positive coefficient is expected for gender of the individual in non-farm self-employment and negative for non-farm wage employment.

ii. *Marital status*: This variable is coded as married and takes on a value one if the individual is married and zero otherwise. Individuals that are married are likely to better mobilize resources together and may decide to engage in non-farm enterprises. Marriage is seen as social capital which could enhance the capacity of the individual to engage in non-farm enterprise. Since women have a higher propensity to engage in non-farm enterprises, getting married could enhance couples to engage in non-farm enterprises as compared to singles. A positive coefficient for marital status is expected for non-farm participation in self-employment and negative for wage employment. Married women will have the additional responsibilities to balance their work with wage employment.

iii. *Household Head:* Individuals who are household heads have the additional responsibility of providing for the needs of the households. Since non-farm enterprises may serve as additional sources of income for households and individuals, it is expected that being a household head will increase the probability of the individual to engage in non-farm self or wage employment.

iv. *Spouse of household head:* Being married to a head of household will enhance the capacity of the individual to engage in non-farm enterprise. It is expected that spouses will support their partners in seeking additional sources of income for the household and non-farm employment is typical especially in the rural localities. The coefficient for spouse of household head is expected to be positive for both self and wage employment.

v. *Age of the individual:* The literature indicate that the likelihood of undertaking a non-agricultural activity, whether self-employed or not, increases with age. Investing in

non-farm enterprises requires some level of capital, and people who have worked for longer and are able to accumulate some capital to engage in non-farm enterprises. The coefficient for age is expected to exert a positive influence on non-farm participation in both self and wage employment.

vi. *Age squared*: It was used to capture the nonlinear relationship between age and non-farm participation. The literature showed that age has an inverted "U-shaped" effect on participation. Age increases the probability of participation but reaches an apex and then declines.

vii. *Education:* It is expected that those who did not have formal education at all will participate less compared to those who have ever attended formal education.

viii. *Credit :*It is expected that credit would have a positive effect on non-farm participation. Access to credit will enhance the individual capacity to set up non-farm enterprises.

ix. *Mobile phones :*Having access to a mobile phone in itself is an indication that the person is abreast with technology. Access to mobile phones is expected to have a positive effect on participation.

x. *Total Livestock Units (TLUs)*: It is a measure of the number of livestock an individual possess. It is expected that individuals that own more livestock are likely to be engaged in agriculture and are expected to participate less as compared to those who own less or do not own livestock at all.

xi. *Per Capita landholding:* One of the arguments in literature is that individuals engage in non-farm enterprises because they do not have access to land for agriculture purposes. Going by this argument, it is expected that individuals with small size of

land holding are more likely to participate more in the non-farm sector than those with large landholdings.

xii. *Access to electricity*: It is expected to have a positive effect on participation in the non-farm sector. Electricity is important for most businesses including non-farm.

xiii. *Distance to drinking water source:* The further the distance to drinking water source, the less water one would fetch. With non-farm enterprises that use a lot of water, having water nearby will enhance participation in non-farm businesses. It is expected that individuals that travel long distance to fetch drinking water will participate less in non-farm activity.

xiv. *Agro-ecological zones:* The literature argues that high populated areas are more likely to participate in non-farm enterprises as compared to less populated ones. It is expected that enterprises in the Forest and Coastal zones will participate more in non-farm activity as compared to those in the Savannah zone. The Coastal and Forest zones have the biggest cities, are highly populated and have access to better infrastructure, etc. The variables used in the analysis are described and defined in Table 3.1

Table 3.1:Description of Variables used in the Analysis (Participation and Participation Intensity)

Variable	Description	Value
Dependent variable		
Self_employment	Participation in non-farm self-employment	1=yes, 0=no
Wage_employment	Participation in non-farm wage employment	1=yes, 0=no
Intensity_self_employment	Number of days worked per year self-employment	Days worked in a year
Intensity_wage_employment	Number of days worked per year wage-employment	Days worked in a year
Individual Characteristics		
Female	Individual gender	1=female, 0=male
Married	Individual marital status	1=married, 0=otherwise
Hh_head	Individual is household head	1=yes, 0=no
Spouse_hhhead	Individual is spouse of household head	1=yes, 0=no
Education	Individual had formal education	1=yes, 0=no
Age	Age of the individual	Number of years
Agesquared	Age of the individual squared	Number of years squared
Credit	Individual had access to credit	1=yes, 0=no
Mobilephone	Individual had a mobile phone	1=yes, 0=no
TLU	Number of livestock kept	Tropical livestock units
Landholding	Landholding per individual	Hectares
Household Characteristics		
Electricity	Household access to electricity	1=yes, 0=no
Distance_water	Distance to potable drinking water	Kilometers
Location/Zone Characteristics		
Coastal	Enterprise is located in Coastal zone	1=yes, 0=no
Savannah	Enterprise is located in Savannah zone	1=yes, 0=no
Forest	Enterprise is located in Forest zone	1=yes, 0=no

Note: Tropical livestock unit (TLU) was calculated following Al-Hassan et al. (1997) and Ramakrishna and Demeke (2002). 1 cattle = 1 TLU; 1 draught = 1 TLU; 1 pig =0.25 TLU; 1 sheep = 0.2 TLU; 1 goat = 0.15 TLU; 1 rabbit = 0.005 TLU; 1 poultry = 0.005 TLU.

3.9 Modeling the Effects of Firm-specific and Non-firm Factors on Enterprise Financial Performance

To examine the effects of firm-specific and non-firm factors on the performance of non-farm micro and small enterprises in Ghana, an ordinary least square (OLS) and quantile regression were used to estimate the factors explaining the intensity (variation) of enterprise financial performance. Conditional quantile regression models were used in the estimation. First, an OLS was estimated and then a quantile regression in which the results were compared. The use of the quantile regression enabled the tracing of the entire distribution of enterprise performance (profit) conditional on a set of explanatory variables. The model is specified following Masakure et al. (2008) to include variables that reflect the standard measures used in the micro and small enterprise literature including the characteristics of the entrepreneur, the enterprise sector and market effects. Following Masakure et al. (2008), enterprise performance (profit) is specified as π_{ik} for enterprise i operated in the subsector k. This is expressed as follows:

$$\pi_{ik} = X_i^{'}\alpha + Y_k\beta + \mathcal{E}_{ik} \qquad (3.3)$$

Where: X_i is a vector capturing observable firm-specific factors;$Y_k$is a vector capturing unobservable characteristics of the sector of the firm; α and β are vectors of unknown parameters; and ε_{ik} is an unobservable error term. To model the factors explaining the intensity (variation) of enterprise performance (profit) using the quantile regression, the study follows Koenker (2005) and Masakure et al. (2008). Let $Q_\theta(\pi|c)$ for $\theta \in (0, 1)$ represent θ quantile of the distribution of enterprise profits (π) given the known vector c=(X,Y). The first quantile is obtained by setting θ = 0.1.In this case as θ increases from 0 to 1, the entire distribution of profits (π) is traced conditional on the known vector (c). The conditional quantile is modeled as:

$$Q_\theta(\pi_{ik}/C_{ik}) = X'_i\alpha_\theta + Y'_k\beta_\theta \quad (3.4)$$

3.9.1 Hypothesis

Based on the RBV of the firm, it is expected that firm-specific factors will dominate market/industry factors in explaining enterprise performance.

3.9.2. Description of the Variables Used in the Analysis and a priori Expectations

3.9.3 Dependent Variable

The dependent variable is annual profit measured in Ghana Cedis (Gh¢). Annual profit was estimated by adding reported sales in high, average and low months in the past 12 months preceding the survey and subtracting reported costs in high, average and low months in the past 12 months preceding the survey.

3.9.4 Independent Variables

The independent variables are specified following Masakure et al. (2008) to include variables that reflect the standard measures used in the micro and small enterprise literature consistent with the RBV. The variables include the characteristics of the entrepreneur, the enterprise sector and market/industry effects. These variables are described and defined in table 3.3, and include the following:

3.9.5 Entrepreneurial Resources

i. *Gender of the enterprise owner:* From the literature, it is expected that male-owned enterprises will perform better than female-owned ones. It is expected that the coefficient for male gender variable (captured here as male) will be positive and significant.

ii. *Age of the enterprise owner:* It is expected that age will positively influence enterprise performance. As the individual ages, it is expected that the person will gather experience and skills that will positively impact on enterprise performance.

iii. *Age squared:* It was used to capture the nonlinear relationship between age and enterprise performance.The literature showed that age has an inverted "U-shaped" effect on enterprise performance. Literatures argues most of the micro and small enterprises are owned by their founders and there is a tendency for them to become less active and ambitious over time, which may result in less flexibility to adopting technology and change, which will affect firm performance. Age squared was expected to impact negatively on enterprise performance.

iv. *No Formal education*:It is expected that having formal education will positively influence enterprise performance, as the individual is expected to apply knowledge and skills learnt through formal education to enterprise management. The variable (noeducation) is expected to be negative and significant.

v. *Technical education:* Literature has indicated that having technical education positively influences enterprise performance, as one may be able to apply technical knowledge acquired to better manage enterprises. The variable (technical) is expected to be positive and significant.

vi. *Tertiary education:* An individual having tertiary education is expected to apply knowledge and skills acquired to better manage enterprises. The variable (tertiary) is expected to be positive and significant.

3.9.6 Enterprise Level Resources

i. *Age of the enterprise:* It is expected that enterprises that have operated for longer years will perform better than those operating for shorter years. This may be the case because as the enterprise grows, the enterprise owners learn from experience and are able to adjust resources which will enhance enterprise performance.

ii. *Months of operations in the last year:* Enterprises that operated longer months during the past years are expected to perform better than those operating for shorter months. It is expected that enterprises operating longer months are active in business and this should translate into better performance. The variable is expected to be positive and significant.

iii. *Access to credit:* Credit is an important enterprise resource and is expected to influence enterprise performance positively. Having access to credit in itself does not guarantee better performance but could help enterprise owners acquire assets which could positively influence enterprise performance. The variable (credit) is expected to be positive and significant.

iv. *Value of assets:* The value of assets to some extent reflects the investment in the enterprise, and thus enterprises that have invested much in terms of assets are likely to perform better than those investing less. The variable (assets) is expected to positively influence enterprise performance.

v. *Registration status of enterprise:* Literature had argued that formalized enterprises grow faster than those that are informal because registered enterprises gain credibility with licensing and taxation and enhanced access to rationed resources and can also act to reduce transaction costs when dealing with other firms, thus contributing to improved performance. The variable is expected to positively influence enterprise performance.

vi. *Number of apprentices:* Apprentices are a form of "cheap" labour for enterprises. It is expected that the number of apprentices hired (apprentices) will augment the labour requirement of the enterprise and will positively influence enterprise performance.

vii. *Number of causal workers:* A dominant characteristic of micro and small enterprises is high rates of labour intensity, and this suggests that the ability to access low cost supply of labour with the required skills is a key factor influencing enterprise performance. It is expected that the number of casual workers used (casuallabour) will positively influence enterprise performance.

viii. *Number of hired workers:*Previous studies showed that hired labour is generally more skilled, experienced and productive in micro and small enterprises and thus the number of hired workers (hiredlabour) is expected to exert a positive effect on enterprise performance.

ix. *Household labour:*The use of household labour can increase enterprise profitability because it is less costly. It is thus expected that the number of household labour used will exert a positive effect on enterprise performance.

3.9.7 Sector/industry Variables

i. *Manufacturing:*The literature is generally not clear about the effect of the manufacturing sector variable on enterprise performance. However, some studies found that the manufacturing sector may be more profitable than the service sector. The expectation is that this sector variable may exhibit either a positive or negative effect on enterprise performance.

ii. *Trade:*Generally, the trade sector has been found to perform better than the service industry. However, depending on the type of business the enterprise engages in, the level of

profitability may vary. The expectation is that the industry may exhibit either a positive or negative effect on profitability.

iii. *Restaurants:*The literature is generally not clear about the effect of this sector variable on enterprise performance. It is expected that the restaurants industry will exhibit either a positive or negative effect on enterprise performance**.**

iv. *Services:*The service industry is generally seen as the least profitable industry. It is expected that this industry will underperform all the other industries and that the variable will exhibit a negative effect in relation to the other variables.

3.9.8 Location/Geographical Characteristics

i. *Urban:*urban-based enterprises tend to enjoy better access to a range of resources and infrastructure than those in rural areas and tend to have better and less costly access to inputs, larger and more dynamic markets, opportunities for networking with larger firms and within fellow enterprises. It is expected that enterprises located in the urban areas will be more profitable than those in the rural areas.

ii. *Savannah zone:*It is expected that enterprises in the Savannah zone will perform less well than those in the Coastal and Forest zones. The Coastal and Forest zones have bigger cities with more developed infrastructure, opportunities and markets.

iii. *Forest zone:*It is expected that enterprises in the Forest zone will perform as compared to those in the Coastal zone and better than those in the Savannah zone. The Coastal zone to some extent has greater access to opportunities in the non-farm sector as compared to the Forest zone. The Forest zone to some extent has more access to opportunities and infrastructure than the Savannah zone.

iv. *Coastal zone:* The Coastal zone tends to be more profitable because it relatively has more infrastructure as compared to the Savannah and Forest zones. The national capital (Accra) is located within this zone. Enterprises located here are expected to perform better than those in the Savannah and Forest zones.

Table 3.2: Description of Variables used in the Analysis (OLS and Quantile Regressions)

Variable	Description	Value
Dependent variable		
Profits	Annual profits	Ghana Cedis (Gh¢)
Explanatory variables		
Entrepreneurial resources		
Male	Gender of the enterprise owner	1=male, 0=otherwise
Age	Age of the enterprise owner	number of years
Agesquared	Square of the enterprise owner's age	number of years sqaured
Noeducation	Enterprise owner had no formal education	1=yes, 0 =otherwise
Technical	Enterprise owner ever been to technical education	1=yes, 0=otherwise
Tertiary	Enterprise owner ever been to tertiary education	1=yes, 0=otherwise
Enterprise resources		
Age_enterprise	Age of the enterprise	number of years of operation
Age_enterprise2	Age of the enterprise squared	number of years of operation squared
Monthsoperated	Months of operation	number of monthsenterprise had operated
Credit	Enterprise had access to credit	1=yes, 0=otherwise
Assets	Value of enterprise assets	Ghana Cedi(Gh¢)
Registered	Enterprise registered with any government agency	1=yes, 0=otherwise
Apprentices	Apprentice workers	number of apprentice workers
Casuallabour	Casual labour workers	number of casual workers
Hiredlabour	hired labour workers	number of hired workers
Householdlabour	Enterprise used household employees	1=yes, 0=otherwise
Sector		
Manufacturing	Food products, beverages, apparel, footwear etc	1=manufacturing, 0=otherwise
Trade	Whole trade and retail sub-sectors	1=trade, 0=otherwise
Restaurants	Restaurants, bars and canteens	1=restaurants, 0=otherwise
Services	Road transport, hair dressing, carpentry, masonry	1=services,0=otherwise
Location/Geographical characteristics		
Urban	Enterprise location	1=urban, 0=otherwise
Savannah	Geographical location of enterprise	1=Savannah zone, 0=otherwise
Forest	Geographical location of enterprise	1=Forest zone, 0=otherwise
Coastal	Geographical location of enterprise	1=Coastal zone, 0=otherwise

3.10 Comparing Female-owned Enterprises with Male-Owned ones With and Without Adjusting for Risks

To compare the performance of female-owned micro and small enterprises relative to male-owned enterprises with and without adjusting for risks, the study first considered the traditional variables used in the literature to compare the performance of male and female firm owners/operators (such as profits, sales, number of employees) and then adjusted for risks using the reward-to-variability ratio proposed by Sharpe (1975). Sharpe ratio is used to adjust for risks in investments. Risk is defined in the economic literature as variability (Forlani & Mullins, 2000). Sharpe (1975) suggested the reward-to-variability ratio as a simple measure of risks. Thus reward (which is good) and variability (which is bad).In this case, reward is the annual profits earned by MSEs and variability is the standard deviations of the profits. So it is given as annual profits divided by the standard deviations of the profits. It is expected that the higher the Sharpe ratio, other things being equal, the better the performance. Taggart (1996) argued that Sharpe measure adjusts for total risk and it is useful for assessing the performance of a portfolio that is less than fully diversified.

The study compared the profits across gender first without adjusting for risks and then compared again after adjusting for risks using a t-test. The Sharpe ratio has often been applied to stock exchange prices, however, because many small and medium scale enterprises are not listed and, therefore, stock price information is not available, profit is used as the reward measure and standard deviation in profit as the variability (risk) measure (Watson & Robinson, 2003). Watson and Robinson indicated that using profit rather than stock market returns as a reward measure is not out of place because: (i) for small and medium enterprise owners, the profit earned by their

ventures is clearly a significant reward; and (ii) stock prices are largely driven by profits (particularly future expected profits). One main advantage of the Sharpe ratio is that it is directly computable from any observed series of returns without need for additional information surrounding the source of profitability. One challenge with the use of Sharpe ratio is that laypeople find it difficult to interpret Sharpe ratios of different investments.The revised ex-ante Sharpe ratio is given as;

$$S = \frac{\mathrm{E}[\mathrm{R_a} - \mathrm{R_b}]}{\delta} = \frac{E[R_{a-R_a}}{\sqrt{var[R_{a-R_b}}} \qquad (3.5)$$

Where, R_a is the asset return, R_b is the return on a benchmark asset. $E[R_a - R_b]$ is the expected value of the excess of the asset return over the benchmark return, and σ is the standard deviation of this excess return.In this study, there is no attempt to compare different investments. The Sharpe ratio is only used here as a risk adjustment measure. In this case, the top part of the formula $E[R_a - R_b]$thus becomes $E[R_a]$, which is the returns of the asset (profits), and the lower part ($\sqrt{var}[R_a - R_b$thus becomes ($\sqrt{var}[R_a]$ which is the standard deviation of the profits). The derived formula can be written as;

$$\mathrm{S} = \frac{E[R_a]}{\sqrt{var[R_a]}} \qquad (3.6)$$

This study following Sharpe (1975) and Watson and Robinson (2003),considered profit as reward and the standard deviation of the profit as variability (risk).The formula for the ex-post Sharpe ratio is the same as given above in equation 3.6 except, that the ex post use realized returns of the asset and benchmark rather than expected.

3.11Survey Design, Sampling and Data

Data for this study was obtained from the EGC/ISSER Socio-Economic Panel Survey. The survey provides a regionally representative data for all the 10 regions of Ghana. It covered 5009 households with a total of 18,889 individuals. It was a nationally representative survey from 334 Enumeration Areas (EAs) across the country. Fifteen households were selected from each of the EAs. A two-stage stratified clustered sample design was used for the survey. Stratification was based on the regions of Ghana. The first stage involved selecting geographical precincts or clusters from an updated master sampling frame constructed from the 2000 Ghana Population and Housing Census (EGC/ISSER, 2011). A total of 334 clusters (census enumeration areas) were selected from the master sampling frame. The clusters were randomly selected from the list of EAs in each region. A complete household listing was conducted in 2009 in all the selected clusters to provide a sampling frame for the second stage selection of households. The second stage of selection involved a simple random sampling of 15 of the listed households from each selected cluster. The primary objective of the second stage of selection was to ensure adequate numbers of completed individual interviews to provide estimates for key indicators with acceptable precision at the regional level. The main field work for the survey covered a 6-month period (November 2009 to April 2010) in order to ensure that enough household baseline information was gathered.

This data set contained detailed and comprehensive information about micro and small enterprise activities in Ghana. In fact, the data collected for non-farm enterprises was limited to only the micro and small enterprise sector comprised of enterprises employing not more than nineworkers. Data was collected on non-farm enterprises' principal and secondary activities, the

number of people engaged in the enterprises as well as their working hours and days, sources of start-up capital and credit, assets of the enterprise, sales and costs in high, average and low months throughout the year, the amount of expenditure and revenue generated by non-farm enterprises, and their stock levels. Refer to Table 3.3 for details on how the various enumeration areas were sampled across the regions in Ghana.

Table3.3: Distribution of Enumeration Areas (EAs) across the Regions in Ghana.

Region	**Number of EAs**	**Percent**
Western	31	9.3
Central	28	8.4
Greater Accra	39	11.7
Volta	33	9.9
Eastern	43	12.9
Ashanti	60	18.0
Brong Ahafo	34	10.2
Northern	38	11.4
Upper East	16	4.8
Upper West	12	3.6
Total	334	100.0

Source: EGC/ISSER data, 2010.

CHAPTER FOUR

DETERMINANTS OF NON-FARM MICRO AND SMALL ENTERPRISE PARTICIPATION

4.1 Introduction

This chapter discusses results from descriptive statistics and two econometric models employed. Two econometric models were specified to examine the determinants of individual participation(equation 3.1) in non-farm self-and wage-employment and the intensity (number of days) of days committed to working on non-farm enterprises (equation 3.2).To examine the determinants of individual participation (equation 3.1), a binomial probit was estimated. Intensity of participation (Equation 3.2) model was estimated by means of truncated regression.

One econometric issue could arise as a result of having many variables in the regression is multicollinearity. This is a phenomenon where by two or more of the predictor variables in the regression model are highly correlated. One method of checking for multicollinearity is the use of variance inflation factor (VIF). This is done by use of vif command after the regression. As a rule of thumb, a variable whose VIF values are greater than 10 calls for further investigation. Other researchers used the tolerance to check the degree of multicollinearity. Tolerance is defined as 1/VIF. A tolerance value lower than 0.1 is comparable to a VIF of 10. This indicates that a variable could be considered as a linear combination of other independent variables if the tolerance level is lower than 0.1 or if the VIF is greater 10. Kutner, Nachtsheim and Neter (2004) proposes a VIF of 10.All the VIF values were less than 10 and this suggests that there is no

problem of multicollinearity. The results from the VIF indicates that there was no problem of multicollinearity (see details in appendix 10).

Women dominate the non-farm sector across all the ecological zones. About 73 percent of those self-employed in non-farm enterprises in rural Ghana are females. This figure is higher as compared to 51 percent in the farming (primary agriculture). Non-farm enterprises owners were older, more educated and more likely to be married as compared to those in agriculture. They were also more likely to use mobile phones and had more access to credit as compared to their colleagues in agriculture. However, those in farming had more acreage of land holdings and owned more livestock as compared to those in non-farm. It is worth noting that almost every household in the rural areas engages in farming and may engage in non-farm enterprises for additional income. It is not out of place to state that households in the rural areas engage in non-farm enterprises as an additional source of income to smoothen consumption and reduce the risks associated with farming. FAO (1998) states that the traditional image of farm households in developing countries is to focus almost exclusively on farming and undertake little rural non-farm activity. There were more female headed households and more households with access to electricity in the non-farm sector as compared to those in farming. Farming households had larger household size and had to travel more distance for potable drinking water as compared to those in non-farm enterprises. Details of the comparison of individual and household variables between participants and non-participants in the rural non-farm sector are presented in Table 4.1.

Table 4.1: Characteristics of Participants and Non-participants in the Rural Non-farm Sector

Variables	Non-farm enterprise owners (Average)	Farmers (Average)	t-statistic
Individual Characteristics			
Gender (% female)	72.94	51.28	-14.11***
Individual age (years)	42.42	38.84	5.59***
Formal education (%)	74.27	63.31	6.51***
Individual (% married)	60.34	51.69	5.09***
Land holding (hectares)	2.16	2.85	-3.27***
Livestock (TLUs)	0.67	0.89	-1.42
Credit (% that had access)	18.53	9.25	8.96***
Mobile phones(% possessing)	77.68	60.71	10.40***
Household Characteristics			
Female headed households (%)	44.47	17.36	4.08***
Household size (number)	3.58	4.25	-5.53***
Access to electricity (%)	42.70	31.84	6.79***
Distance to drinking water source (Km)	0.49	0.69	-1.66*

Source: Author's computations from EGC/ISSER data, 2010

4.2Participation Rates by Gender and Industry in Rural Ghana

Analyses of the participation rates according to gender showed that the majority (57%) of females are in the trade industry whiles the largest share of males (38.8%) are into the manufacturing industry. Less than 3 percent (2.38%) of female are engaged in services industry whiles about 4 percent of males are engaged in the restaurants industry. This is the case because activities in the services industry such as passenger road transport, masonry, carpentry, plumber,

painting, electricians seemed to be male dominated activities. In the restaurants industry, activities such as operating canteens, restaurants and bars seemed to be female dominated. Further analysis of the rural non-farm enterprise sector revealed that the restaurants industry was the most profitable for the female among all the industries. However, there was no significant difference between the profits obtained by female and male enterprise operators in this sector. The restaurant industry is the only industry that female enterprise operators had more profits as compared to male enterprise operators. It is the only industry that female had higher profits as compared to their male operators.Details of the results are presented in Table 4.2 below.

Table 4.2: Participation Rates and Profits by Gender and Industry in Rural Ghana

Industry	**Male**		**Female**		**t-test of difference between means**
	% of Male involved	Mean profit(Gh¢)	% of female involved	Mean profit (Gh¢)	
Manufacturing	26.01	567.24	38.80	963.27	-2.78**
Trade	57.06	713.02	36.40	2058.01	-3.24***
Restaurants	14.55	763.36	4.00	699.00	0.29
Services	2.38	663.12	20.80	1286.30	-1.65
Total	100	993.73	100	2111.25	

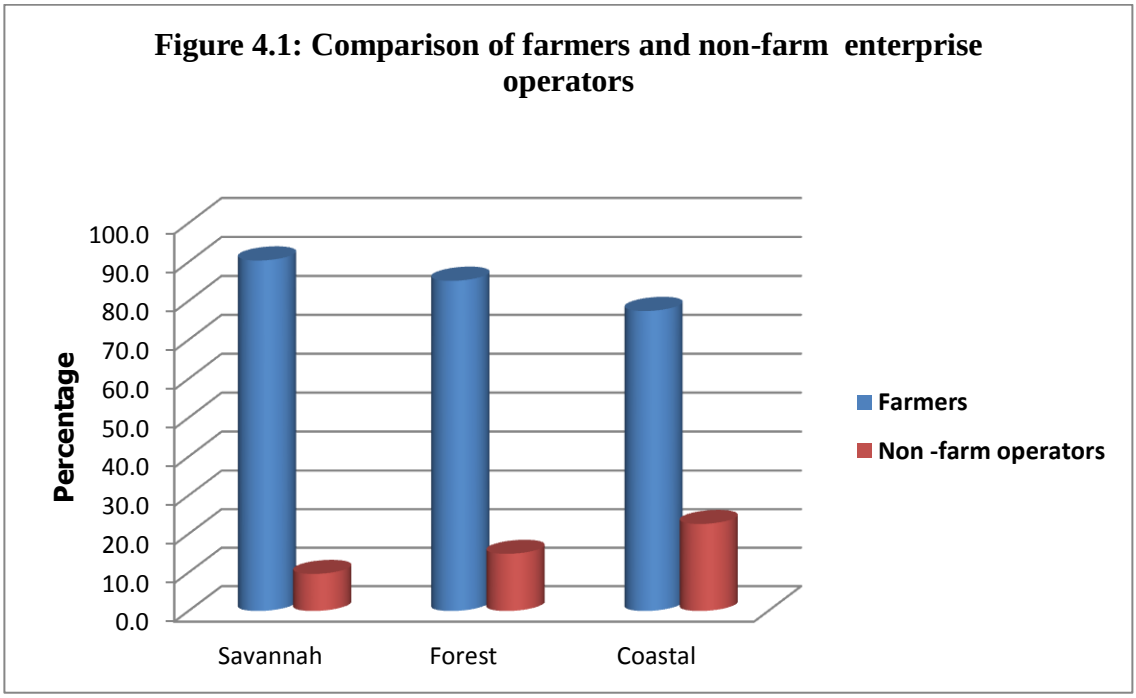
Source: Author's computations based on EGC/ISSER data, 2010.

4.3 Comparisons of Farmers and Non-farm Enterprise Operators across Ecological Zones

Analysis of the rural non-farm economy reveals that 1005 enterprises in the sample are operated by individuals across the three ecological zones in Ghana. The results showed that majority (86.4%) of people in rural Ghana do not operate non-farm enterprises while 13.6 percent operate non-farm enterprises. About 5% of the rural people provide labour and receive wages in the non-

farm sector.It is not surprising that the percentage of people owning enterprises are higher than those providing labour, given the fact that more than 75 percent of the enterprises are operated by single individuals. Self-employment is distinguished from wage employment. Self-employment here refers to those operating (owning) non-farm enterprises and wage-employment refers to those who provide labour and receive wages in non-farm activities.A comparison of the participation rates across the three ecological zones revealed that the Savannah zone had the least (9.6%) of individuals operating non-farm enterprises. This finding is consistentwith the apriori expectation of the study because the Forest and Coastal zones have bigger cities with high populations and have access to better infrastructure as compared to the Savannah zone. The Coastal zone had the highest (22.6%) of individuals operating non-farm enterprises. Figure 4.1 illustrates the comparison of farmers (individuals' not operating non-farm enterprises) as against those operating non-farm enterprises across the three ecological zones in rural Ghana.

Figure 4.1: Comparison of farmers and non-farm enterprise operators



Source: EGC/ISSER data, 2010

Generally, the percentage of female headed households in the sample was low and in particular that for the Savannah zone. There were fewer female headed households in the Savannah zone as compared to the Forest and Coastal zones. Households in the Savannah had less access to electricity compared to the other zones and inhabitants had to travel more distance for portable drinking water. An interesting finding is the high usage of mobile phone in the rural communities. On the average, about 63 percent of individuals in rural Ghana used mobile phones. The Savannah zone had the lowest usage of mobile phones and owned more livestock as compared to the Forest and Coastal zones. Individuals in the Savannah zone were less educated, more likely to be married and younger as compared to those in the other zones. Individuals in the Forest zone had more acreage of land as compared to those in the Savannah and Coastal zone. This may be surprising given the fact that the largest region in Ghana in terms of land size is located in the Savannah zone. It is possible that a lot of the land in the Savannah zone is not under cultivation. Refer to Table 4.3 for details.

Table 4.3: Characteristics of Individuals and Households by Ecological Zone in Rural Ghana

Variables	All zones	Savannah	Forest	Coastal
Individual Characteristics				
Gender (% Female)	54.22	54.24	53.16	57.60
Individual age (years)	39.32	38.42	39.78	40.85
Ever been to school (%)	64.78	48.84	78.42	73.46
Technical school (%)	2.79	2.64	2.44	4.27
Tertiary (%)	2.53	2.21`	2.09	4.65
Married (%)	52.87	62.05	45.80	45.31
Land holding (hectares)	2.74	2.84	3.01	1.39
Livestock (TLUs)	0.91	1.11	0.54	0.77
Credit (%)	10.34	7.84	13.53	9.56
Mobile phones (%)	63.03	50.36	72.62	73.97
Household Characteristics				
Households	3,143	1,124	1,512	507
Female headed households (%)	26.27	11.22	28.22	39.39
Age of household head (years)	49.12	49.53	48.66	49.58
Household size	3.77	5.35	3.57	3.05
Access to electricity (%)	33.32	24.46	40.03	41.03
Distance to water source (Km)	0.67	0.85	0.54	0.47

Note: Tropical livestock unit (TLU) was calculated following Al-Hassan et al. (1997) and Ramakrishna and Demeke (2002). 1 cattle = 1 TLU; 1 draught = 1 TLU; 1 pig =0.25 TLU; 1 sheep = 0.2 TLU; 1 goat = 0.15 TLU; 1 rabbit = 0.005 TLU; 1 poultry = 0.005 TLU.

4.4 Determinants of Participation in Non-farm Self-and Wage-employment

The first stage of the Double-hurdle estimation process is the probit model, which models the factors influencing individual participation. The decision to estimate the first stage of the Double-hurdle separately using a probit was based on the fact that the Wald test of independence

of equations (Rho) was not significantly different from zero, hence failure to reject the null hypothesis of no difference.The results from the Heckman selection model for self-employment (see appendix 4) showed that the Rho was 0.02 and the probability of the chi-square(chi^2) was 0.8884. This implied that the "decision to participate model" and the "intensity of participation model", could be treated as two independent equations and estimated separately. The results from the Heckman selection model for wage-employment (see appendix 5) showed that the Rho was 0.87 and the probability of the chi-square(chi^2) was 0.3510 also indicating that the "decision to participate" and the "intensity of participation" could be treated as two independent equations. In general, the selection equation should have at least one variable that is not part of the outcome equation. To fulfill this general rule, the variable (married) variable was removed from the outcome equation.

Results from the probit regression analysis (Table 4.4) show the marginal effects on participation given a one unit change or a discrete change in the explanatory variables. Participation in the non-farm sector is a function of individual, household and location characteristics. Several variables were significant determinants of participation in the non-farm sector. These include the gender of the individual, being head of a household, being the spouse of a household head, having formal education, age of the individual, having access to credit, possessing a mobile phone, per capita landing holding and ownership of livestock. Generally the effects of individual characteristics on the probability of individual participation in non-farm self-employment were consistent with a priori expectations. Except gender, ownership of livestock and being the spouse of the household head, the rest of the variables had the same signs and were significant across wage and self-employment. The results indicate that females are more likely to participate in

non-farm self-employment. This finding is consistent with studies of the non-farm sector in Ghana by Ackah (2013),Newman and Canagarajah (1999) and Owusu-Boateng (2011). The greater participation of Ghanaian women in non-farrm self-employment according to Newman and Canagarajah (1999) conforms more to the culturally accepted role of women as market traders. However, females were less likely to participate in non-farm wage employment. These findings are similar to those of Corral and Reardon (2001), who found that in Nicaragua, women mostly participate in self-employment activities.Glick and Sahn (1997) in earlier studies argued that the less participation of women in non-farm wage employment could be due to the many roles played by women. Being the spouse of the household head does not increase the probability of participating in non-farm wage employment but it matters for non-farm self-employment. The results from the probit regression are presented in Table 4.4 below.

Table 4.4: Determinants of Individual Participation in Non-farm self-and wage-employment: estimated Marginal Effects using Probit Models

Variable	Non-farm wage and self-employment	Non-farm self-employment	Non-farm wage employment
Individual Characteristics			
Female	0.0917***	0.1262***	-0.0225***
	(0.0113)	(0.0096)	(0.0042)
Married	-0.011	0.0024	-0.0040
	(0.0112)	(0.0094)	(0.0030)
Hh_head	0.2504***	0.1902***	0.0367***
	(0.0207)	(0.0187)	(0.0091)
Spouse_hhhead	0.1154***	0.0865***	0.0111
	(0.0249)	(0.0212)	(0.0092)
Education	0.0398***	0.0182**	0.0150***
	(0.0087)	(0.0073)	(0.0027)
Age	0.0157***	0.0110***	0.0027***
	(0.0018)	(0.0014)	(0.0006)
Agesquared	-0.0178***	-0.0123***	-0.0032***
	(0.0019)	(0.0015)	(0.0006)
Credit	0.0511***	0.0311**	0.0311**
	(0.0145)	(0.0119)	(0.0119)
Mobilephone	0.0720***	0.0473***	0.0473***
	(0.0084)	(0.0069)	(0.0069)
TLUs	-0.0011	-0.0000	-0.0039*
	(0.0011)	(0.0007)	(0.0022)
Landholding	-0.0125***	-0.0046**	-0.0031***
	(0.0031)	(0.0021)	(0.0009)
Household Characteristics			
Electricity	0.0506***	0.0200**	0.0151***
	(0.0092)	(0.0075)	(0.0032)
Distance_drinkingwater	-0.0046	-0.0029	-0.0011
	(0.0037)	(0.0027)	(0.0014)
Zone Characteristics (reference: Coastal)			
Savannah_zone	-0.0614***	-0.0370***	-0.0084**
	(0.0122)	(0.0101)	(0.0037)
Forest_zone	-0.0572***	-0.0360***	-0.0056*
	(0.0112)	(0.0092)	(0.0031)
Log pseudolikelihood	-2444.2215	-2131.3421	-895.2528
Wald $\chi^2(15)$	703.22	508.46	389.03
Prob> χ^2	0.0000	0.0000	0.0000
Pseudo R^2	0.1917	0.1744	0.2254
Observations	6530	6530	6530

Robust standard errors are reported below the estimates in parenthesis. *, ** and *** are levels of significance at 10%, 5% and 1%, respectively.

Note: With Robust standard errors, Likelihood Ratio (LR) chi^2 is not given. However, LR $chi^2$is reported for non robust standard errors. The LR chi^2 (15) for self-employment is 900.47 and the probability of the chi^2 was 0.0000. For wage-employment, LR chi^2 (15) was 520.96 with a probability of chi^2being 0.0000. For both self and wage-employment combine, the LR chi^2 (15) was 1159.29 with the probability of the chi^2 being 0.0000.

Being a household head increases the probability of participating in non-farm employment, whether the household head is male or female. Similarly, analyzing non-farm income diversification in rural Ghana, Bernardin (2012) found no significant difference between male-headed and female-headed households in non-farm activity participation. The effect of human capital on non-farm participation was positive and significant. Human capital captured here as having formal education exerted a positive and significant effect on participation. Older people were more likely to participate in non-farm self-employment as compared to younger ones as expected. This may be because older people have accumulated some capital to go into non-farm enterprise. This finding is consistent with Sanchez (2005) who found that the probability of participating in the non-farm sector increases with age. Bigsten and Kayizzi-Mugerwa (1995) stress the importance of life-cycle, aspects arguing that the youngest are often better endowed with human capital (such as health or education) but have not yet accumulated assets (land or cattle). Escobal (2001) obtained similar results in analyzing the determinants of non-farm income diversification in rural Peru.

Corral and Reardon (2001), Lanjouw (1999) and Ferreira and Lanjouw (2001) find that the likelihood of undertaking a non-agricultural activity, whether self-employed or not, increases with age. Age was quadratically modeled to determine the marginal rate of return of age on the probability of participation. Age increases the probability of participation but reaches an apex and then declines. This finding is consistent with Micesva and Rahut (2008) who modeled quadratically the effect of age on household participation and found that the probability of participation first increases with age, peaks at age 55 and thereafter declines .Nonetheless, these findings are contrary to the findings of Owusu-Boateng (2011) and Ackah (2013). Owusu-

Boateng found that younger people are more likely to participate in non-farm work. However, Ackah (2013) did not find age to be important in determining the probability of participation in non-farm enterprises.

It is worth noting that most studies in Ghana do not often consider access to credit as an explanatory variable but this study found it relevant to include it. This study found that having access to credit increases the probability of participating in non-farm employment. In a related study,Senadza (2012) found that access to credit is an important determinant of multiple non-farm activities as well as non-farm income. On the other hand, Ruben and van den Berg (2001) found that access to credit had no impact on non-farm self-employment.

In an attempt to capture the effect of technology on the probability of participating in the non-farm economy, this study included the variable "having access to mobile phone". The results indicate that having access to mobile phone increases the probability of participation in both wage and self-employment. This emphasizes the importance of modern technology in the rural areas. As expected, individuals' having large size of landholding decreases the probability of participating in the non-farm enterprise. Loening et al. (2008) discuss the argument that non-farm enterprises are set up by households primarily as a survival strategy, perhaps as a substitute for agriculture for the landless. This finding is consistent with the findings of Owusu-Boateng (2011) and Malchow-Moller and Svarer (2001). The former found that the lack of access to land increases participation in the non-farm sector. Malchow-Moller and Svarer (2001) state that low access to productive resources such as land push households to allocate labour to the non-farm sector. Some studies have indicated that acreage of land owned seems not to have an impact on

non-farm self-employment. For instance Ackah (2013), Escobal (2001), Ruben and van den Berg (2001), Corral and Reardon (2001) and de Janvry and Sadoulet (2001) found that land ownership does not have an impact on non-farm self-employment.

Household access to electricity increases the probability of participating in the non-farm economy. This finding corroborates that of Gibson and Olivia (2010) who found that households are less likely to have a non-farm enterprise if they lack access to electricity and suffer from frequent electricity blackouts. Freese (2010) in analyzing the rural non-farm sector in Burkina Faso likewise found that access to electricity increases the probability of participating in the rural non-farm sector.

Enterprises located in the Savannah and Forest zones are less likely to participate in non-farm employment as compared to the Coastal zone. From the descriptive statistics, average land holding per person in the Coastal zone was the smallest indicating that primary agriculture is very low and thus people may be more likely to engage in non-farm enterprises. The capital city of Ghana (Accra) is located within the Coastal zone and the zone also contains big industries which pull people into non-farm enterprises. Residing in a town or "populated center" makes the options of participation in wage and self-employment more accessible, generating more income opportunities for individuals (Elbers & Lanjouw, 2001; Barrett et al.,2001).

Results from the analysis of individual participation in non-farm wage employment were generally in line with the findings on individual participation in non-farm self-employment. Similar to the findings on the factors influencing individual participation in non-farm self-

employment, individual access to electricity, mobile phones, credit positively influenced the individual participation in non-farm wage employment. Individuals having formal education were more likely to participate in non-farm wage employment. Likewise, individuals residing in the Forest and Savannah zones were more likely to participate in non-farm wage-employment. Older individuals were more likely to participate in non-farm wage-employment as compared to younger ones as expected. However, the effect of age on wage-employment first increases and declines at a certain age and declines thereafter. This finding is consistent with Micesva and Rahut (2008) who found that the probability of participation first increases with age, peaks at age 55 and thereafter declines. Being a household head increases the individual participation in non-farm wage-employment. Unlike the findings on participation in non-farm self-employment, females were less likely to participate in non-farm wage-employment. This is consistent with the finding of Ackah (2013). Glick and Sahn (1997) recognized that women in rural areas are involved in several activities ranging from domestic production and commercialization andhousehold welfare and this may affect the types of activities women get involve in. Being the spouse of the household head is does not influence the individual to participate in non-farm wage-employment. An interesting finding here, is that individuals owning more livestock decreases one probability of participation in the non-farm wage employment. One may prefer to raise livestock as suppose to offering labour to someone else.

Generally, the marginal effects of the variables in the self-employment model seems higher than those in the wage-employment. This shows the differential effects of the variables on self and wage employment thus justifying the need to separate non-farm participation in the two categories (self and wage). With the exception of the variable (female) which was negative in the

wage-employment model, the rest were generally consistent. Gender variable (female) had different effects on self- and wage-employment. On one hand, being female increases the probability of participation in self-employment by 0.1262 and on the other hand, being a female, decreases the probability of participating in wage-employment by 0.0225. The size of the effect of being a female was more in self-employment than in wage-employment which may indicate the importance of gender in self-employment as compared to wage employment. Household headship had the greatest marginal effect on self-employment. Being a household head increases the probability of participation in self-employment by 0.1902.

4.5 Intensity of Participation (number of days worked)

The second stage of the Double-hurdle model is a truncated regression which is used here to determine the factors influencing the number of days worked per year once the first hurdle (participation) has been crossed. Once the decision has been made to participate in the non-farm sector, then analysis can be made about how many days are committed to working in the non-farm sector. Results from the truncated regression (Table 4.5) showed thathousehold heads and spouses of household heads work more days on wage employment. The household head and the spouse have the responsibility of providing the needs of the households and will therefore work more to be able to get more income for their households.Details of the results from the truncated regression are presented in Table 4.5.

Table 4.5: Determinants of Intensity of Participation in Non-farm Self and Wage-employment: Results Estimated Using a Truncated Regression o Days Worked per Year.

Variable	Self-employment Coefficients	Wage-employment Coefficients
Female	-13.00	-27.53
	(13.09)	(15.08)
Hh_head	14.18	50.15**
	(26.85)	(22.21)
Married	-9.95	-3.41
	(12.12)	(11.64)
Spouse_hhhead	17.84	63.84*
	(27.96)	(29.72)
Education	-5.62	3.01
	(11.57)	(14.62)
TLU	8.95**	0.43***
	(3.51)	(0.49)
Landholding	-2.94	0.96
	(2.38)	(2.19)
Credit	12.76	-8.94
	(11.47)	(11.76)
Electricity	39.92***	13.51
	(9.40)	(10.45)
Mobilephone	33.32**	41.22**
	(12.74)	(14.33)
Age	0.14	0.66
	(1.93)	(2.61)
Agesquared	-0.17	-0.04
	(2.00)	(2.98)
Distance_water	3.56	1.93
	(2.93)	(3.05)
Savannah	-3.60	-1.43
	(13.31)	(15.73)
Forest	5.73	12.80
	(11.54)	(12.41)
Constant	167.30***	162.00***
	(49.43)	(55.61)
Observation	804	404
Sigma	117.72***	97.63***
	(2.96)	(3.63)
Wald $chi^2(15)$	43.21	85.24
Prob>chi^2	0.00	0.00

Robust standard errors are reported below the estimates in parenthesis. *, ** and *** are levels of significance at 10%, 5% and 1%, respectively.

Note: With Robust standard errors, Likelihood Ratio (LR) chi^2 is not given. However, LR chi^2 is reported for non robust standard errors. The LR $chi^2(15)$ for self-employment is41.33and the probability of the chi^2 was 0.00. For wage-employment, LR $chi^2(15)$ is31.09 with a probability of chi^2 being 0.00.

An additional increase in TLU will result in 8.95 increased in the number of working days on self-employmentand 0.43 days on wage-employment.This implies that individuals having more livestock will as well increase the number of days working on the wage-employment. This is contrary to the findings of Sanchez (2005) who found that owning more livestock reduces the number of days worked in non-farm wage employment and that ownership of livestock is not important for wage-employment. In this study, ownership of livestock was captured as tropical livestock unit (TLU) which has become the standard practice in Africa (see for example, Al-Hassan et al. (1997), Ramakrishna and Demeke (2002) and Senadza (2012).Ownership of livestock reduces the probability of participating in non-farm wage employment but is important in determining the number of days committed to non-farm self and wage employment. This is possible in the sense that most rural households do not practice the intensive system of keeping animals where they are confined and fed from time to time. The animals are allowed to roam freely, and sometimes children are the sole keepers. This means that an adult livestock keeper can still have enough time to engage in wage employment and can even work more. This also indicates that once the individual decides to participate in the self and wage labour market, the individual is likely to commit days to working.

Individuals who possess mobile phones tend toincrease their working days in either self or wage employment. The Rural Poverty Report (2011) indicated that improved communication and information systems, particularly the diffusion of mobile phone coverage in rural areas have played a role in stimulating the growth of the non-farm economy. Households that have access to electricity are more likely to work more days in self-employed enterprises than those not having

access to electricity. Enterprises that have electricity are better able to work in the evening as compared to those not having electricity.

4.6 Summary

Majority of women (about 73%) are engaged in non-farm enterprises in rural Ghana. This figure is close to the 72 percent indicated in the GLSS 5 report. Households in the Savannah zone had less access to electricity compared to the Forest and Coastal zones.Results from the probit regression model showed that individual characteristics such as the gender of the individual, being head of a household, being the spouse of a household head, having formal education, age of the individual, having access to credit, possessing a mobile phone, per capita landing holding and ownership of livestock influenced the participation of individuals in self-and wage-employment. However, females are more likely to participate in non-farm self-employment and less likely to participate in wage-employment.In addition, individuals who owned less livestock were more likely to engage in non-farm wage-employment. Individuals with more landholding are less likely to participate in non-farm self or wage employment. This finding supports the argument in the literature that individuals and household may set up non-farm enterprises because they do not have access to land for agriculture.The study showed that being a female increases the probability of participation in self-employment by 0.1262. Contrary, being female decreases the probability of participating in wage-employment by 0.0225. Being a household head increases the probability of participation in self-employment by 0.1902 and 0.0367 in wage-employment.

The study used a truncated regression to analyse the factors influencing the intensity (number of days) of participation in the non-farm sector. Results for the self-employment model showed that having access to mobile phones, owning more livestockand electricity are important in determining the number of days worked on self-employed enterprises. For wage-employment, being a household head, spouse of household head, having access to mobile phone and owning more livestock increased the number of days working on wage-employment.

CHAPTER FIVE

EXAMINING THE EFFECTS OF FIRM-SPECIFIC AND NON-FIRM FACTORS ON ENTERPRISE FINANCIAL PERFORMANCE

5.1 Introduction

This chapter discusses the effects of firm-specific and non-firm factors on the financial performance of micro and small enterprises in Ghana from the perspective of the resource-based view. Ordinary Least Squares (OLS) was used in estimating the determinants of non-farm enterprise (see equation 3.3). Quantile regression was used in estimating the factors affecting the variation in enterprise financial performance (see equation 3.4).

5.2 Non-farm Micro and Small Enterprises in Ghana

Micro and small enterprises in the non-farm sector were classified into four industries for the purpose of this study using the International Standards Industrial Classification (ISIC) Rev. 3.1. These industries include manufacturing, trade (whole and retail), restaurants and services. These were distinct categories and had enough observations for analytical purposes. The various industries were analysed according to ecological zones. The results indicate that a larger number of the enterprises are in the trade industry (53.2% in the Savannah zone, 49.4% in the Forest zone and 41.7% in the Coastal zone). The Coastal zone has more enterprises (30%) in the service industry as compared to the Savannah (16.2%) and Forest (22.8) zones. The savannah zone had more enterprises in the manufacturing industry (25.2%) as compared to the Forest (23.0%) and the Coastal (24.0) zones. With respect to specific activities or businesses within each industry, one will find out that the Savannah zone leads in terms of wholesale of agricultural raw materials

and live animals. The Savannah zone is grassland and is conducive for livestock production. Table 5.1 shows the industry composition of the non-farm sector by ecological zone.

Table 5.1: Industry composition of the non-farm by Ecological zone

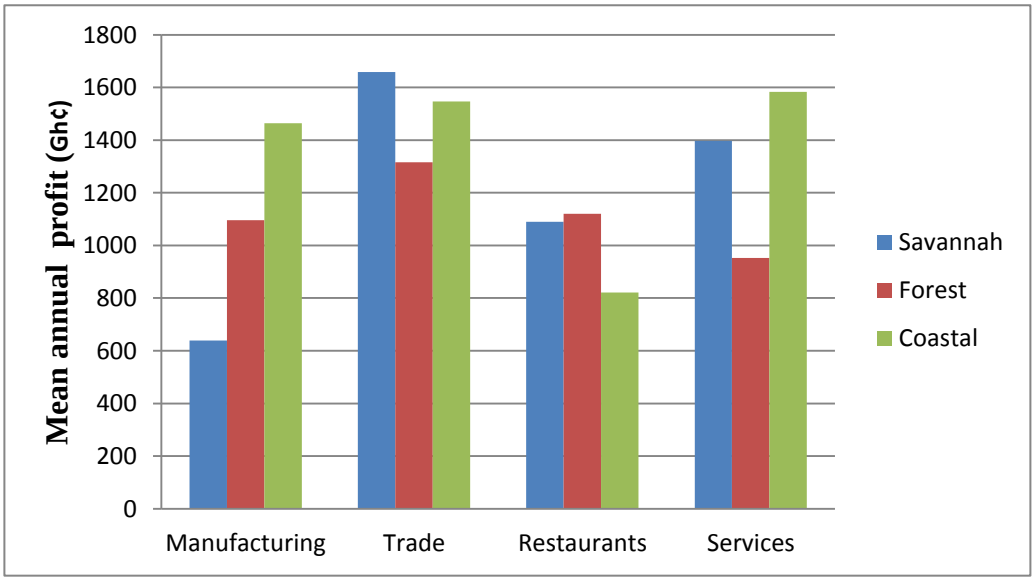
Industry	Savannah	Forest	Coastal
Manufacturing			
1. Manufacture of food products and beverages	8.3	4.5	2.8
2. Manufacture of wearing apparels, foot wear, dressing etc.	2.9	5.6	4.8
3. Manufacture of structural metal products, fabricated products	4.7	3.8	6.0
4. Manufacture of metals, non-metallic products, plastics etc.	3.6	4.8	5.5
5. Other manufacturing.	5.7	4.3	4.8
Sub-total (%)	**25.2**	**23.0**	**24.0**
Trade (wholesale and retail)			
1. Retail via stalls and markets	3.3	6.6	3.3
2. Retail in specialized and non-specialised stores	6.5	4.5	4.0
3. Retail sale of textiles, clothing, footwear and leather goods.	5.5	4.1	5.1
4. Maintenance and repair of motor vehicles, cycles, accessories	3.6	7.2	2.3
5. Retail of household appliances, articles, equipments, paints etc.	2.8	5.2	5.4
6. Pharmaceuticals, medical goods, cosmetics toilet etc	3.6	4.8	5.5
7. Wholesale of food, beverages and tobacco	3.4	6.5	3.3
8. Wholesale of agric raw materials and live animals.	16.3	2.2	0.7
9. Retail of sale of second hand goods in stores	1.2	4.8	7.0
10. Other wholesale and retail	6.8	3.6	5.0
Sub-total (%)	**53.2**	**49.4**	**41.7**
Hotels and restaurants			
1. Restaurants, bars and canteens etc.	5.4	4.8	4.3
Sub-total (%)	**5.4**	**4.8**	**4.3**
Services			
1. Passenger road transport and other transport.	3.1	3.1	8.0
2. Hair dressing and beauty treatment.	2.7	5.6	5.0
3. Masonry, carpentry, plumber, painting, electricians.	2.7	3.4	7.9
4. Rental services, teaching, entertainment	2.2	6.5	4.2
5. Other services	5.6	4.3	4.9
Sub-total (%)	**16.2**	**22.8**	**30.0**
Grand total (%)	**100**	**100**	**100**

Source: Author's analysis from EGC/ISSER data, 2010

5.3 Profitability Analysis by Ecological Zones

The Coastal zone leads in terms of profit in the manufacturing and services sectors. The Savannah zone leads the others in the trade sector, while the Forest zone leads in the restaurants sector. The trade sector was generally the most profitable enterprise, followed by the service sector with the restaurant sector. In terms of profitability across the zones, the Coastal zone was the most profitable location followed by the Savannah zone. Refer to figure 5.1

Figure 5.1: Mean Profit by Industry and Ecological Zone

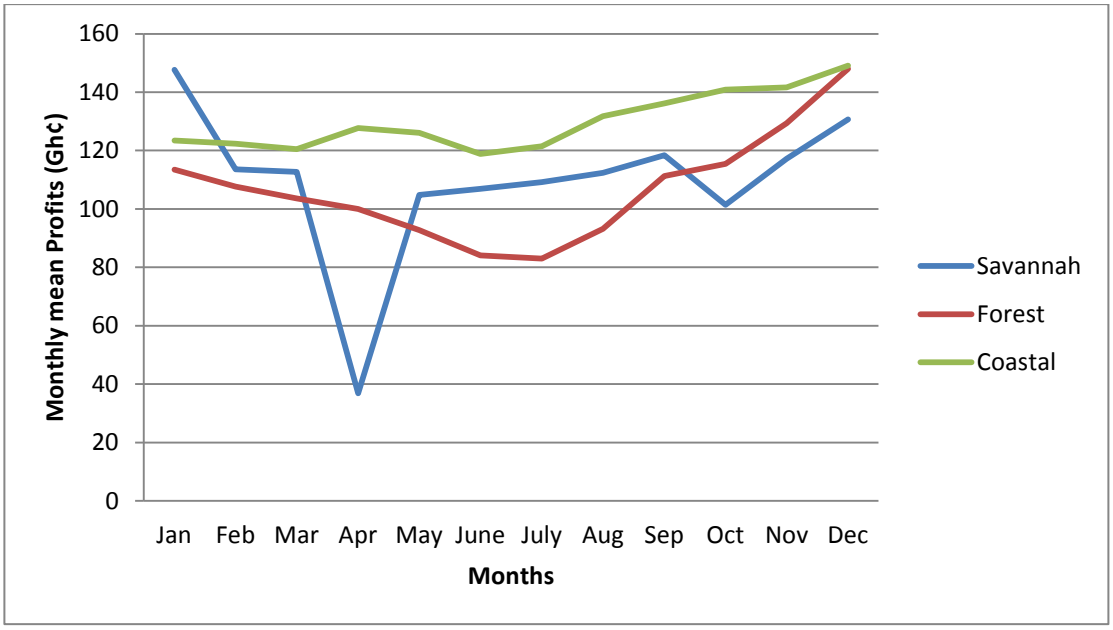


Source: Author's analysis from EGC/ISSER data, 2010

Monthly profits levels were analysed across ecological zones (see figure 5.2). Generally, profits are higher across the three zones from October to December. The Coastal zone was the most profitable location and maintained relatively stable profit levels throughout the year. During the early part of the year (January and February), the Savannah zone had higher profits than the rest but the profits declined sharply around April. The month of April is usually the planting time in

Northern Ghana and is the beginning of the rainy season. It is possible that with the onset of the rains, enterprise owners turn their attention to agriculture. Business picks up sharply around May and profits begin to increase. Getting to the end of the rainy season in the Savannah zone, usually around October, profits begin to fall and then picks up from November in the dry season. There seems to be a decline in profits around June-July in the Coastal zone.

Figure 5.2: Monthly Profits by Ecological Zone



Source: Author's analysis from EGC/ISSER data, 2010

Two methods were used to estimate the enterprise profits; in the first method, profit was estimated based on average sales and costs in low, average and high months throughout the year. In the second method, profit was estimated based on detailed estimation of revenues and expenses for a year. The results from the two were generally consistent. Three variables (male, urban and restaurants) had the expected signs and were significant across the two OLS models.

Refer to appendix 3 for details on how profit was estimated through reported sales and costs in high, average and low months.

In comparing the results of the two, where a variable was significant in one method, it had the same sign in the other except for the assets variable, which was positive and significant in the estimated profit based on reported sales and costs method and negative but not significant in the other method. This means that one could focus on one method without losing much since the results from the OLS for both methods generally agree with each other. However, the coefficients for the estimated profit based on the detailed accounting of revenues and expenses (appendix 2) were relatively large as compared to that of the estimated profit based reported sales and costs. Also, the R-square for the detailed accounting method was very low (0.03) as compared to the estimated profit based reported sales and costs (0.12). Many variables (11) were significant in the estimated profit based on average sales and costs model as compared to six in the other. None of the entrepreneurial characteristics was significant across the quantile regression in the case of the accounting profit estimation method, even though the male variable was positive and significant in the OLS model.

Although the study focused on estimated profit based on average sales in high, medium and low months, it is expedient to also present the results from both the quantile regression and OLS models from the detailed accounting of expenses and revenues to serve as a basis for comparison. With the detailed accounting method, about 40 percentof enterprise operators made negative profits as compared to only 5 percent in the case of the estimated average reported sales and costs. Daniels (2001) notes that although some enterprises do operate with negative profits in

the short run, a high proportion of cases with negative profits may suggest that the profit measures used in the analysis were not accurate. Vijverberg and Mead (2000) found that the proportion of enterprises with negative profits ranged from 14 percent in Vietnam to 64 percent in Ghana. A similar study in Kenya showed that one third of all small enterprises made negative profits (Daniels, 1995). These reasons, among others, restricted focusedanalysis on the estimated average profit based on reported sales and costs. The means and standard deviations of the variables used in this study are described in Table 5.2.

Table 5.2: Mean and Standard Deviations of the Variables used in the Analysis

Variable	Description	Observations	Mean	Std. Dev.
Dependent variable				
profits	Annual profits (Gh¢)	1887	1306.42	3204.74
Explanatory variables				
Entrepreneurial resources				
male	Gender of the enterprise owner; 1=male, 0=otherwise	1887	0.28	0.45
age	Age of the enterprise owner (years)	1887	42.37	13.18
agesquared	Square of the enterprise owner's age	1887	1969.04	1261.74
noeducation	Enterprise owner had no formal education (1=yes, 0 =otherwise)	1887	0.19	0.39
technical	Enterprise owner ever being to technical school (1=yes, 0=otherwise)	1887	0.03	0.17
tertiary	Enterprise owner ever being to tertiary school (1=yes, 0=otherwise)	1887	0.02	0.14
Enterprise resources				
age_enterprise	Age of the enterprise (number of years of operation)	1718	9.16	8.58
age_enterprise2	Age of the enterprise (number of years of operation) squared	1718	157.62	324.95
monthsoperated	Number of months enterprise operated in the last 12 months	1887	11.28	2.02
credit	Enterprise had access to credit (1=yes, 0=otherwise)	1775	0.12	0.32
assets	Value of enterprise assets (Ghana Cedi)	1887	480.63	1822.28
registered	Enterprise formally registered (1=yes, 0=otherwise)	1750	0.13	0.34
apprentices	Number of apprentices	1887	0.11	0.62
casuallabour	Number of casual workers	1887	0.19	0.73
hiredlabour	Number of paid workers	1887	0.69	0.97
householdlabour	Enterprise used household employees (1=yes, 0=otherwise)	1887	0.06	0.24
Sector				
manufacturing	Food products, beverages, apparel, footwear (1=manufacturing, 0=otherwise)	1873	0.26	0.44
trade	Whole trade and retail sub-sectors (1=trade, 0=otherwise)	1876	0.56	0.50
restaurants	restaurants, bars and canteens (1=restaurants, 0=otherwise)	1873	0.10	0.29
services	Road transport, hair dressing, carpentry, masonry (1=services,0=otherwise)	1886	0.10	0.30
Location/Geographical characteristics				
urban	Enterprise location (1=urban, 0=otherwise)	1887	0.49	0.50
savannah	Geographical location of enterprise (1=Savannah zone, 0=otherwise)	1887	0.24	0.43
forest	Geographical location of enterprise (1=Forest zone, 0=otherwise)	1887	0.46	0.50
coastal	Geographical location of enterprise (1=Coastal zone, 0=otherwise)	1887	0.30	0.40

5.4 Results from the Ordinary Least Squares (OLS) and Quantile Regressions

Results from the OLS and quantile regressions are presented in Table 5.3. These results are from calculated profit based on high, medium and low months. The results for the detailed accounting method are presented in appendix 2.One obvious concern with this type of analysis is the potential endogeneity of certain explanatory variables. For example, some key organizational resources such as credit, capital stock, and labour are potentially endogenous to the enterprise production/profit function, due to jointness of production and consumption decisions within the household (Sadoulet and de Janvry, 1995; Strauss and Thomas, 1995). Masakure et al. (2008) argue that the number of months a firm operates may also be endogenous to the sector.

One way to solve the problem of endogeneity is to use instrumental variables, but unfortunately the data used for this study do not provide valid instruments. Identifying good instruments is a difficult problem (Strauss and Thomas, 1995). Masakure et al. (2008) argue that in the case of labour, in the short run at least, hired labour, family labour, and apprentices are tied to the enterprise as a quasi-fixed input. Checks were done to ensure that there was no problem of multicollinearity. One way of checking for multicollinearity is the use of variance inflation factor (VIF). This is done and the results indicate that there was no problem of multicollinearity. All the VIF values (see appendix 11) were less than 10 and according to Kutner et al., (2004), there is no basis to suspect the presence of multicollinearity.

An F-test of the joint significance of the OLS regression coefficients suggested that the OLS model carries significant explanatory power. The R^2 in the OLS model is low, but this is common with cross sectional data. The Pseudo R^2s in the quantile models seemed low, but these

are not unusual with cross sectional data (see e.g Masakure et al., 2008). The Pseudo R^2 for the quantile models ranges from 0.01 in the 0.1 quantile to 0.18 in the 0.9 quantile. All the variables that are significant in the OLS model are also significant in QR models in at least two quantiles. Notable variables that are significant in the OLS and also significant across all the quantiles include gender of the enterprise owner (male) and the number of hired labour. Urban variable is significant in all quantiles except the 0.1 quantile.

Table 5.3: OLS and Quantile (main model) Regression Estimates of Micro and Small Enterprise Performance

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)	(6.00)	(6.96)	(9.04)	(12.61)	(15.30)	(26.54)	(37.89)
Ageasquare	-0.377*	0.03	0.06	0.09	-0.129*	-0.239***	-0.207*	0.19	0.01	0.51
	(0.23)	(0.06)	(0.05)	(0.06)	(0.07)	(0.09)	(0.12)	(0.16)	(0.25)	(0.34)
Noeducation	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)	(0.09)	(0.14)	(0.19)	(0.21)	(0.23)	(0.26)	(0.38)	(0.66)
Monthsoperated	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)
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)

Casuallabour	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)
Hiredlabour	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)
Householdlabour	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)
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)	(69.60)	(73.63)	(78.28)	(98.52)	(137.80)	(173.40)	(249.70)	(460.60)
Constant	-1,233*	-137.20	-216.0*	-264.6*	-486.4**	-865.0***	-773.3**	-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
F-statatistics	4.84***									
R sq (Pseudo)	0.12	0.01	0.03	0.04	0.06	0.08	0.10	0.11	0.12	0.18
Entrepreneurial resource	7.97***									
Enterprise resource	3.07***									
Entrepreneurial and enterprise	4.84***									
Sector characteristics	5.47***									
Joint F-test of location effects	5.49***									

Note: Standard errors are reported below the estimates in parenthesis. OLS was estimated using robust standard errors whiles standard errors for quantiles are bootstrapped based on 1000 replications.

5.5 Effects of Entrepreneurial Resources on Profits

A joint F-test for the significance of the entrepreneur's resources suggests that they are important determinants of enterprise profits, at the one percent level (see Table 5.3 for the joint F-test statistics). The coefficient for the male variable was positive and significant in the OLS and QR models. This suggests that male-owned enterprises have significantly higher profits relative to those enterprises owned by females. This finding supports previous studies by Akoten et al.(2006), Daniels and Mead (1998), Masakure et al.(2008), and Sabarwal and Terrell (2008). The dichotomous variable for male becomes more positive with movement from the lower quantile to higher quantile, thus suggesting a larger gap in profits between enterprises owned by males as compared to those owned by females. The coefficient for the male variable (in the OLS) which is 964.4 indicates that male enterprise operators made GH₵ 964.4 per annum more than female enterprise operators. The OLS results further showed that one additional year increase in the enterprise years of operation will increase annual profit by GH₵ 57.3. Enterprise operators located in urban areas made GH₵ 562.6more than those located in rural areas. The trade industry was the most profitable as compared to the manufacturing, services and restaurants industries. Enterprise operators in the trade industry made GH₵ 903.6 more than those in manufacturing, restaurants and services industries.

The age of the entrepreneur was not significant in the OLS but it was positive and significant at the 0.5 quantile. It became negative and significant at the 0.9 quantile. It is an indication that age is important for enterprises whose profits are around the middle of the quantile and may not be relevant for those at the higher decile. The mean annual profit was Gh₵1306, which is around the 0.5 quantile, indicating that age is important when operating around the mean. Age was squared

to take care of the non-linearity of the influence of individual age on enterprise performance. Age squared was negative and significant in the OLS model and at the 0.4, 0.5 and 0.6 quantiles thus suggesting a nonlinear relationship of age and enterprise performance. This may be a reflection of the notion that most enterprises are owned by their founders and there is a tendency for the entrepreneur to become less active and ambitious over time, which may result in less flexibility to adopting technology and change, which will affect firm performance (Daniels and Mead, 1998; Vijverberg, 1991). This study found that more than 70 percent of the enterprises are operated by one person (usually the owner). On the level of education, having formal education per se does not increase profitability of enterprises. Technical education was positive and significant from the 0.2 to 0.5 quantiles but not significant with the OLS model. Enterprises within this range are the manufacturing and the service subsectors. Technical education may be more important for these subsectors due to the nature of the jobs. Previous studies suggest that the returns to education remain low until after junior secondary school (GSS, 2002). This is an indication that an entrepreneur attaining technical education will tend to have more profits as compared to those who never had technical education.

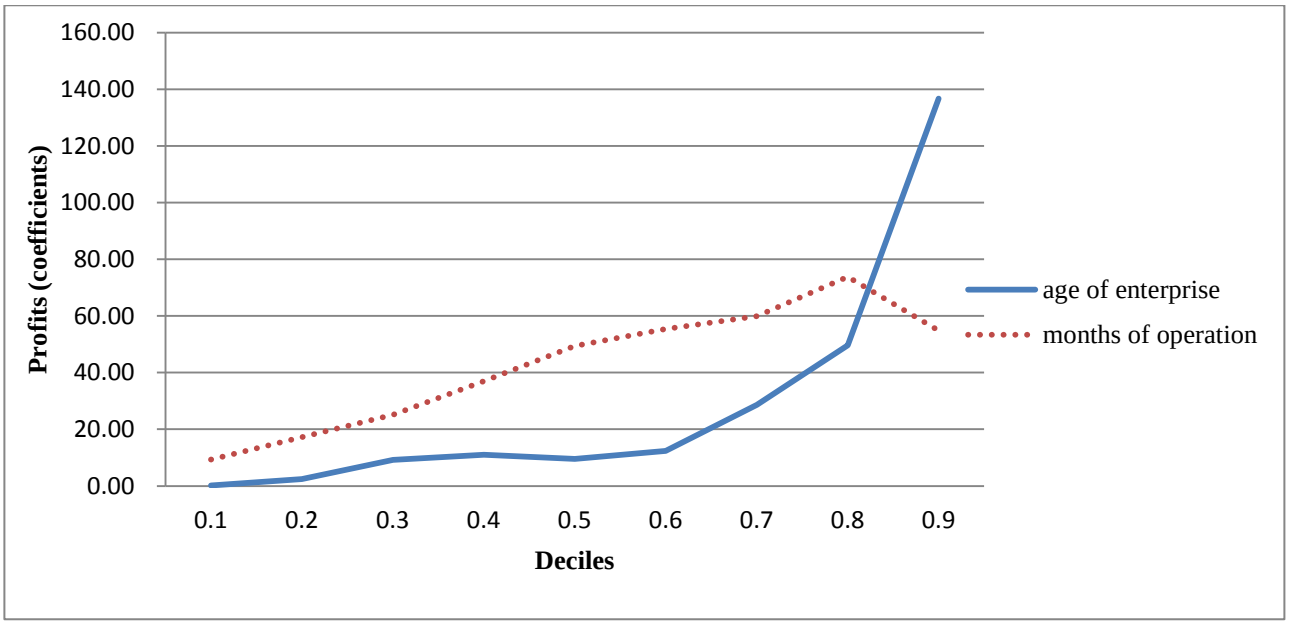
5.6 Effects of Enterprise Resources on Enterprise Profits

A joint F-test for the significance of the organisational resources suggests that they are important determinants of enterprise profits, at the one percent level. Age of enterprise was positive and significant with the OLS and QR (0.3, 0.7, 0.8 and 0.9) quantiles. The results showed that enterprises that had operated for longer years had more profits as compared to those operating for shorter years. This was expected because enterprises operating for longer years may be able to cover investment costs and are able to make the necessary adjustments to continue to stay in

business. Also, entrepreneurs invest in enterprises hoping to reap benefits in the future. Enterprises that operate longer in the market are able to build social capital, networks and trust, which may enhance their ability to perform better. It is expected that a higher level of social capital and trust among operators positively influences enterprise performance (Fafchamps, 2003; Fafchamps and Gabre-Madhin, 2001). However, the variable "years operated squared" was negative and significant in the OLS and QR (at 0.8 and 0.9) quantiles, suggesting a non-linear influence of enterprise years on enterprise performance and implying that enterprises profits will begin to fall with age beyond some point.

The number of months enterprises had operated was positive but not significant in the OLS model. About 80 percent of all enterprises had operated throughout the 12 months period prior to the survey.However, the number of months the enterprise had operated was positive and significant starting at the 0.2 to 0.8 quantiles. The coefficients of the months operated become larger with movement from the lower quantile to higher quantiles. This shows that the returns to months of operation depend on where the enterprise falls in the profit distribution. This is similar to the findings of Masakure et al. (2008). The coefficients for the number of years the enterprise had operated increase with movement from lower quantiles to higher quantiles (see Figure 5.3). The coefficients for the number of months of operations were higher as compared to the age of the enterprise but began to fall at the higher quantile (0.9). Months of operation may not be relevant when seasonality of the enterprise is considered. There are some months of the year when enterprises are very active, while at certain times, business is very slow. For example, in the Savannah zone, non-farm enterprises are usually active in the off seasons (November to March).

Figure 5.3: Distribution of Profits by Deciles and by Age of Enterprise and Months of Operation



Source: Author's analysis from EGC/ISSER data, 2010

Enterprise operators relied heavily on household savings to finance their enterprises. About 70% of the enterprise operators relied on household savings to finance their businesses as compared to about 60 percent of non-farm operators according to the GLSS 5 report. Less than 5% of enterprise operators attempted getting credit from the bank and 2.3 percent had credit from the bank as compared to 1.3 percent of those who had credit from the bank as reported by GLSS 5 report. The figures reported by the GLSS 5 report of 2008, however, are for all non-farm enterprises (including medium and large ones),whilst this study is restricted to only micro and small enterprises. The relatively low percentage of enterprise operators who obtained credit from banks may be a reflection that micro and small enterprises are generally excluded from formal financial institutions. Other micro and small enterprise owners in the study had relied on friends, relatives and other forms of assistance as means of financing their businesses. The value of

assets of enterprises had a positive and significant effect on enterprise profits in the OLS and QR, as expected. This suggests that enterprise assets are important in determining enterprise profitability.

Registration of enterprises is found to have an effect on enterprise performance. A number of studies, including Sleuwaegen and Goedhuys (2002) and Deininger et al. (2007), found that formalized microenterprises grow faster than those that are informal. Registered enterprises gain credibility with licensing and taxation and enhanced access to rationed resources, thus contributing to improved performance (Sleuwaegen & Goedhuys, 2002). This study found that only 18 percent of those who registered their enterprises had access to credit. This may seem low but considering the general situation in which about 12 percent of all the enterprises had access to credit, this figure may be appreciable. Formal registration status of enterprises was positive but not significant in the OLS. However, it was negative and significant at the 0.3 and 0.4 quantiles which implies that registration is not relevant for enterprises at the lower quantile (that is enterprises performing poorly). Those at the micro level performing poorly do not consider registration as important, given the low level of capitalisation. The variable for registration became positive and significant at the 0.8 quantile, implying registration is important for better performing enterprises at the higher quantile.

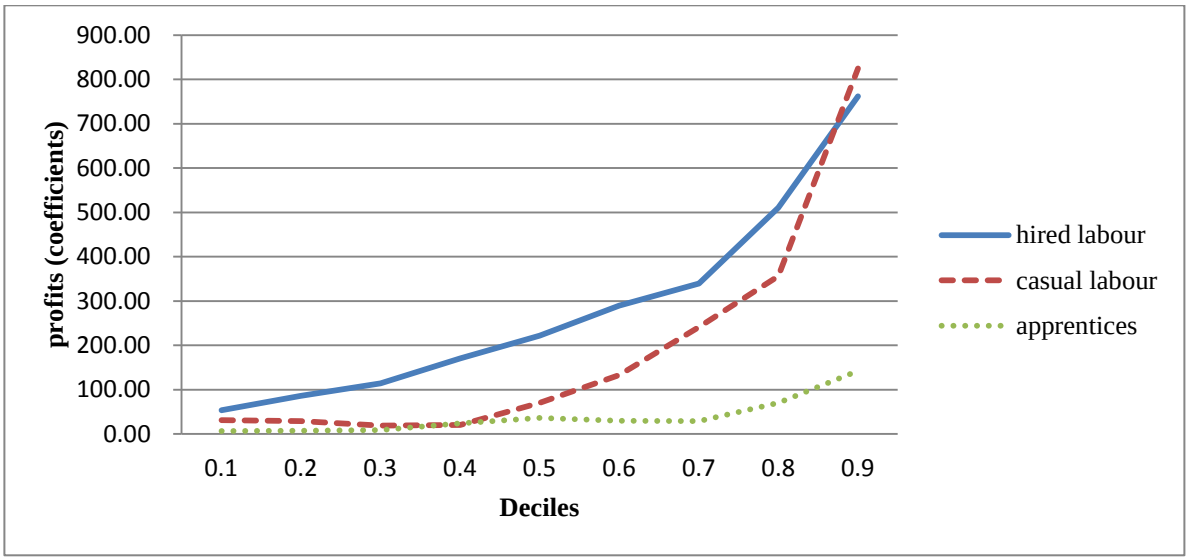
Micro and small enterprises are found to be labour intensive probably due to the type of enterprises and the scale of business. The study revealed that the majority (65%) used hired labour while 10% used casual labour. Family labour was the least patronised (6%). Most micro and small enterprises use a mixture of unpaid family members, hired workers and apprentices as

labour force (Frazer, 2006). This study captured the effects of labour on enterprise performance by including the number of apprentices, the number of casual workers and the number of hired workers. The study also included a dummy variable which takes on the value one for those enterprises using family labour and zero for those not using them.

The use of casual labour and hired labour were found to have a positive and significant effect on enterprise profits in the OLS and QR models. Using hired labour has a positive effect on financial performance, and this is consistent with the findings of Masakure et al. (2009) in analysing the performance of microenterprises in Ghana. Daniels and Mead (1998) found that hired labour is generally more skilled, experienced and productive in microenterprises in Kenya. Fafchamps and Minten (2002) found similar results in studying agricultural traders in Madagascar. The effect of using casual labour was however, not as strong as that of using hired labour. This may be due to the fact that the majority of enterprises used hired labour and only relied on casual labour when necessary. Evidence suggest that hired labour tends to be more productive, reflecting higher levels of skills and experience (Frazer, 2006). The hired labour variable was positive and significant in all the quantiles thus suggesting the importance of hired labour in better or worse performing enterprises. Nichter and Goldmark (2009) found that a dominant characteristic of micro and small enterprises is high rates of labour intensity, suggesting that the ability to access a low cost supply of labour with the required skills is a key factor influencing enterprise performance. The coefficientson the hired labour variable are positive and increase with movement from the low to high quantiles (see figure 5.3). This could mean that better performing enterprises have more productive workers who may be committed because they are fully employed and have job security. It is also possible that these hired workers

have high skills and experience, which enhances the enterprise performance. The profit coefficients for hired labour, casual and apprentice workers increases with movement from lower to higher quantiles but that for apprentices increases slowly as compared to hired and casual labour.

Figure 5.4: Distribution of Profits by Deciles according to Type of Labour.



Source: Author's analysis from EGC/ISSER data, 2010

5.7 The Effects of Location and Industry Structure on Enterprise Profits

Location and industry structure capture effects of location and sector variables on enterprise performance. A joint F-test for the significance of the location and industry structure variables suggests that they are important determinants of enterprise profits, at the one percent level. Dummy variables were included to capture location and industry effects. Three dummy variables were included and intended as controls for geographical location (zones) of enterprises. Coastal, Savannah and Forest zones were all assigned dummy variables. Dummy variables were also assigned to manufacturing, trade, restaurants and service sectors and were used to capture

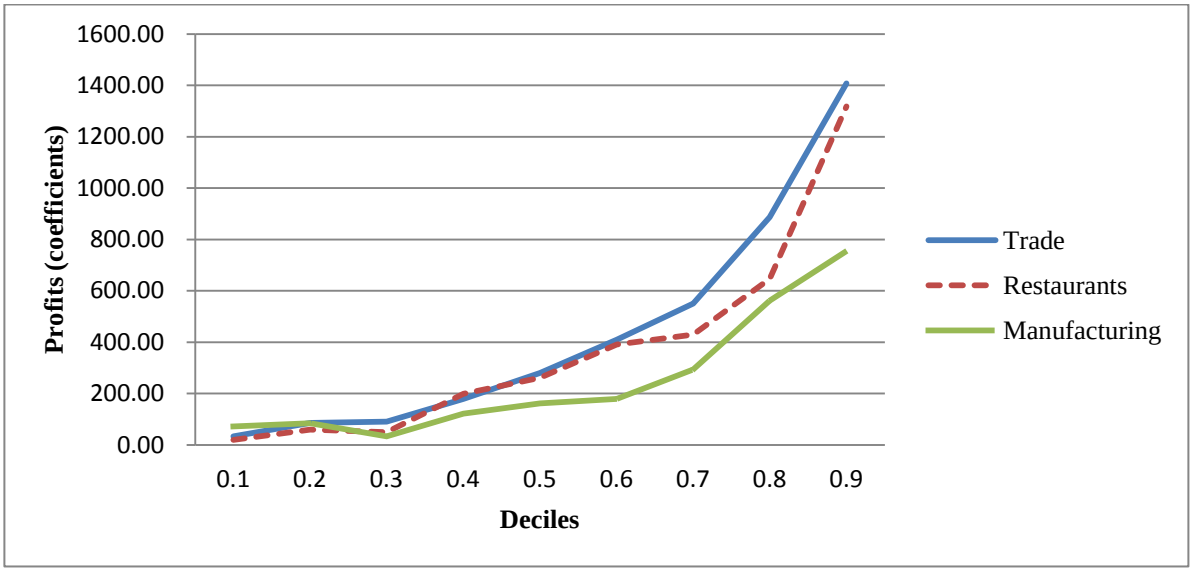
the sector specific effects on enterprise performance. Sector variables have been observed to influence micro and small enterprise performance (Daniels and Mead, 1998; Fafchamps and Gabre-Madhin, 2001). For example, sector characteristics and the related institutional environment can moderate how readily firm-specific resources are able to be employed in meeting enterprise objectives. Enterprises across sectors may face differing product demands and encounter distinct cost structures, resulting in differential effects on enterprise performance (Liedholm & Mead, 1998; Nissanke & Aryeetey, 2006; Steel & Andah, 2004). Savannah and Forest zones variables were not significant in the OLS models but negative and significant in some of the quantiles. The reference zone for these location variables was the Coastal zone. Savannah and Forest zone dummies being negative and significant suggest that enterprises in these zones performed poorly as compared to those in the Coastal zone. It is worth mentioning that the capital city (Accra) and harbour city (Tema) are within the coastal zone and these have significant access to modern technology, resources and infrastructure, which may explain why enterprises located within this zone performed better as compared to the northern and forest zones.

There were other dummy variables intended to capture the effects of the physical location of enterprises in either urban or rural areas. The variable for urban was positive and significant in the OLS and QR models (except at the 0.1 quantile). This suggests that enterprises found in the urban areas performed better than those in rural areas. The coefficients of the urban variable become more positive with movement from lower quantile to higher quantile implying that there is a larger gap in profits between urban and rural enterprises. Micro and small enterprises in urban areas tend also to have better and less costly access to inputs, larger and more dynamic

markets, opportunities for networking with larger firms and within fellow micro and small enterprises, and a greater pool of information, all of which are critical to enterprise performance (Fafchamps & Minten, 2002; Shields, 2005; Sleuwaegen &Goedhuys, 2002).

It is worth noting that in the OLS model, all the sector variables were significant, but in the case of the quantile model, they became significant beginning from the 0.4 quantile. This indicates that at the very lower quantile (lower profits level) there is no difference in terms of profits among all the subsectors. Also, the significance differs among the quantiles thus justifying the use of the quantile regression model. All the sector variables were dichotomous. The trade, restaurants and manufacturing subsectors were all more profitable as compared to the service subsector, which was the reference sector. The dichotomous variable for enterprises in the trade subsector is positive and significant only after the 0.4 quantile, and the coefficients become more positive with movement from lower to higher quantiles, implying a positive and larger gap in profits between enterprises in the trade subsector and enterprises in the service subsector. This is shown in figure 5.5 where the quantile coefficients are plotted for the various subsectors. The coefficients for the manufacturing and restaurants subsectors were positive and significant at the 0.4 quantile and became more positive with movement from lower to higher, quantiles suggesting the gap in terms of profits becomes larger between these subsectors and the service subsector.

Figure 5.5: Distribution of Profits in Deciles by Industry



Source: Author's analysis from EGC/ISSER data, 2010

To check the robustness of the results, quantile regressions were carried out on subsamples differentiating by sector of the enterprise, gender and location of enterprises. In the manufacturing subsector, the OLS and quantile regression results (see Table 5.4) indicate that male enterprise owners had higher profits as compared to that of females. This is similar to the finding in the main OLS and quantile models (Table 5.3). With the enterprise resources, three variables (assets, urban location and hired labour) were positive and significant. These are similar to the main model. The higher the value of assets owned by enterprises, the higher the profits. Enterprises located in the urban centers had higher profits, and enterprises using hired labour were more profitable. However, using household labour reduces enterprise profits, but this is not strong giving the fact that it was not significant in the quantile model. On location factors, the results suggest that enterprises located in the Savannah and Forest zones perform poorly as compared to better performing enterprises in the Coastal zone.

The results from the regressions in the trade subsector (see Table 5.5) showed that male enterprises owners had more profits as compared to those of females. The profit coefficients increased with movement from lower to higher quantile, emphasizing that the gap in terms of profits is large. These are similar to the results in the full model. The coefficients are larger when compared to that of the manufacturing subsector, again emphasizing the point that the profit margins are larger in the trade subsector. Enterprise age was positive and significant in the OLS and from the 0.4 quantile. Confirming that the number of years an enterprise had operated is important, especially for enterprises performing better (at the higher quantiles). The number of months the enterprise had operated during the year was relevant for enterprises around the middle quantile.

Accumulation of capital (assets) was positive and significant, just as in the full model. Enterprises in urban locations are more profitable, and hired labour is important for enterprises. Enterprises in the Savannah zone performed better than those in the Coastal zone. This is contrary to the results in the main model (Table 5.3). However, enterprises in the Forest zone performed worse as compared to those in the Coastal zone, and this is consistent with the results from the full model. The F-statistic for enterprises in the restaurants and service subsectors were not significant. This may be due to the smaller sample size, as a majority of the enterprises in this survey were concentrated in the trade and manufacturing subsectors. Although not significant, the results are presented in appendix 6 and 7 respectively. The results were not discussed because of the non-significance of the F-statistics.

Table 5.4: OLS and Quantile Regression of Enterprise Performance in the Manufacturing Subsector

Variables	OLS	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
Entrepreneurial resource										
Male	370.1**	-12.58	96.93	74.14	118.10	263.5**	355.4***	490.3***	630.1***	629.90
	(187.00)	(62.27)	(61.15)	(66.50)	(83.61)	(103.60)	(130.90)	(178.80)	(233.90)	(442.70)
Age	31.43	-1.63	2.36	9.75	16.62	21.80	23.61	29.84	24.06	62.20
	(28.99)	(10.21)	(9.89)	(9.86)	(11.41)	(13.49)	(18.40)	(23.47)	(31.64)	(58.60)
Ageasquare	-0.43	-0.00	-0.03	-0.11	-0.17	-0.22	-0.24	-0.31	-0.26	-0.67
	(0.28)	(0.10)	(0.09)	(0.09)	(0.11)	(0.13)	(0.18)	(0.23)	(0.30)	(0.53)
Noeducation	398.80	86.63	24.52	27.48	20.64	48.45	70.52	21.21	-42.19	-86.41
	(324.80)	(53.66)	(45.85)	(52.98)	(67.34)	(77.92)	(105.40)	(137.00)	(210.30)	(339.50)
Technical	23.34	226.70	161.00	88.67	20.54	-93.57	-60.90	-405.50	-755.80	-1145.00
	(405.80)	(252.00)	(192.90)	(192.10)	(242.70)	(273.00)	(330.10)	(500.90)	(770.30)	(1165.00)
Tertiary	-612.30	-4,838**	-16.52	-14.97	-78.58	37.33	86.76	715.80	-90.07	-206.30
	(764.70)	(2438.00)	(2027.00)	(1221.00)	(759.40)	(690.30)	(827.40)	(513.10)	(521.40)	(726.70)
Enterprise resource										
age_enterprise	18.70	2.05	-0.04	-1.89	-3.09	-8.70	-15.26	-20.20	-9.42	-0.69
	(26.26)	(7.27)	(6.39)	(7.39)	(8.68)	(9.86)	(12.66)	(15.42)	(21.86)	(39.20)
age_enterprise2	-0.20	-0.03	-0.00	0.04	0.06	0.16	0.29	0.40	0.10	-0.15
	(0.46)	(0.17)	(0.15)	(0.17)	(0.19)	(0.21)	(0.26)	(0.32)	(0.43)	(0.74)
Monthsoperations	16.94	10.39	10.82	4.34	4.84	5.54	13.19	15.14	25.72	26.59
	(58.04)	(7.54)	(9.69)	(10.83)	(11.67)	(13.11)	(15.69)	(18.15)	(35.02)	(158.30)
Credit	408.70	-221.90	7.48	23.49	-0.28	88.83	151.60	143.90	73.14	341.20
	(461.80)	(192.20)	(131.30)	(109.50)	(132.50)	(144.60)	(183.50)	(227.90)	(374.20)	(628.20)
Assets	0.0934**	0.04	0.09	0.12	0.11	0.174**	0.153*	0.13	0.10	0.02
	(0.05)	(0.15)	(0.09)	(0.07)	(0.07)	(0.08)	(0.09)	(0.09)	(0.15)	(0.24)
Registered	-4.30	45.26	-42.01	-56.02	-31.67	-39.50	57.22	184.10	379.30	1020.00
	(379.70)	(405.20)	(135.30)	(117.70)	(174.80)	(259.00)	(316.60)	(415.00)	(688.30)	(1036.00)
Apprentices	-70.88	0.94	-1.58	-8.84	-18.57	-0.68	-20.42	-23.66	-51.36	-130.10

	(102.70)	(229.10)	(83.60)	(51.32)	(48.42)	(54.87)	(59.38)	(71.32)	(94.71)	(138.20)
Casuallabour	544.50	-98.37	-87.14	-64.01	55.28	138.90	195.60	264.30	251.10	358.10
	(483.80)	(123.60)	(98.26)	(102.90)	(117.50)	(126.60)	(140.50)	(275.30)	(849.60)	(1831.00)
Hirelabour	173.40	107.9**	118.5***	146.7***	134.6***	121.1*	193.8**	314.1***	338.1***	700.8**
	(113.40)	(53.15)	(44.88)	(36.79)	(46.57)	(65.88)	(86.97)	(93.87)	(114.80)	(294.30)
Householdlabour	-497.1*	-73.65	-66.11	-59.58	-112.40	-12.56	-103.90	-265.90	-384.90	-351.90
	(278.80)	(409.40)	(214.40)	(162.40)	(168.80)	(166.50)	(179.60)	(287.80)	(466.20)	(760.00)
Location factors										
Urban	634.2*	18.51	29.95	58.42	156.00	319.8***	348.4**	444.2**	572.8**	477.80
	(334.50)	(50.55)	(59.83)	(69.95)	(99.31)	(118.60)	(155.50)	(194.50)	(259.20)	(530.10)
Savannah	-372.50	-70.08	-111.60	-192.3**	-227.9**	-235.4*	-385.1**	-474.1*	-949.7***	-1,576**
	(365.70)	(116.90)	(69.03)	(77.32)	(95.66)	(136.00)	(178.10)	(252.40)	(337.30)	(620.10)
Forest	-178.30	49.18	-31.88	-65.89	-67.94	-27.49	-201.70	-337.10	-786.3**	-1,060*
	(241.60)	(128.30)	(79.63)	(83.33)	(105.10)	(143.80)	(179.50)	(260.50)	(332.20)	(612.80)
Constant	-377.30	-13.36	-2.03	12.19	-75.88	-178.70	-62.51	-25.04	579.30	551.90
	(721.20)	(243.60)	(245.30)	(250.40)	(290.70)	(331.70)	(434.40)	(551.20)	(765.40)	(2153.00)
Observations	384.00	384.00	384.00	384.00	384.00	384.00	384.00	384.00	384.00	384.00
R-squared	0.15									
F	3.53									

Note: Standard errors are reported below the estimates in parenthesis. OLS was estimated using robust standard errors whiles standard errors for quantiles are bootstrapped based on 1000 replications. *, ** and *** are levels of significance at 10%, 5% and 1%, respectively.

Table 5.5: OLS and Quantile Regression of Enterprise Performance in the Trade Subsector

Variables	OLS	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
Entrepreneurial resources										
Male	1,501***	138.2*	243.3***	411.0***	543.3***	659.9***	785.5***	1,012***	1,529***	2,209**
	(352.30)	(79.47)	(88.67)	(90.53)	(116.30)	(149.30)	(219.40)	(303.30)	(565.10)	(919.60)
Age	37.42	1.12	10.64	13.11	12.94	4.66	3.19	9.59	-6.30	-43.08
	(35.13)	(13.64)	(7.49)	(9.27)	(11.06)	(13.61)	(16.36)	(23.01)	(34.91)	(45.49)
Ageasquare	-0.653*	(0.03)	-0.135*	-0.169*	(0.17)	(0.13)	(0.15)	(0.26)	(0.17)	0.16
	(0.36)	(0.16)	(0.08)	(0.10)	(0.11)	(0.13)	(0.16)	(0.23)	(0.34)	(0.43)
Noeducation	176.40	42.17	-47.53	-75.50	-93.64	-88.64	-121.90	-81.34	-158.20	-367.50
	(326.10)	(48.74)	(43.35)	(47.00)	(63.10)	(78.62)	(114.80)	(151.20)	(230.60)	(324.30)
Technical	759.7*	449.1**	465.0***	492.2**	434.0*	437.30	563.10	541.90	1,454*	543.80
	(419.20)	(194.00)	(163.40)	(205.00)	(240.30)	(286.50)	(401.20)	(666.30)	(793.10)	(1404.00)
Tertiary	-180.70	-827.40	-307.30	-398.40	-148.90	-263.20	1117.00	1357.00	283.10	772.90
	(799.00)	(547.40)	(512.60)	(511.70)	(731.40)	(911.80)	(985.00)	(920.20)	(1291.00)	(2173.00)
Enterprise resources										
age_enterprise	91.02***	5.23	8.49	15.85	22.97**	32.13***	41.29**	55.84**	117.1***	176.0***
	(31.97)	(25.64)	(11.35)	(9.82)	(11.50)	(11.97)	(17.59)	(22.21)	(40.57)	(61.38)
age_enterprise2	-1.735*	-0.20	-0.13	-0.12	-0.23	-0.37	-0.51	-0.78	-2.098*	-3.10
	(0.91)	(1.60)	(0.49)	(0.38)	(0.40)	(0.44)	(0.55)	(0.78)	(1.27)	(2.05)
Monthsoperations	36.50	24.01	17.54	33.90***	48.63***	76.92***	84.00***	105.4**	93.71	-14.01
	(94.39)	(25.49)	(14.95)	(9.30)	(13.00)	(16.50)	(23.88)	(41.63)	(77.21)	(230.20)
Credit	-296.10	61.36	-6.81	9.62	-15.14	-29.68	-43.23	-121.00	-188.10	-99.63
	(288.00)	(87.66)	(54.62)	(66.54)	(73.36)	(85.22)	(117.50)	(178.30)	(269.00)	(438.90)
Assets	0.18	-0.01	0.07	0.11	0.201***	0.197***	0.172*	0.15	0.36	0.58
	(0.11)	(0.16)	(0.08)	(0.07)	(0.06)	(0.06)	(0.09)	(0.18)	(0.40)	(0.70)
Registered	239.60	1.48	(47.93)	(123.90)	-175.9*	(142.20)	(112.40)	77.04	670.30	770.40
	(369.40)	(105.20)	(73.30)	(81.80)	(101.40)	(129.60)	(200.10)	(390.50)	(617.80)	(799.40)
Apprentices	175.50	162.20	146.20	127.90	214.10	151.80	488.60	338.70	22.29	347.60

	(199.40)	(1298.00)	(449.40)	(321.20)	(240.10)	(275.90)	(330.70)	(556.70)	(805.70)	(895.20)
Casuallabour	247.00	10.96	-6.76	-1.67	25.88	30.50	170.90	286.10	242.30	704.70
	(194.40)	(40.50)	(43.63)	(66.60)	(90.03)	(124.60)	(212.00)	(298.00)	(393.90)	(480.70)
Hiredlabour	267.40	36.22	41.27	120.8**	161.6***	238.1***	284.6***	446.2***	744.0***	822.4***
	(184.30)	(38.67)	(40.21)	(48.85)	(55.76)	(77.41)	(106.30)	(125.00)	(200.30)	(233.60)
Householdlabour	448.00	-38.26	-51.49	167.60	181.70	92.80	31.39	120.40	-58.92	-195.60
	(457.80)	(127.60)	(119.30)	(161.00)	(148.40)	(165.90)	(247.20)	(373.00)	(470.80)	(979.70)
Location factors										
Urban	598.1***	31.56	59.93	107.1**	140.3**	204.7***	283.7***	385.2***	382.4**	554.1*
	(204.50)	(39.17)	(40.14)	(42.27)	(58.32)	(71.26)	(102.30)	(120.70)	(187.70)	(287.40)
Savannah	540.2*	-15.45	35.24	5.39	-30.95	-40.02	27.84	196.90	351.10	876.2*
	(288.60)	(68.83)	(54.14)	(60.19)	(75.55)	(105.20)	(135.80)	(185.40)	(284.10)	(459.80)
Forest	76.56	17.19	8.61	-33.67	-66.11	-158.7*	-207.3*	227.20	-344.5*	-462.1*
	(216.90)	(51.17)	(44.34)	(53.57)	(70.86)	(84.12)	(107.70)	(141.20)	(198.10)	(237.70)
Constant	-1014.00	-285.30	-329.60	-547.9**	-653.0**	-649.3**	-544.00	-816.20	-224.20	2287.00
	(1253.00)	(424.80)	(246.60)	(231.80)	(277.80)	(318.80)	(418.50)	(669.60)	(1193.00)	(3021.00)
Observations	812.00	812.00	812.00	812.00	812.00	812.00	812.00	812.00	812.00	812.00
R-squared	0.14									
F	4.56***									

Note: Standard errors are reported below the estimates in parenthesis. OLS was estimated using robust standard errors whiles standard errors for quantiles are bootstrapped based on 1000 replications. *, ** and *** are levels of significance at 10%, 5% and 1%, respectively.

In addition, OLS were run on subsamples of the data. OLS were run differentiating by gender of the enterprise owner and location of enterprise (see appendix 1). For the male sub-sample, five variables were important: assets, casual labour, urban location, trade subsector and age of the enterprise. These five variables were all positive and significant in the full model regression results. Compared with the female subsample, three of these variables (assets, casual labour, and number of years the enterprise had operated) were not relevant for female enterprise owners. It was realised from the survey that male enterprise operators owned more assets as compared to females. The value of assets in male-owned enterprises was three times that of female-owned enterprises. On the average, male owned enterprise operated for longer periods as compared to females. Male owned enterprises used more casual and hired labour as compared to female owned, and yet hired labour was not significant for male subsample. The use of apprentices had a negative effect on enterprise profits in the female subsample. Only two variables (trade subsector and urban location) were positive and significant in both male and female subsamples. The trade subsector variable being positive and significant re-emphasises the point that it is more profitable as compared to the services subsector. However, hired labour, which is not important for male enterprise owners, is positive and significant for female owners. Using hired labour in female owned enterprises increases profits.

Male owned enterprises had higher profits in both urban and rural locations. Older enterprise owners had higher profits. The age of the enterprise was positive and significant for only urban located variables. The value of assets was positive and significant for only rural enterprises. Use of hired labour was relevant for both urban and rural enterprises but casual labour was only

important for urban enterprises. Enterprises in the urban areas were more vibrant and may require additional hands in operation. With the subsector variables, trade and manufacturing subsectors were more profitable as compared to the service subsector. The gender of the enterprise owner, the age of the enterprise, the value of assets, the use of both causal and hired labour and trade and manufacturing subsectors were all consistent with the full OLS model results.

5.8 Summary

The chapter examined the effects of firm-specific and non-firm factors on enterprise financial performance using the resource-based view theory of enterprise performance. The results from the study have contributed significantly to knowledge by utilizing one of the current nationally representative survey data to unearth current trends in the non-farm sector. Most of the studies on enterprise performance relied on data collected a decade ago. This study adds to literature by testing two approaches/methods of measuring enterprise financial performance (profits). The study measured enterprise financial performance (profit) using what is described in this study as "detailed accounting" of sales and costs in the last 12 months preceding the survey and then estimated reported sales and costs in high, average and low months in the same periods.

The study found that entrepreneurial resources such as the gender of the entrepreneur, the age of the individual and having technical education have an effect on enterprise financial performance. At the enterprise level, factors such as the age of the enterprise, the number of hired and casual workers, formal registration of enterprises and the value of assets affect financial performance of enterprises. Geographical or location variables such as enterprises location within urban areas

and the ecological zone in which enterprise operate in are essential determinants of enterprise financial performance. The industry or sector in which the enterprise competes, such as manufacturing, trade, restaurants and services, together with the other variables, shape the financial performance of micro and small enterprises in Ghana.

The study found that enterprise or firm-specific resources dominated market/industry factors in explaining enterprise financial performance. However, the sector of the enterprise and the location of enterprises also play a role in explaining enterprise performance. This implies that enterprise-specific resources, the sector of the enterprise and the geographical location of the enterprise jointly explain the financial performance of micro and small enterprises in Ghana. Unlike previous studies that did not find entrepreneurial characteristics to be important factors in determining enterprise profits (see Masakure et al., 2009), this study found that entrepreneurial characteristics are indeed relevant in explaining enterprise performance. It also found that enterprise level resources are also important in explaining enterprise performance. In particular, this study found that enterprise assets affect the variation of enterprise performance, but the coefficients appear small implying that most of the micro and small enterprises have very low value of assets.

CHAPTER SIX

COMPARING FEMALE-OWNED AND MALE-OWNED NON-FARM MSEs WITH AND WITHOUT ADJUSTING FOR RISKS

6.1 Introduction

This chapter discusses the performance of male-owned and female-owned enterprises with adjustment for risks and without adjustment for risks. Empirical evidence is adduced to support or dismiss certain assertions regarding the performance of male-owned and female-owned enterprises in the case of Ghana. Basically, the chapter put into context the social feminism and liberal feminism theories of gender and enterprise performance. Literature has suggested that female-owned enterprises underperform male-owned enterprises, and more often than not, no attempt has been made to control for risks. This section seeks to compare male-owned and female-owned enterprises with and without adjustment for risks using Sharpe Ratio (see equations 3.4 and 3.5).

Comparing the performance of male and female-owned is important considering the fact that about 70% of those engaged in micro and small enterprises in this study are females. This figure (70%) is close to 72% as reported by the GLSS report of 2008. According to the GLSS 5 report of 2008, approximately 3.2 million households representing 46.4% of households in Ghana operate a non-farm enterprise and about 72% of non-farm enterprises are operated by females. Understanding the source of the difference in terms of enterprise performance is important from a policy perspective since majority of women are into enterprises and therefore increasing the performance of women will result in an aggregate increase in economic welfare.

6.2 Individual and Enterprise Characteristics by Gender

In order to compare some of the relevant parameters, it is important to analyse and subject the results of the analysis to statistical tests. The results from Table 6.1 showed that in terms of educational background, there is no statistical difference between genders in terms of formal education. Education is one of the key attributes of human capital. Hence any difference in enterprise performance in this sample cannot be attributed to differences in education. In terms of firm registration, male-owned enterprises were more likely to be formally registered as compared to female-owned ones. The difference was statistically significant. This is not surprising given the fact that female-owned enterprises were smaller in terms of the number of people employed as compared to male-owned enterprises. This finding is consistent with that of Cliff (1998) and Sabarwal and Terrell (2008). It is expected that as enterprises grow in terms of size, they are more likely to become formal as compared to the smaller ones. Comparatively, male-owned enterprises had on the average operated more years as compared to the female-owned ones. Jovanovic (1982) argued that younger firms are more likely to fail because they face greater variability in their cost functions while they learn about their industry and management capabilities. Also, the number of hired employees, age of business enterprise and value of assets were statistically significantly different.

Table6.1: Individual and Enterprise Characteristics by Gender

Variable	Male	Female	t-values
Formal education (%)	82.2	80.6	-0.77
Technical education (%)	6.14	4.88	-0.83
Tertiary education (%)	4.09	3.10	-0.84
Formal registration(%)	24.0	9.4	-6.99***
Age of the enterprise owner (years)	42.4	42.4	0.03
Size of enterprise (number of employees)	1.7	1.4	-4.25***
Age of business (years)	10.8	8.5	-4.59***
Value of assets (Gh¢)	986.2	284.2	7.63***

Source: Author's computation based on EGC/ISSER data, 2010.

6.3 Hours and days worked by Sector and Gender

Male enterprise owners on the average spent 8.9 hours a day on their enterprises as compared to 8.5 hours worked by female enterprise owners. There was no significant difference between the number of hours worked by male and female enterprise owners. The manufacturing sector recorded the least number of days worked in a year in both male and female-owned enterprises. There is marked difference in the number of days spent by female in the manufacturing sector and that of the other sectors. Generally, there was no significant difference between the number of days worked by male and female-owned enterprises. Details of the hours and days worked by female and male enterprise owners in the various sectors are presented in Table 6.2.

Table 6.2: Hours and Days Worked by Sector and Gender

Sector	Male		Female	
	Hours/day	Days/year	Hours/day	Days/year
Manufacturing	8.8	232.3	8.2	201.8
Trade	8.1	247.0	8.8	255.3
Restaurants	8.9	241.8	7.3	254.6
Services	8.7	237.9	7.6	252.5
Average	8.9	240.1	8.5	242.3

Source: Author's computations based on EGC/ISSER data, 2010

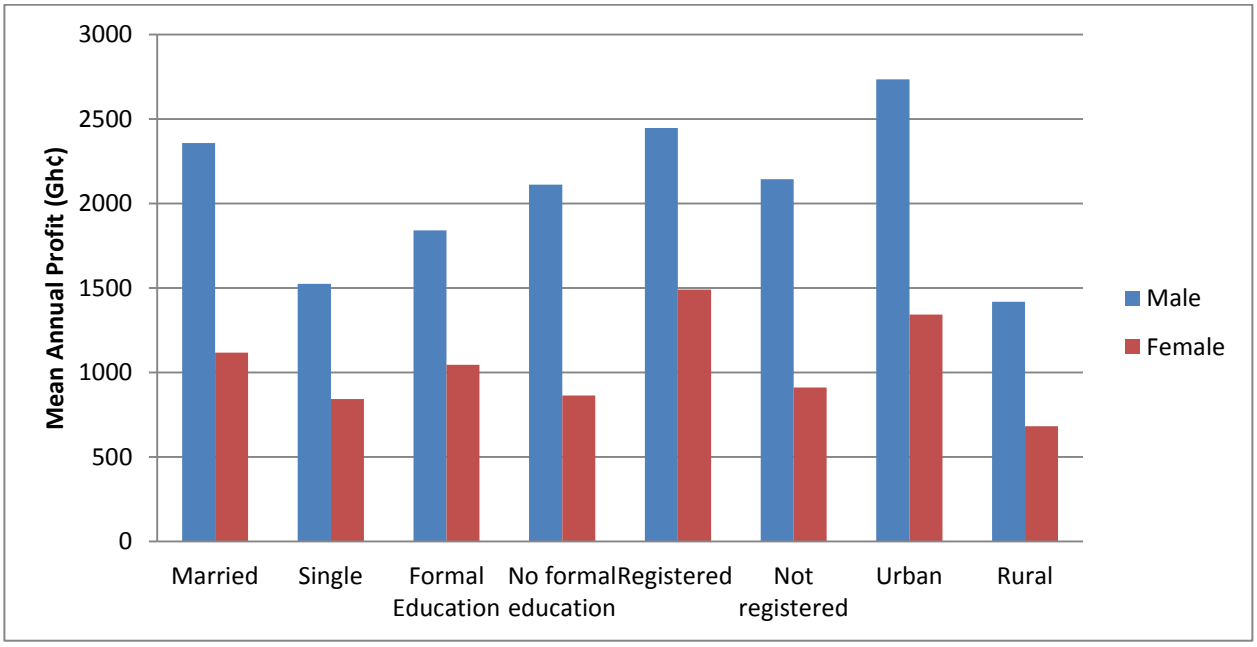
6.4 Profitability and Socio-Demographic Characteristics

Some socio-demographic characteristics were analysed and compared across gender. The essence is to test whether some of those socio-economic characteristics could result in differences in terms of enterprise performance (see figure 6.1). The analyses showed that being married improves enterprise profitability. From the results, both married men and women had higher profits than single men and women. But within the married category, married men had higher profits as compared to married women. Married couples may be able to combine resources together better than single persons. The results for education were mixed. Men who had no formal education had more profits as compared to men that had formal education. But women who had formal education had higher profits as compared to those who do not. It is possible that education is not crucial for enterprise performance, especially at the micro level where majority may not be keeping business records. Enterprises that formally registered their businesses had higher profits than those who did not. This confirms the findings of Sleuwaegen and Goedhuys (2002) who found that registered enterprises gain credibility with licensing and

taxation and enhanced access to rationed resources and registration can also act to reduce transaction costs when dealing with other firms, thus contributing to improved performance.

Enterprises located in urban areas are more profitable as compared to those in the rural areas. Several studies have indicated that urban-based enterprises tend to enjoy better access to a range of resources and infrastructure than those in rural areas (Barr, 1999; Bogetic and Sanogo, 2005; Eberts and McMillen, 1999; Fafchamps, 2000). Micro and small enterprises in urban areas tend also to have better and less costly access to inputs, larger and more dynamic markets, opportunities for networking with larger firms and within themselves offering a greater pool of information, all of which are critical to enterprise performance (Fafchamps & Minten, 2002; Shields, 2005; Sleuwaegen & Goedhuys, 2002).

Figure 6.1: Mean Profit and Socio-demographic Characteristics

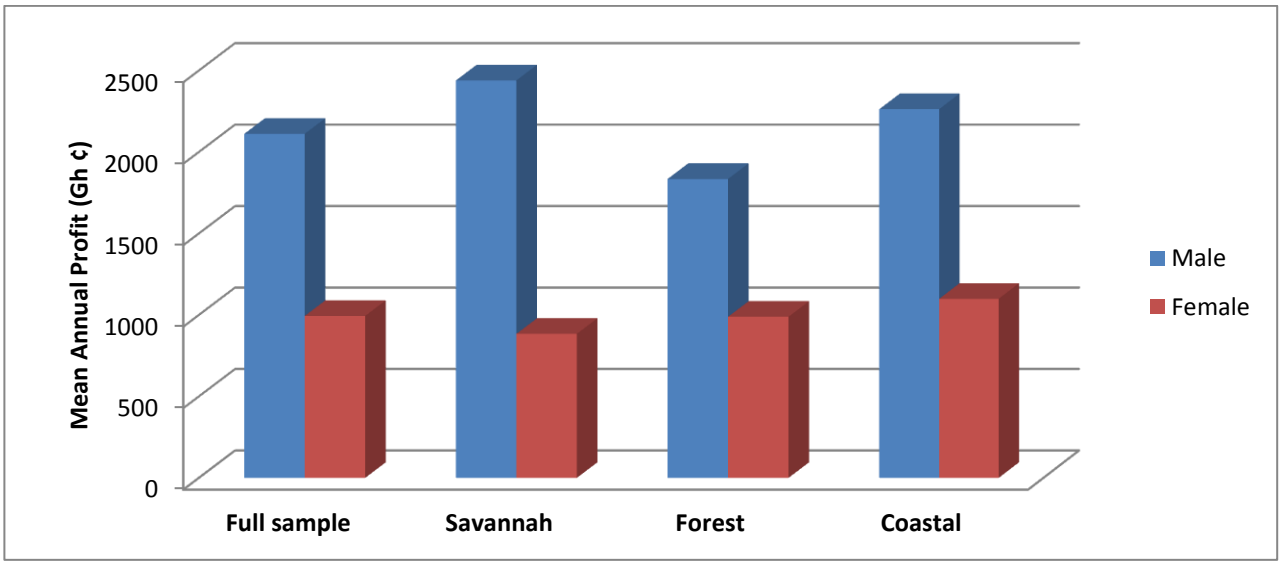


Source: Author's analysis from EGC/ISSER data, 2010

6.5 Ecological Zones and Enterprise Performance

Generally, enterprises in the Coastal zone are more profitable as compared to those in the Savannah and Forest zones. The Savannah zone however, performed better than the Forest zone. The mean profit for enterprises in the Coastal zone was about Gh¢1,458. Savannah zone was Gh¢1,291, and Forest zone mean profit were Gh¢1,217. Disaggregating the data by gender showed a completely different picture (see figure 6.2).Although in all the three zones male-owned enterprises were more profitable as compared to female-owned enterprise, the difference was more evident in the Savannah zone. Male-owned enterprises in the Savannah zone are more profitable as compared to those in the Coastal and Forest zones. Male-owned enterprises in the Savannah zone made almost three times the profits made by female-owned enterprises.

Figure 6.2: Mean Profit, Gender and Ecological Zones

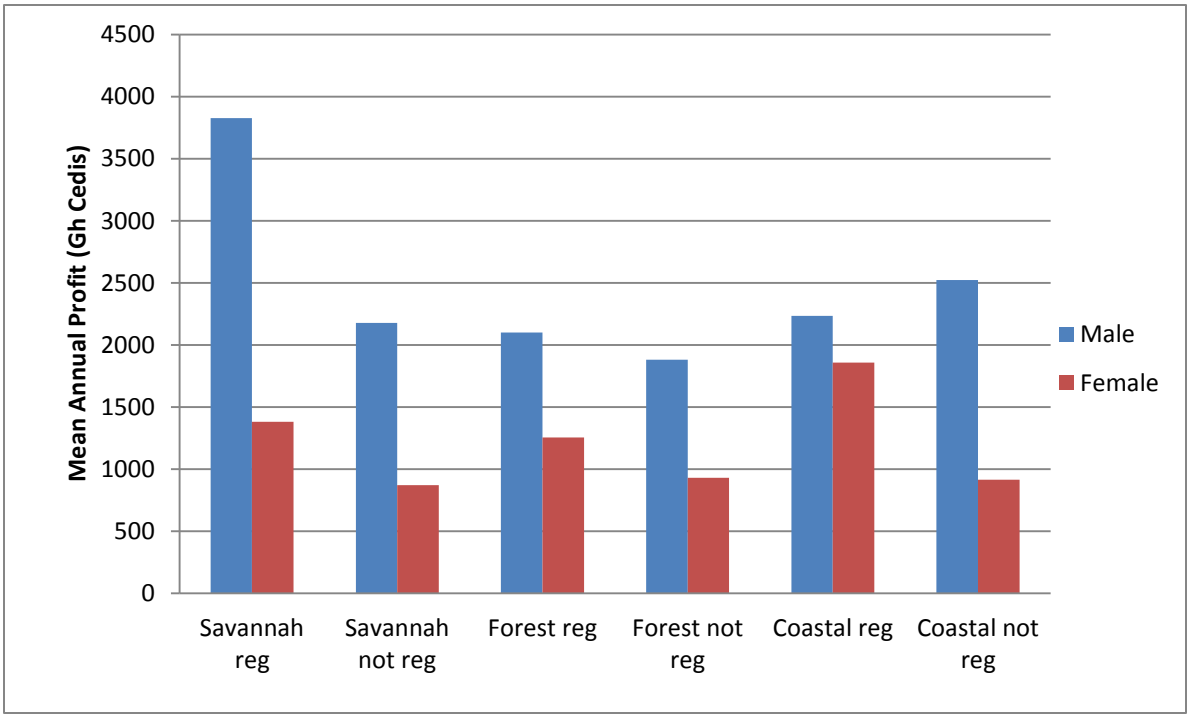


Source: Author's analysis from EGC/ISSER data, 2010

6.6 Profitability and Formal Registration Status across Ecological Zones

The essence here is to compare profits across gender, ecological zones and formal registration of enterprises. Generally, the percentage of enterprises which are formally registered is very low and cuts across the Savannah, Forest and Coastal zones. Only 9 percent of the enterprises in the Savannah are registered as against 13 percent and 18 percent in the Forest and Coastal zones, respectively. What is clear is that male-owned enterprises outperformed female-owned enterprises in terms of profits in all the ecological zones. All registered female-owned enterprises performed better than those not registered across all the ecological zones. This emphasizes the importance of formal business registration. However, registered male-owned enterprises performed better than those not registered in all the ecological zones with the exception of the Coastal zone. The difference in terms of profits between registered and not registered male-owned enterprises is more pronounced in the savannah zone. This is interesting considering the fact that only 17 percent of the male-owned enterprises in the Savannah zone are registered. Robb and Watson (2012) explained that being incorporated could reduce expenses and make a firm more profitable. The effect of registration can be influenced by the credibility and effectiveness of institutional mechanisms, sector and size of enterprise (Masakure et al., 2008). Figure 6.3 displays the comparison of formal registered enterprises as against those not formally registered.

Figure 6.3: Comparing the Mean Profit of Registered and not Registered Enterprises across Ecological Zones



Source: Author's computations from EGC/ISSER data, 2010

6.7 Assets and Gender

Results from the analysis across the three main ecological zones in Ghana showed that enterprises in the Coastal zone had more assets as compared to the Savannah and Forest zones (see Table 6.3).With respect to the assets across the ecological zone by gender, the difference was wider in the Savannah zone where male-owned enterprises possess almost six times the value of assets owned by females. This indicates that gender disparity is serious in the savannah zone. Male-owned enterprises in the Forest and Coastal zones had about three times the value of assets owned females.

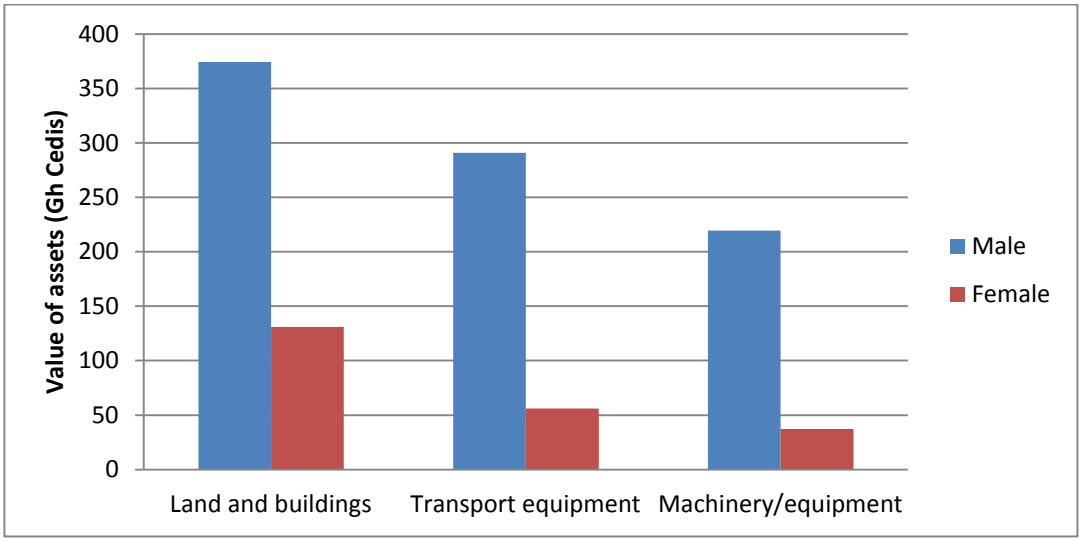
Male-owned enterprises had more assets as compared to female-owned enterprises across the ecological zones. As noted by von Masson (1999), gender differences in access to and control over resources also exacerbate inequities in performance of micro and small enterprises. Enterprise assets were categorized into three: land and building, transport equipment and machinery. In all these categories, male-owned enterprises had more assets compared to their female counterparts. Male-owned enterprises had almost three times the value of land and buildings as compared to female-owned ones and more than five times the value of transport equipment and machinery. This again emphasizes the disparities with respect to ownership of assets. Women enterprises seemed less capital intensive as compared to men. Most of the women engaged in enterprises which returns were very low. For instance, while men traded in electronics such as mobile phones, auto parts, selling cement, the women traded in food stuffs, pure water and table provisions, which are less capital intensive and hence low returns to capital invested.Figure 6.4 shows the comparison of assets by gender.

Table 6.3: Value of Assets (Gh¢)by Ecological Zone and Gender

Ecological zone	**Male**	**Female**
Savannah	943.775	155.8669
Forest	772.8263	250.8978
Coastal	1308.674	451.8442

Source: Author's computations from EGC/ISSER data, 2010

Figure 6.4: Men Own more Assets as Compared to Women



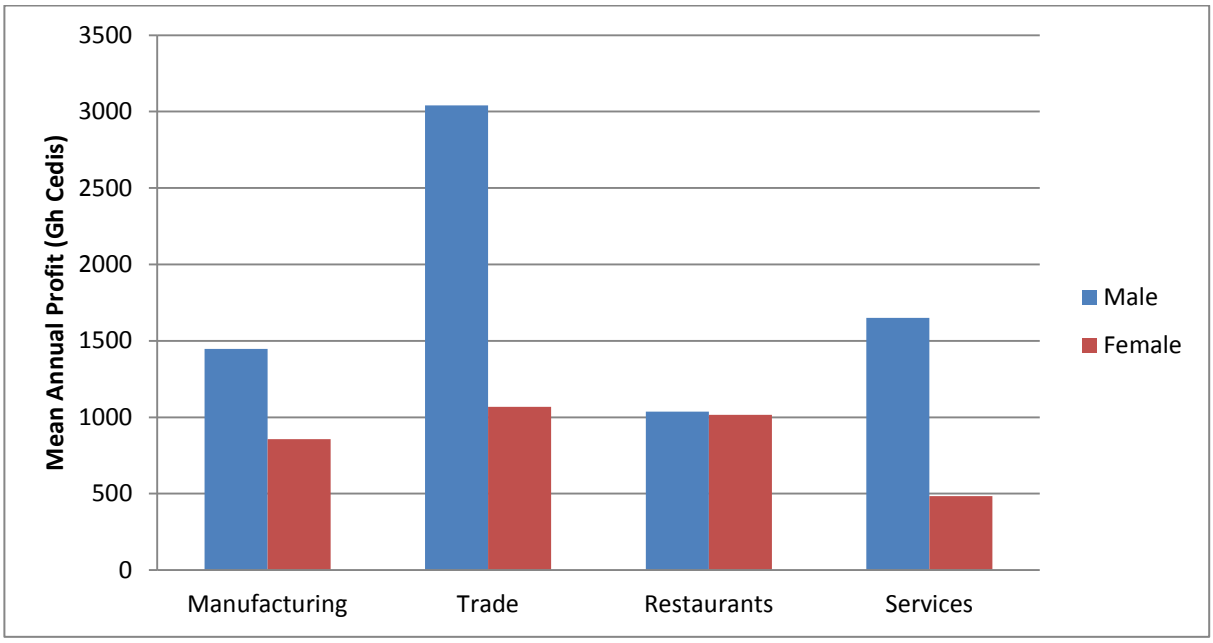
Source: Author's analysis from EGC/ISSER data, 2010

6.8 Gender and Industry

Following the International Standards Industrial Classification (ISIC), Rev. 3.1, the micro and small enterprises were classified into four distinct industries namely: manufacturing, trading, restaurants and services. About 55 percent of all enterprises operated by both males and females were in the trade industry, while about 25 percent were in the manufacturing. Disaggregating the data based on gender indicates that the majority of the women (about 60%) were in trade and almost 40% of the men were also in trade. About 22 percent of the women were into manufacturing as compared to 33 percent of men. On profitability, the trade industry was the most profitable followed by the services industry. Males had higher profits as compared to females in all the four industries (see figure 6.5 and Table 6.4). The difference in profitability was more pronounced in the trade industry (Table 6.4). The males in the trade industry made almost three times the profits that the females made. There was no significant difference in terms of profits between male and female enterprise operators (table 6.4) in the restaurant subsector.

The value of assets owned by males was more than three times that of females, and if assets play a role in enterprise performance then one is not surprised that profit levels of females are lower than that of males.

Figure 6.5: Mean Profit by Industry



Source: Author's analysis from EGC/ISSER data, 2010

6.9 Sources of Capital for Enterprise Start up

About 60 percent of the enterprise owners had relied on household savings as a means to finance their non-farm enterprises. Both male-owned and female-owned enterprises used household savings to set up their businesses. This finding is similar to that of the GLSS 5 report of 2008, which indicated that 60 percent of non-farm enterprise operators relied on household savings to set up their enterprises. Comparing the sources of capital for non-farm enterprise set up across the three main ecological zones revealed that almost 49 percent of enterprises in the Savannah zone used household savings to finance their enterprises as compared to 64 percent and

62percent in the Forest and Coastal zones respectively. However, about 19 percent of enterprises in the Savannah zone had capital from farm proceeds as compared to only 5 percent in the Forest zone and only 2 percent from the Coastal zone.

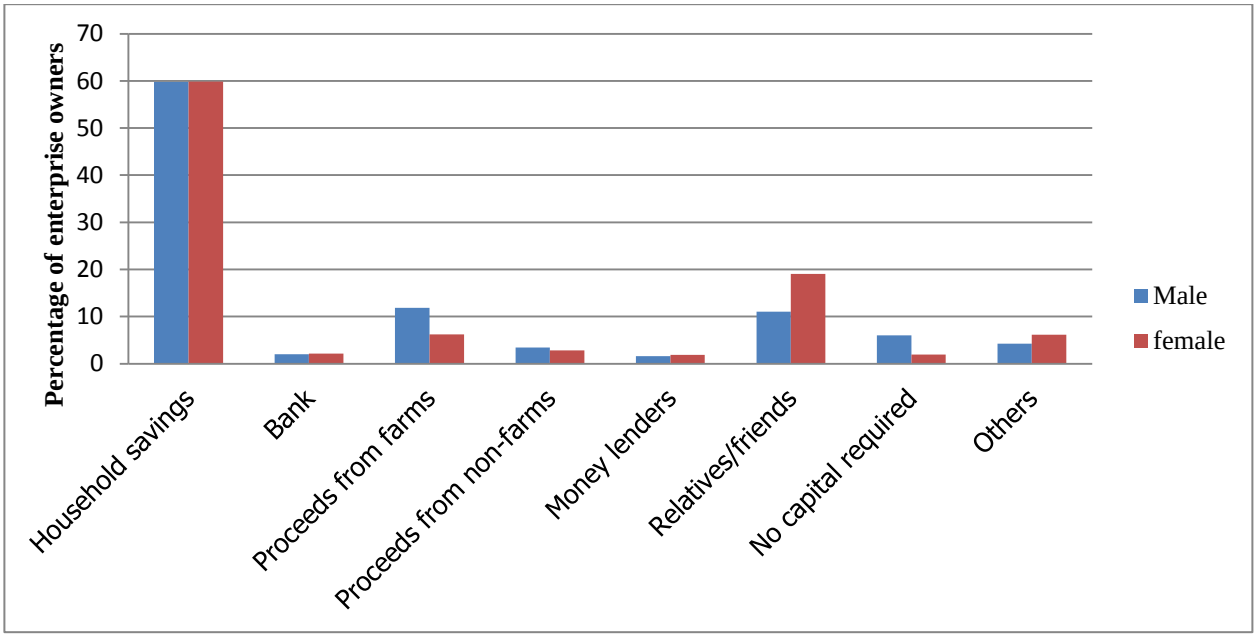
About 24 percent of household members in the Savannah zone owned non-farm enterprises as compared to 46 percent in the Forest zone and 30 percent in the Coastal zone. About 17 percent of enterprise operators had capital from relatives and friends to start their non-farm enterprises, which is close to the 20 percent as reported in the GLSS report of 2008. About 2 percent of enterprise operators had credit from a bank to set up their non-farm enterprises, which is close to 2.4 percent as reported in the GLSS 5 report. Although proceeds from farms is an important source of capital for setting up businesses as compared to household savings and capital from relatives and friends, the study revealed that the percentage of male-owned enterprises relying on proceeds from farms was higher as compared to female-owned enterprises. This is not surprising considering the fact that household resources are mostly controlled by men. However, the percentage of female-owned enterprises that had capital from friends and relatives was higher as compared to male-owned enterprises. This could be the case because females seem to have more social relations as compared to males.

As observed by Akoten, et al. (2006) and Bigsten, et al. (2003), lack of access to credit and other financial services is a binding constraint to the growth and expansion of micro and small enterprises. Females are mostly involved in sole-proprietorship businesses, which are mainly microenterprises and as such may lack the necessary collateral to qualify for loans (Aryeetey et al., 1994; Abor & Biekpe, 2006). Credit can also negatively affect profitability and survival if

firms are captive borrowers or operate under poor economic conditions and high-interest rates (Atieno, 2006; Steel & Andah, 2004). However, it is not clear that access to formal credit, whether through banks or microfinance facilities, translates into better enterprise performance; in many cases informal credit is a readily-available substitute source of finance (Akoten et al., 2006; Daniels & Mead, 1998; Loening et al., 2008). Figure 6.6 shows that the main source of capital for enterprise set up is household savings.

Beck and Demirguc-Kunt (2006) have shown that formal banks have long restricted access to micro and small enterprises because of perception of risks and high transaction costs of delivery. This phenomenon has forced micro and small enterprises to often rely on limited household savings, remittances or even donation from charitable organisations as well as sometimes on informal finance, which are known to charge relatively higher interest rates (Osei-Assibey, 2010).

Figure 6.6: Sources of Capital for Setting up Enterprises

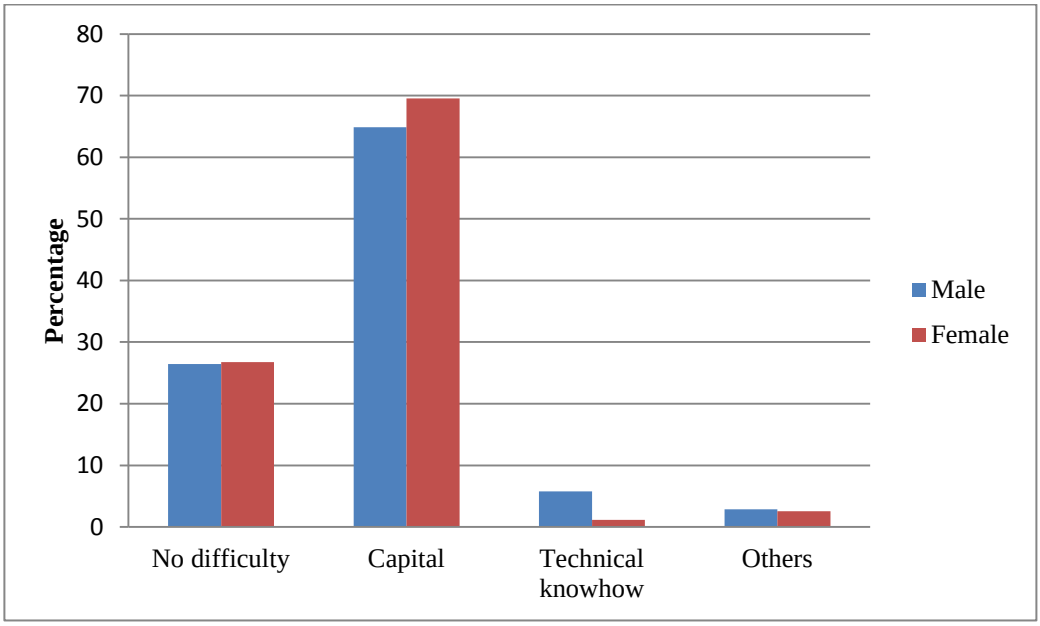


Source: Author's analysis from EGC/ISSER data, 2010

6.10 Constraints to Setting up Non-farm Enterprises

Enterprises face several constraints in their day-to-day operations. Several factors affect enterprise operators including poor and/or costly access to credit, problems acquiring new and more productive technologies, low levels of technical and/or managerial skills, lack of basic knowledge in record keeping, high levels of competition among enterprises and unfavourable macroeconomic conditions. This study identified the lack of capital or credit as the major obstacle to establishing non-farm enterprises in Ghana (see figure 6.7). Lack of capital was a major constraint across all the three main ecological zones in Ghana. About 68% of non-farm enterprises in the Savannah zone indicated that capital was the main constraint. In the Forest zone, about 70% of enterprises indicated that capital was the main constraint and about 64% in the Coastal zone. Technical knowhow was the second major constraint confronting enterprise operators in establishing non-farm enterprises. Interestingly, more than 25% of the enterprise operators across all the ecological zones indicated that they had no difficulty establishing their enterprises. However, more females faced capital as a constraint as compared to males. About 70% of the females had identified capital as the main constraint as compared to 65% males.

Figure 6.7: Constraints to Setting up Non-farm Enterprises



Source: Author's analysis from EGC/ISSER data, 2010

6.11 Controlling Variables that may Influence Differences in Performance between Males and Females

The literature argues that a number of factors could potentially cause differences in terms of enterprise performance between males and females. These include educational status of the enterprise owner, age of business, size of the enterprise, sector of the enterprise and formal registration status, among others. In order to avoid introducing biases, these variables were controlled for in the analysis. What is clear from these results is that male-owned enterprises had more profits as compared to female-owned ones in all the variables presented. On education, data for those who had formal education in both male-owned and female-owned enterprises were used for the analysis. The results (Table 6.4) indicate that male-owned enterprises outperformed female-owned enterprises. On the age of business, because there were not enough observations for all the years of operation of the enterprises, enterprises that operated for one, two three, four,

and ten years were selected for the analysis. The results showed that there was no significant difference in terms of profits between male-owned and female-owned enterprises that had operated for one, three and ten years. However, there was a significant difference in profits of enterprises that had operated for two and four years. The results are mixed, giving no clear indication. But in all the cases, male-owned enterprises had on the average more profits as compared to female-owned enterprises. After controlling for the size of enterprises and formal registration, male-owned enterprises had outperformed female-owned enterprises and this was statistically significant. On the sector of the enterprise, with the exception of the enterprises in the restaurants sector, male-owned enterprises performed better than female-owned ones, and the difference was statistically significant.

Table 6.4: Comparisons of Profits by Gender after Controlling some Factors

Variable	Male	Female	t-values
Formal education	1841.14	1044.77	-4.93***
Age of enterprise (1 year)	1569.33	602.27	-1.66
Age of enterprise (2 years)	2059.94	994.11	-2.26**
Age of enterprise (3 years of operation)	1346.58	1216.60	0.35
Age of enterprise (4 years of operation)	1789.43	715.39	2.80**
Age of enterprise (10 years of operation)	1376.673	1073.941	-0.90
Size of enterprise (one employee)	1937.07	812.49	-6.77***
Formal registration (incorporated)	2446.25	1489.30	2.18**
No formal registration(unincorporated)	2144.06	909.85	-6.57***
Manufacturing	1447.56	856.63	2.90**
Trade	3041.12	1069.11	-6.72***
Restaurants	1035.72	1015.98	-0.044
Services	1650.47	483.71	-3.41***

Author's computations based on EGC/ISSER data, 2010.

6.12 Comparing Male and Female Enterprises With and Without Adjusting for Risks

One key discussion in the literature relates to the issues surrounding the performance of male and female-owned enterprises. Most literature conclude that female-owned enterprises tend to underperform the male ones. This aspect of the study was set out to test the empirical evidence supporting such claims. Profitability was the main measure here and so mean profits from male-owned enterprises were compared to mean profits from female-owned enterprise, first without adjusting for risks and secondly, with adjustment for risks. When risks are not adjusted for (see

appendix 8), the results indicate that female-owned enterprises underperform male-owned ones. The mean profit for male-owned enterprise was Gh¢2111.3 while that for female-owned was Gh¢993.7.The t-value was 5.4388 indicating that there is significant difference between the two. Clearly, male enterprise owners made twice the profits obtained by the females. In other words, female are underperforming male-owned ones. Jones (2012) used a twelve-year panel of manufacturing firms from Ghana to identify the effects of female ownership on firm performance. The study found that on average, female-owned firms were about 25 percent less productive than male-owned firms, controlling for time-invariant characteristics like sector, location, and union status.In a related study, Amin (2011) found that a typical worker in a female-owned business produces only 76 percent of the output of a worker in a male-owned business. Linking their study in Argentina and Peru, one would say that female-owned enterprises in those places performed better than those in Ghana.

In the case of adjusting for risks (see appendix 9), the results from the Sharpe Ratio indicate that male-owned enterprises had a higher Sharpe ratio (0.473) as compared to female-owned (0.399). The t-value was -1.4489 thus indicating that there is no statistical significant difference between male-owned and female-owned enterprises after adjusting for risks. Females tended to be more risk averse as compared to males from the Sharpe ratio. As noted by Freese (2010), a risk-averse choice of activities is often associated with an inefficient factor allocation (the avoidance of riskier but potentially higher expected return ventures). It is possible that females are avoiding riskier activities which are more rewarding. The higher the Sharpe ratio, the better the performance. This finding is similar to that of Robb and Watson (2012), who found no statistical significant difference between male-owned and female-owned in the performances of male and

female-owned new ventures in the United States of America. The results are also consistent with the findings of Kepler and Shane (2007) and Watson and Robinson (2003). Kepler and Shane (2007) found that women prefer to start less risky new ventures than men and Watson and Robinson in studying Australian firms found no statistical significance difference in the performance of male-owned and female-owned businesses after adjusting for risks.

6.13 Summary

The study compared the financial performance of male-owned and female-owned enterprises and tested the female-underperformance hypothesis. Most literature generally agree that female-owned enterprises underperformed male ones but no appropriate methods have been employed to empirically test these assertions. For instance, Sabarwal and Terrell (2008) found that female-owned businesses in the formal sector in 26 transition countries are significantly less profitable than male-owned businesses, andRijkers and Soderbom (2013) in studying the effects of risk and shocks on non-farm enterprise development in rural Ethiopia found that male-operated enterprises are more productive than enterprises managed by women. In Ghana, Canagarajah et al. (2001) found that women made about 40% less income than men in rural non-farm enterprises. But these studies did not take risk into consideration.Watson and Robinson (2003) argued that past research into small and medium scale enterprise performance has generally focused on sales and/or profit (or growth in sales and/or profit) without any explicit control for risk, even though from finance theory, expected returns and risks are positively related.

This study has broadened the scope in knowledge by including risks in the analysis which adds fresh impetus to the understanding of risks, gender and enterprise performance in Ghana. The results support the hypothesis that if profits are related to variability in profits using the Sharpe

Ratio, on the average male-owned enterprises performed no differently female-owned ones. This is consistent with social feminism theory, which argues that men and women are inherently different by nature and these differences (rather than discrimination) will cause them to operate their ventures differently. The results showed that when risks are not adjusted for, female-owned enterprises underperform male-owned ones, but when risks are adjusted for female enterprise owners perform as well as male enterprise owners. This implies that females are more risk averse as compared to males, and that the way and manner in which females operate their enterprises differ from males.

CHAPTER SEVEN

CONCLUSION, POLICY IMPLICATIONS AND RECOMMENDATIONS

7.1 Conclusion

The study focused on non-farm micro and small enterprises in Ghana with the view to examining the factors influencing the individual decision to participate in non-farm self-and wage-employment and the intensity of participation, determining the effects of firm-specific and non-firm factors on the variation of enterprise profits, and examining gender differences in enterprise performance. In this regard, the study identified factors which influence the participation of individuals in the non-farm sector. The study applied the resource-based theory of the firm which posits that firm-specific factors will dominate non-firm factors in explaining enterprise financial performance. Further, the female-owned firm underperformance hypothesis was subjected to empirical analysis by comparing the financial returns (profits) of male-owned and female-owned enterprises with and without adjusting for risks. The results from the analysis were generally consistent with the conceptual framework and the specific models used and represent useful characterizations of the situation in the non-farm sector in Ghana.

The determinants of individual participation in non-farm self-and wage-employment was anchored in the theory of the household by Sadoulet and de Janvry(1995). The resource-based view perspective of enterprise performance was the theoretical framework underpinning the analysis of financial performance of non-farm enterprises in this study. In analysing gender differences in enterprise performance, the study was rooted in the liberal and social feminism theories.

In analysing the determinants of individual participation in the non-farm sector, the study used probit models. An aspect of the non-farm sector which is often neglected is the level of participation in non-farm enterprises.Matshe and Young (2004) in their analysis of off-farm labour allocation decisions in small-scale rural households in Zimbabwe acknowledged that, the amount of time allocated to off-farm activities, although important, is often overlooked emphasizing that increasing off-farm work in rural areas is important because of its effects on low agricultural productivity and low agricultural incomes which are associated with poverty in rural areas. This study contributes to the existing knowledge on participation in the non-farm sector and in particular, intensity of participation which is virtually lacking in the Ghanaian context. The study also included three important variables (access to credit, mobile phone and ownership of livestock) which are often missing in previous studies of participation in the non-farm sector in Ghana. In analysing the intensity of participation using the truncated regression, the results indicated that having access to mobile phones, access to electricity and owning more livestock increased the number of days committed to working on non-farm self-employment.

In examining the effects of firm-specific and non-firm factors on the financial performance of enterprises, the study employed ordinary least squares (OLS) and quantile regressions. In comparing the financial performance of male-owned and-female-owned enterprises, the study first compared the profits of male and female owned enterprises without adjusting for risks and tested if there was a significant difference between the two and then went further to use the Sharpe ratio in adjusting for risks and also used a t-test to test if there was significant difference between the two.

Results from the analysis of participation rates by gender and industry in rural Ghana showed that the majority of females are engaged in the trade industry while about 39% of males are engaged in the manufacturing industry. The most profitable industry for females was the restaurants and for males the trade industry. The results from the probit regression, which sought to estimate the factors influencing the individual decision to participate in non-farm enterprise, indicated that individual factors such as the gender of the enterprise owner, being a household head, being the spouse of the household head, access to formal education, the individual age, access to credit, access to mobile phones and size of landholding per capita shaped the participation of the individual in non-farm self-employment.

With the household level variables, households that had access to electricity tended to participate more in non-farm self-employment. Enterprises located in the Savannah and Forest zones were less likely to participate in non-farm-farm self-employment as compared to those enterprises located in the Coastal zone. The study also examined if different factors influence the individual decision to participate in either self or wage-employment. The results revealed that the same set of individual, household and location/zone factors except being the spouse of the household head influenced the individual decision to participate in non-farm wage-employment.

The study showed that enterprises in the trade, manufacturing and restaurants industries made higher profits as compared to those in the services sub-sector. The trade industry was the most profitable as compared to the manufacturing, services and restaurants industries. Enterprise operators in the trade industry made about Gh₵903.6 more than those in the other industries. The

coefficient of the sector variables became more positive with movement from lower to higher quantiles, implying a positive and larger gap in profits between these sub-sectors and enterprises in the services sub-sectors.This study justifies the use of the quantile regression model in explaining enterprise performance and dismisses the notion that a common set of factors determine the financial performance of micro and small enterprises in Ghana and do not change whether an enterprise performs better or worse.

Enterprises that are formally registered enterprises had higher profits than those that were not. Comparatively, more male-owned businesses were formally registered as compared to that of females. Male-owned enterprises were larger than female-owned ones, and on the average, male-owned enterprise were older than those operators by females. The age of the enterprise and size of the enterprise were not correlated with formal registration of enterprises. Male-owned enterprises had higher assets as compared to females. It is expected that as enterprises grow in terms of size, they are more likely to become formal as compared to the smaller ones.

Enterprises located in urban areas were more profitable as compared to those in the rural areas since they are able to access better resources, opportunities for networking which are important factors in enterprise profitability and growth. Enterprises located in the Savannah and Forest zones were less profitable compared to those in the Coastal zone.Assets are important for enterprises. Comparatively, enterprises in the Coastal zone had more assets as compared to the Savannah and Forest zones. The gap between the value of assets owned by male and female-owned enterprises were wider in the Savannah zone. Male-owned enterprises had more assets (land, buildings and machinery) as compared to female-owned enterprises across the three

ecological zones. This indicates that females lack the necessary assets for enterprise development.

The trade industry was the most profitable and the gap in terms of profits between the male and females was very big. It was only in the restaurants industry that the gap in terms of profits was very negligible between males and females. This shows that female enterprises do better in the restaurants industry, even though profits levels are low. The main source of financing enterprise start up is household savings, and the main difficulty facing enterprise owners in starting business is capital. There is low of access to credit. Results from the OLS regression indicate that male enterprise operators made about GH¢ 964.4 more than female enterprise operators. Male and female enterprise profits were compared in relation to the number of years the enterprise had operated and the results showed that, there was no significant difference in terms of profits between male-owned and female-owned enterprises that had operated for one, three and ten years. However, there was a significant difference in profits of enterprises that had operated for two and four years.

In comparing the performance of male and female-owned enterprises in Ghana, the study concludes that females will perform as well as male enterprise operators when risks are adjusted for (profits are related to the variability in profits) and will underperform males if risks are not adjusted. The results from the Sharpe Ratio indicate that male-owned enterprises had a higher Sharpe ratio (0.473) as compared to female-owned (0.399). The lower Sharpe Ratio for female-owned enterprise suggests that females are more risk averse and perhaps may decide to grow their businesses more slowly as compared males. Ballantine, Cleveland and Koeller (1993)

suggests that the higher the risk, the higher the expected rate ofreturn on an investment, and conversely, the lower the risk, the lower the expected rate ofreturn. This may indicate that female entrepreneurs are engaged in low return ventures. On the average, female-owned enterprises had lower profit variability as compared to male-owned ones. This indicates that female-owned entrepreneurs are less risky as compared to male-owned ones and therefore may be attractive to credit institutions. The study found that 60 percent of micro and small enterprise operators indicated that, access to capital for enterprise set up is a major obstacle. About 60 percent of non-farm operators relied on household savings in setting up enterprises and only 2 percent of non-farm operators had credit from the bank in setting up their enterprises.

7.2. Policy Implications and Recommendations

The study found that females tended to participate more in non-farm self-employment and are less likely to participate in non-farm wage employment. The finding suggest that, there may not be significant barriers to entry into self-employment and the finding that females are less likely to engage in wage-employment may suggest there are significant barriers to entry. Senadza (2012) found that education was the single most important factor contributing to inequality-increasing of non-farm income in rural Ghana. Thus emphasising the essence of education to working in the non-farm sector especially wage-employment. Policies should gear towards reducing constraints to entry in the non-farm sector, particularly targeting wage-employment.

Having formal education increases the probability of participation in non-farm self-and wage-employment. Government should play a lead role in making formal education accessible to the rural people. It should encourage female education,sincefemaleswere less educated as compared

to males. Efforts targeting to reduce rural poverty requires strategic investments in rural electrification projects.Deliberate policies should focus on addressing critical factors such as access to credit, mobile phone, electricity and schooling which are relevant for increasing the number of days worked in rural enterprises.The trade industry was the most profitable, and the gap in terms of profits between male and females was very wide. It was only in the restaurants industry that the gap in terms of profits was very negligible. This shows that female enterprise owners are doing better in the restaurants industry even though profits levels are low. It is recommended that if the focus of government is to help alleviate rural poverty, especially for women, then it is strategic for those interventions to specifically target women, especially in the restaurants industry. Women are mostly engaged in the manufacturing and trade industries, but the results suggest that women are making little profits as compared to their male counterparts.

The sector variables, though positive and significant in the OLS model, were only significant beginning at the 0.4 quantile upwards in the profits distribution spectrum, thus suggesting that specific policies are needed to address constraints at that end of the spectrum. The trade, manufacturing and restaurants sub-sectors are the most profitable enterprises, but there is variation of profits within these sub-sectors attributable to use of hired and casual workers, having technical schooling, months and years enterprise operated, value of assets. This implies that policies should focus on addressing specific issues that confront enterprises at the lower and upper ends of the profit quantiles. The Rural Enterprise Programme is supporting micro and small enterprise development, and there is the need to scale up the efforts.The trade and restaurants industries were the most profitable for females indicating that policies aimed at

enhancing the incomes of females should be directed at these industries. This also suggests that, specific sector policies should be encouraged.

There is the need to promote technical education targeting those at the lower end of the spectrum. In this case, the service subsector was the worst performing industry, and it should receive attention to address the constraints confronting it. Formal registration of enterprises should be encouraged for enterprises performing at the upper end of the quantile and size spectrum.The finding that enterprises that are registered had higher profits than those not registered drum home the point that registration of enterprises should be encouraged especially among female-owned enterprises. One of the policy objectives of the Ghana Industrial Policy is to formalize small scale businesses to help them get access to business support services and also to encourage cluster development of micro and small enterprises. Government has to implement this policy in order to enhance the development of micro and small scale businesses in Ghana. Providing incentives to formalized businesses will encourage the formalization of business enterprises in Ghana. One way of doing this, is to facilitate easy access to credit by formalized micro and small businesses.

This study strongly recommends that there should be deliberate policies to enhance the access of women to productive resources for enterprise development, because womenowned fewer assets as compared to men. This could be attributed to the nature and size of women-owned businesses, but having access to resources could encourage women to expand upon their businesses. The disparity in terms of ownership of assets featured prominently in the Savannah zone, implying that efforts should target at educating people and disabusing their minds about female-owned

underperformance. Women equally worked as men, given the fact that there was no significant difference between the number of hours and days worked by male and female-owned enterprises. This further emphasizes the point that women are equally capable.

Generally, male-owned enterprises were more profitable as compared to female-owned ones. This finding is consistent with Reardon (1997) who argued that women generally appear to be limited to the low-wage activities in the non-farm sector, resulting in lower earnings that tend to have lower impacts on improving food security. This indicates that policies aimed at improving food security especially in the rural areas should focus on migrating women from low-wage non-farm activities to medium and high ones. Promoting education among women and access to productive resources such as credit, land is vital. Individuals in the Savannah and Forest zones are less likely to participate in non-farm self and wage employment as compared to the Coastal. Also, enterprise owners in Savannah and Forest zones worked fewer days on non-farm wage-employment as compared to those in the Coastal zone. These results point to the fact that policy makers need to pay attention to factors which may act as barriers to entry into the non-farm enterprises especially, in the Savannah and Coastal zones.

The gap between the value of assets (land, buildings and machinery) owned by male-and female-owned enterprises were wider in the Savannah zone in favour of the males, and also the gap between the profits of male-and female-owned enterprises in the Savannah zone was the largest as compared to the Forest and Coastal zones. Male enterprise operators in the Savannah zone made almost three times the profits made by female-owned enterprises. There is the need to take a critical look at this gender disparity in the Savannah zone and appropriate policies put in

placeto address the issue. About 60% of non-farm micro and small operator used household savings in setting up enterprises and only 2% of them had access to credit from banks in setting up their enterprises. This may suggest that, the micro and small enterprise operators seemed to be excluded from participating in formal financial markets. Policies should aim at strengthening financial institutions including the rural banks and make it possible for these institutions to extend capital to micro and small enterprise operators.

This study was not able to include all the variables that could possibly cause female-owned enterprises to underperform male-owned ones. It was possible to capture risks and some socio-demographic factors, but there could be other factors that have not been investigated here. For example, prior research suggests that there are gender differences in the motivation for entering self-employment (Kepler & Shane, 2007). This study suggests that further research should be conducted taking some of these variables into consideration.It was not possible to test all the constructs of the resource-based view perspective due to data limitations. For instance, it was not possible to capture tacit knowledge of the entrepreneur and the impact of skill and knowledge acquisition through apprenticeship training, which are relevant in the resource-based view. Nonetheless, this study captured the standard measures used in micro and small enterprise literature. There is the need further studies to be done taking these issues into consideration.

This study confirms the notion that female-owned enterprises appear to underperform male-owned enterprises because females prefer to take fewer risks and hence accept lower returns but there is no significant difference when risks are adjusted for. The findings point to the fact that females are not discriminated against, but that females prefer to take fewer risks and grow their

businesses more slowly as compared to men. It is worth making the point that men and women are both capable in managing micro and small enterprises, and that the conclusions from past research indicating that female-owned enterprises underperform male-owned ones are rather due to inappropriate performance measures. The recommendation here is for reorientation of the mindset regarding female-underperformance hypothesis. Efforts should be geared towards addressing the risk behaviour of female enterprise owners.

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LIST OF APPENDICES

Appendix 1: OLS Regression Results by Gender and Location

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)
Ageasquare	(0.25)	-0.422*	(0.28)	-0.525**
	(0.51)	(0.24)	(0.46)	(0.22)
Noeducation	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)
Monthsoperations	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)
Casuallabour	511.8**	279.90	651.9**	24.94
	(232.20)	(223.10)	(314.50)	(100.50)
Hiredlabour	165.70	327.3***	304.3*	314.7**
	(204.10)	(125.40)	(158.10)	(139.40)
Householdlabour	461.20	81.59	39.96	507.00
	(766.50)	(329.60)	(361.30)	(509.70)
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)
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
	(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***

Appendix 2: OLS and Quantile regression estimates of enterprise profits (detailed accounting method)

Variable	OLS	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
Entrepreneurial resources										
Male	2,419**	14.76	106.50	70.04	46.38	63.33	205.00	348.30	853.80	1871.00
	(1130.00)	(389.40)	(171.70)	(121.00)	(106.40)	(84.24)	(155.70)	(241.30)	(547.80)	(1465.00)
Age	232.60	-39.98	14.01	-9.04	-15.77	-9.73	-2.78	-16.71	18.62	-7.38
	(161.10)	(54.91)	(30.13)	(25.89)	(19.92)	(16.13)	(19.06)	(25.01)	(51.97)	(113.40)
Ageasquare	2.15	0.42	(0.11)	0.11	0.15	0.06	(0.03)	0.03	(0.41)	(0.23)
	(1.56)	(0.51)	(0.29)	(0.26)	(0.20)	(0.16)	(0.18)	(0.24)	(0.50)	(1.13)
Noeducation	-405.00	-474.50	-111.90	-23.47	-137.10	-41.00	-83.24	-76.54	-96.02	-370.10
	(1228.00)	(460.70)	(191.80)	(153.30)	(118.40)	(97.15)	(122.40)	(180.20)	(369.80)	(756.80)
Technical	270.90	-44.37	226.80	298.20	173.40	60.10	813.00	876.70	423.00	1851.00
	(1297.00)	(1325.00)	(454.60)	(402.10)	(267.70)	(453.90)	(698.10)	(908.20)	(1664.00)	(2732.00)
Tertiary	-2807.00	-584.40	-1006.00	119.90	102.40	-10.21	46.44	2334.00	2806.00	-394.40
	(1850.00)	(4711.00)	(1449.00)	(918.70)	(610.10)	(809.40)	(1532.00)	(1689.00)	(1789.00)	(1941.00)
Enterprise resources										
age_enterprise	121.90	-1.83	15.26	8.26	-7.72	4.20	13.49	46.96*	91.51**	97.51
	(131.50)	(63.41)	(30.60)	(22.91)	(15.40)	(11.91)	(17.67)	(24.82)	(43.56)	(91.56)
age_enterprise2	-3.58	-0.19	-0.86	-0.47	0.07	-0.10	-0.29	-0.86	-1.36	-1.29
	(2.71)	(2.00)	(0.93)	(0.71)	(0.42)	(0.30)	(0.40)	(0.57)	(0.96)	(2.35)
Monthsoperations	366.4**	-139.8**	(9.28)	8.34	19.51	21.50	52.47**	87.04**	130.8**	127.90
	(146.70)	(57.53)	(36.83)	(31.33)	(26.29)	(21.74)	(25.97)	(35.86)	(65.87)	(148.10)
Credit	305.10	-600.00	-316.70	-478.1*	-149.10	-114.80	-25.03	-38.27	142.20	-425.50
	(1328.00)	(600.00)	(282.70)	(247.50)	(245.60)	(160.10)	(185.20)	(242.30)	(468.60)	(971.10)
Assets	-0.12	-1.914**	-0.31	-0.05	0.06	0.21	0.409*	0.672***	0.55	2.83
	(0.89)	(0.89)	(0.59)	(0.27)	(0.16)	(0.19)	(0.22)	(0.24)	(0.62)	(1.88)
Registered	2,474*	888.10	607.4**	218.90	90.68	48.80	118.70	709.40	1877.00	4,126**
	(1434.00)	(597.20)	(301.30)	(201.60)	(146.90)	(157.70)	(279.80)	(473.30)	(1217.00)	(2065.00)
Apprentices	91.45	241.40	66.16	69.39	25.88	47.20	6.45	-66.91	-183.20	-146.50

	(319.80)	(172.90)	(104.50)	(83.99)	(87.78)	(94.06)	(131.90)	(151.20)	(335.90)	(1271.00)
Casuallabour	168.10	-671.40	-174.20	16.27	(18.14)	18.85	105.20	79.14	429.10	1224.00
	(720.40)	(730.10)	(186.80)	(130.30)	(80.24)	(79.78)	(102.70)	(245.50)	(684.10)	(1915.00)
Hiredlabour	809.00	-447.30	-169.80	-50.75	38.88	148.2**	319.3**	626.8***	1,186***	2,558***
	(782.30)	(452.20)	(157.30)	(127.10)	(81.11)	(74.65)	(124.00)	(183.10)	(405.60)	(791.50)
Householdlabour	1052.00	381.80	-382.90	-444.50	-389.10	-219.40	-308.30	-219.00	-498.50	534.70
	(1681.00)	(639.80)	(362.60)	(318.50)	(285.00)	(259.80)	(330.60)	(452.20)	(1405.00)	(7003.00)
Location factors										
Urban	1,893*	-982.00**	-330.2*	-191.10	-47.64	-1.42	72.93	217.00	719.1*	1,623**
	(985.70)	(446.60)	(186.80)	(139.10)	(102.70)	(80.74)	(109.30)	(181.70)	(384.10)	(790.70)
Savannah	2,895**	-576.20	-61.30	-212.00	-134.60	-108.80	-184.90	-96.04	142.00	757.00
	(1468.00)	(586.40)	(250.30)	(175.60)	(133.30)	(117.20)	(178.20)	(242.50)	(458.20)	(1291.00)
Forest	-88.34	91.58	66.48	-30.99	-74.73	-99.01	-270.5*	-487.1**	-672.0*	-1,491**
	(706.40)	(492.30)	(193.40)	(146.80)	(122.30)	(106.30)	(144.40)	(206.80)	(375.40)	(660.20)
Manufacturing	292.80	-1,142***	-824.4***	-374.9**	-288.1**	-148.90	-178.30	-39.73	420.60	468.30
	(734.30)	(399.20)	(183.20)	(162.20)	(121.80)	(126.00)	(167.20)	(260.40)	(520.40)	(977.30)
Trade	1740.00	-3,553***	-2,071***	-1,248***	-658.9***	-230.3*	-122.60	283.30	1,018*	2,368**
	(1193.00)	(482.80)	(235.90)	(217.90)	(171.30)	(131.80)	(188.10)	(274.20)	(527.00)	(1032.00)
Restaurants	4,405***	-1,889***	-1,152***	-388.30	-221.90	-57.64	234.30	1,245*	2,833**	5396.00
	(1700.00)	(722.20)	(404.80)	(237.70)	(175.00)	(224.00)	(432.10)	(675.80)	(1165.00)	(3994.00)
Constant	-13,158***	3,066**	52.01	351.30	547.20	238.20	-169.90	-358.50	-1930.00	-1003.00
	(4696.00)	(1351.00)	(737.80)	(648.90)	(519.80)	(420.10)	(524.40)	(749.50)	(1436.00)	(3144.00)
Observations	1479.00	1479.00	1479.00	1479.00	1479.00	1479.00	1479.00	1479.00	1479.00	1479.00
R-squared	0.03									
F	0.00									

Note: Standard errors are reported below the estimates in parenthesis. OLS was estimated using robust standard errors whiles standard errors for quantiles are bootstrapped based on 1000 replications. *, ** and *** are levels of significance at 10%, 5% and 1%, respectively.

Appendix 3: Estimated Profit using sales and costs in high, average and low months

Month	High	Average	Low	None
January				
February				
March				
April				
May				
June				
July				
August				
September				
October				
November				
December				

Sales per month

What is the average level of sales in a HIGH month for this enterprise? GH cedis and pesewas	
What is the average level of sales in an AVERAGE month for this enterprise? GH cedis and pesewas	
What is the average level of sales in a LOW month for this enterprise? 1.GH cedis and pesewas	

Costs per month

What is the average level of costs in a HIGH month for this enterprise? GH cedis and pesewas	
What is the average level of costs in anAVERAGE month for this enterprise? GH cedis and pesewas	
What is the average level of costs in a LOW month for this enterprise? GH cedis and pesewas	

sales was estimated by adding all the sales with respect to high, average and low months throughout the year and costs estimated by adding all the costs in high, average and low months throughout the year. Zero will be recorded in months that that had no sales or costs. Thus Profit was estimated by subtracting the total costs throughout the year from the total sales throughout the year.

Appendix 4: Heckman Selection model for self-employment

Heckman selection model
(regression model with sample selection)

Number of obs	= 6508
Censored obs	= 5650
Uncensored obs	= 858
Wald chi2(14)	= 36.88
Prob > chi2	= 0.0008

Log pseudolikelihood = -7393.544

	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
i~self_emp~t						
female	-5.995219	17.80347	-0.34	0.736	-40.88938	28.89895
hh_head	21.23075	29.72086	0.71	0.475	-37.02107	79.48257
spouse_hhh~d	20.32183	24.12966	0.84	0.400	-26.97143	67.6151
school	-4.864445	10.16164	-0.48	0.632	-24.7809	15.05201
TLU	9.39891	3.134606	3.00	0.003	3.255196	15.54262
landholding	-3.481167	2.269876	-1.53	0.125	-7.930043	.967709
credit	11.04705	10.81368	1.02	0.307	-10.14739	32.24148
electricity	20.80271	8.842433	2.35	0.019	3.471858	38.13356
mobilephone	41.71843	11.94748	3.49	0.000	18.30179	65.13506
age	.8205127	2.022523	0.41	0.685	-3.14356	4.784585
agesquared	-.658626	2.155932	-0.31	0.760	-4.884175	3.566923
distance_w~r	-.5214347	3.775936	-0.14	0.890	-7.922134	6.879265
savannah	-5.495144	12.24009	-0.45	0.653	-29.48528	18.495
Forest	-17.25254	11.15224	-1.55	0.122	-39.11053	4.605442
_cons	139.048	93.04044	1.49	0.135	-43.30789	321.4039
self_emplo~t						
female	.8563271	.0697439	12.28	0.000	.7196317	.9930225
hh_head	1.110476	.1016698	10.92	0.000	.9112072	1.309745
married	.008655	.0620948	0.14	0.889	-.1130486	.1303586
spouse_hhh~d	.5021644	.1071341	4.69	0.000	.2921854	.7121435
school	.1274486	.0509128	2.50	0.012	.0276613	.2272358
TLU	-.000115	.0047427	-0.02	0.981	-.0094105	.0091805
landholding	-.0286666	.0134519	-2.13	0.033	-.0550319	-.0023013
credit	.1703772	.0647025	2.63	0.008	.0435626	.2971917
electricity	.1330007	.0466708	2.85	0.004	.0415276	.2244739
mobilephone	.3279338	.0516078	6.35	0.000	.2267843	.4290833
age	.0716567	.0098307	7.29	0.000	.0523888	.0909246
agesquared	-.0797442	.0107658	-7.41	0.000	-.1008449	-.0586435
distance_w~r	-.0206341	.018793	-1.10	0.272	-.0574677	.0161995
savannah	-.2541787	.0681713	-3.73	0.000	-.3877921	-.1205654
Forest	-.2552328	.0632401	-4.04	0.000	-.3791812	-.1312845
_cons	-3.862569	.207938	-18.58	0.000	-4.27012	-3.455018
/athrho	.0269845	.192301	0.14	0.888	-.3499185	.4038876
/lnsigma	4.765161	.0157188	303.15	0.000	4.734353	4.79597
rho	.026978	.192161			-.3363033	.3832704
sigma	117.3501	1.844598			113.7898	121.0217
lambda	3.165867	22.56294			-41.05669	47.38842

Wald test of indep. eqns. (rho = 0): chi2(1) = 0.02 Prob > chi2 = 0.8884

Appendix 5: Heckman Selection model for wage employment

Heckman selection model
(regression model with sample selection)

Number of obs	= 401
Censored obs	= 125
Uncensored obs	= 276
Wald chi2(14)	= 26.26
Prob > chi2	= 0.0240

Log pseudolikelihood = -1853.436

	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
i~wage_emp~t						
female	-28.49225	17.23591	-1.65	0.098	-62.27401	5.289523
hh_head	34.02127	25.98095	1.31	0.190	-16.90046	84.943
spouse_hhh~d	61.0701	30.53599	2.00	0.046	1.220658	120.9195
school	3.987875	19.17793	0.21	0.835	-33.60017	41.57592
TLU	-24.67152	15.56223	-1.59	0.113	-55.17293	5.829889
landholding	1.696786	2.69261	0.63	0.529	-3.580633	6.974205
credit	-14.11703	13.83128	-1.02	0.307	-41.22585	12.99178
electricity	11.69879	12.58506	0.93	0.353	-12.96747	36.36505
mobilephone	57.15322	22.82152	2.50	0.012	12.42386	101.8826
age	-1.246675	2.75795	-0.45	0.651	-6.652157	4.158807
agesquared	1.995891	3.102936	0.64	0.520	-4.085752	8.077535
distance_w~r	2.008232	1.792475	1.12	0.263	-1.504955	5.521419
savannah	22.6544	17.30493	1.31	0.190	-11.26263	56.57144
Forest	9.297857	13.74573	0.68	0.499	-17.64329	36.239
_cons	195.819	66.82706	2.93	0.003	64.84035	326.7976
wage_emplo~t						
female	.1071191	.2110745	0.51	0.612	-.3065794	.5208176
hh_head	-.3713002	.3214187	-1.16	0.248	-1.001269	.2586689
married	.0672706	.162384	0.41	0.679	-.2509962	.3855374
spouse_hhh~d	-.4649295	.4500525	-1.03	0.302	-1.347016	.4171572
school	.6043663	.2051578	2.95	0.003	.2022644	1.006468
TLU	-.07238	.1496949	-0.48	0.629	-.3657765	.2210166
landholding	-.0607957	.0296122	-2.05	0.040	-.1188346	-.0027568
credit	-.0186404	.163668	-0.11	0.909	-.3394238	.3021429
electricity	.5435843	.1456874	3.73	0.000	.2580423	.8291263
mobilephone	.3662624	.1963246	1.87	0.062	-.0185267	.7510516
age	-.0163714	.0364218	-0.45	0.653	-.0877568	.0550139
agesquared	.0265631	.0417619	0.64	0.525	-.0552887	.1084149
distance_w~r	.0072218	.0397949	0.18	0.856	-.0707749	.0852184
savannah	.9239918	.2457639	3.76	0.000	.4423034	1.40568
Forest	-.0040736	.1704319	-0.02	0.981	-.3381139	.3299667
_cons	-.1276897	.7877272	-0.16	0.871	-1.671607	1.416227
/athrho	.1090807	.116957	0.93	0.351	-.1201507	.3383121
/lnsigma	4.51192	.0498821	90.45	0.000	4.414152	4.609687
rho	.1086501	.1155763			-.1195759	.3259697
sigma	91.09652	4.544088			82.6118	100.4527
lambda	9.897647	10.68241			-11.0395	30.83479

Wald test of indep. eqns. (rho = 0): chi2(1) = 0.87 Prob > chi2 = 0.3510

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Appendix 6: OLS and Quantile Regression of Enterprise Performance in the Restaurants Subsector

Variables	OLS	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
Entrepreneurial resource										
Male	-247.60	-102.60	67.56	294.70	162.90	111.00	-58.10	-213.80	-309.70	-1003.00
	(274.50)	(378.30)	(309.80)	(310.60)	(320.70)	(351.30)	(380.50)	(450.20)	(563.80)	(814.60)
Age	-49.85	0.66	10.48	33.43	41.51	48.95	29.03	41.26	-64.35	-123.20
	(62.48)	(43.05)	(32.21)	(34.35)	(35.69)	(41.73)	(60.10)	(99.65)	(137.10)	(174.90)
Ageasquare	0.16	-0.06	-0.18	-0.51	-0.50	-0.56	-0.38	-0.56	0.23	0.68
	(0.59)	(0.47)	(0.36)	(0.38)	(0.39)	(0.43)	(0.60)	(0.96)	(1.31)	(1.66)
Noeducation	67.42	50.13	28.72	-80.34	-231.40	-161.40	63.49	-78.07	356.70	53.88
	(344.10)	(201.60)	(178.60)	(201.70)	(223.70)	(252.50)	(291.40)	(376.70)	(470.10)	(612.00)
Technical	-677.90	172.30	176.00	185.30	-105.60	-114.70	-346.40	-859.40	-1261.00	-1737.00
	(606.80)	(523.70)	(299.00)	(291.30)	(343.00)	(380.20)	(544.40)	(841.60)	(1120.00)	(1552.00)
Tertiary	-959.10	235.40	224.10	-14.08	-327.30	195.40	107.70	-365.90	-1431.00	-1984.00
	(774.90)	(418.80)	(334.00)	(338.60)	(346.40)	(413.90)	(506.20)	(773.30)	(1020.00)	(1342.00)
Enterprise resource										
age_enterprise	5.14	-4.30	-0.44	19.32	17.67	19.90	30.12	22.33	14.22	-4.33
	(35.57)	(33.67)	(28.36)	(28.20)	(23.94)	(26.41)	(31.15)	(40.26)	(46.02)	(64.16)
age_enterprise2	-0.08	0.16	0.08	-0.34	-0.52	-0.58	-0.83	-0.75	-0.62	-0.28
	(0.88)	(0.89)	(0.76)	(0.78)	(0.68)	(0.77)	(0.89)	(1.16)	(1.25)	(1.74)
Monthsoperations	38.12	-12.82	-1.95	26.80	42.71	48.74	66.22	38.68	79.15	168.50
	(83.58)	(71.01)	(53.56)	(59.08)	(74.43)	(74.01)	(119.40)	(156.50)	(199.40)	(245.20)
Credit	-112.00	151.20	117.90	-3.04	-136.90	-140.20	-117.10	-235.40	-245.60	-425.90
	(314.10)	(211.80)	(173.90)	(173.80)	(181.40)	(199.40)	(239.90)	(304.90)	(398.80)	(542.70)
Assets	0.10	0.24	0.24	0.16	0.11	0.10	0.25	0.25	0.30	1.09
	(0.36)	(0.34)	(0.30)	(0.37)	(0.43)	(0.53)	(0.60)	(0.73)	(0.78)	(0.91)
Registered	48.75	-108.60	-116.20	-231.40	-220.90	-152.00	228.20	-241.10	-35.35	400.70
	(343.70)	(447.70)	(276.10)	(261.40)	(277.80)	(342.00)	(399.50)	(527.00)	(631.10)	(793.50)
Apprentices	-380.6***	-59.58	-79.24	-152.20	-235.00	-249.40	-316.60	-299.50	-627.0*	-1,048**
	(125.40)	(197.50)	(150.00)	(152.80)	(166.80)	(198.80)	(217.80)	(273.70)	(336.10)	(424.20)

Casuallabour	-12.35	-208.40	-209.20	-226.60	-281.90	-95.81	6.56	227.30	424.20	830.80
	(406.40)	(175.90)	(195.10)	(236.80)	(284.50)	(369.40)	(476.40)	(576.30)	(633.80)	(681.30)
Hiredlabour	690.2***	205.40	194.60	328.4**	362.2**	370.0*	305.60	503.50	840.0**	936.3**
	(257.40)	(179.80)	(145.50)	(156.50)	(164.10)	(189.80)	(269.10)	(378.90)	(417.10)	(398.80)
Householdlabour	-379.00	-85.35	-74.59	-56.69	-194.40	29.54	-143.70	-436.20	-649.20	-1097.00
	(404.60)	(332.60)	(286.50)	(314.60)	(372.80)	(405.50)	(525.10)	(673.90)	(956.30)	(1231.00)
Location factors										
Urban	242.50	23.35	33.60	-52.93	123.10	185.30	339.60	437.70	-10.74	200.50
	(301.00)	(370.50)	(210.00)	(217.00)	(230.70)	(247.60)	(305.40)	(395.40)	(506.50)	(759.40)
Savannah	607.2*	-3.88	44.11	-16.66	-40.94	83.91	135.40	351.00	145.80	1209.00
	(332.40)	(212.80)	(186.40)	(180.70)	(192.50)	(212.40)	(279.20)	(365.30)	(503.40)	(807.70)
Forest	629.8**	184.70	146.00	176.50	275.50	290.40	374.90	579.90	697.10	780.60
	(254.80)	(207.70)	(185.10)	(182.90)	(203.80)	(223.50)	(273.50)	(361.40)	(434.80)	(569.50)
Constant	1251.00	94.17	-163.00	-762.30	-1142.00	-1436.00	-1138.00	-911.00	2080.00	2985.00
	(1628.00)	(1280.00)	(870.80)	(955.20)	(1092.00)	(1290.00)	(1936.00)	(2876.00)	(4085.00)	(5166.00)
Observations	135.00	135.00	135.00	135.00	135.00	135.00	135.00	135.00	135.00	135.00
R-squared	0.41									
F	.									

Note: Standard errors are reported below the estimates in parenthesis. OLS was estimated using robust standard errors whiles standard errors for quantiles are bootstrapped based on 1000 replications. *, ** and *** are levels of significance at 10%, 5% and 1%, respectively.

Appendix 7: OLS and Quantile Regression of Enterprise Performance in the Services Subsector

Variable	OLS	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
Entrepreneurial resource										
Male	1,550***	212.80	416.7*	362.0*	428.60	625.9**	873.1**	886.1**	866.2*	927.00
	(533.10)	(348.50)	(233.30)	(212.00)	(264.10)	(302.70)	(334.20)	(351.70)	(447.80)	(749.20)
Age	-50.99	-2.42	-9.22	-9.91	-17.66	-7.99	-28.23	-96.21	-96.43	-57.66
	(71.48)	(41.18)	(37.66)	(40.02)	(47.87)	(54.02)	(64.85)	(70.93)	(93.51)	(116.60)
Ageasquare	0.27	-0.02	0.05	0.04	0.12	0.00	0.12	0.81	0.75	0.24
	(0.75)	(0.44)	(0.40)	(0.43)	(0.54)	(0.59)	(0.71)	(0.76)	(1.03)	(1.23)
Noeducation	-442.70	-262.00	-355.30	-352.90	-213.60	-252.20	-61.32	-310.20	-692.90	-1,301*
	(425.30)	(262.30)	(233.10)	(230.40)	(271.60)	(327.50)	(362.50)	(404.80)	(502.50)	(778.80)
Technical	-590.80	-89.14	-351.60	-213.10	126.10	-128.50	-12.21	-140.40	-235.10	-926.90
	(581.20)	(717.70)	(518.50)	(443.10)	(617.80)	(603.20)	(580.10)	(643.10)	(721.00)	(1040.00)
Tertiary	-479.90	-6164.00	-6647.00	589.80	656.00	429.50	246.30	298.20	4567.00	4487.00
	(2872.00)	(3928.00)	(4051.00)	(3956.00)	(3741.00)	(3524.00)	(3795.00)	(4082.00)	(4338.00)	(5428.00)
Enterprise resource										
age_enterprise	120.9*	-19.00	-9.14	8.24	21.67	19.61	73.84	138.2**	163.1*	114.60
	(67.10)	(41.77)	(33.96)	(35.46)	(44.19)	(57.68)	(63.65)	(67.75)	(87.84)	(145.10)
age_enterprise2	-3.136*	0.60	0.20	-0.14	-0.47	-0.65	-1.88	-3.547*	-4.53	-1.14
	(1.65)	(1.21)	(1.01)	(1.15)	(1.48)	(1.81)	(2.00)	(2.12)	(3.25)	(5.74)
Monthsoperations	205.4**	15.33	11.29	17.65	53.23	82.39	133.3*	162.0*	200.3*	274.70
	(99.57)	(55.27)	(47.42)	(43.90)	(53.28)	(61.39)	(72.80)	(87.38)	(116.70)	(192.40)
Credit	-573.20	81.60	-122.10	-34.66	-34.45	-33.92	-378.00	-814.20	-139.10	1565.00
	(1165.00)	(432.90)	(391.90)	(411.70)	(530.30)	(679.10)	(1142.00)	(1460.00)	(2225.00)	(3167.00)
Assets	0.04	0.04	0.01	0.00	0.02	0.01	0.07	0.23	0.14	0.14
	(0.13)	(0.06)	(0.05)	(0.07)	(0.10)	(0.13)	(0.14)	(0.16)	(0.20)	(0.32)
Registered	935.10	23.07	-12.99	-80.18	-109.10	190.10	630.70	546.80	647.50	639.70
	(654.70)	(315.10)	(259.50)	(293.70)	(384.40)	(446.60)	(457.00)	(487.40)	(715.90)	(1446.00)
Apprentices	670.90	14.34	37.00	0.87	77.73	78.25	96.02	160.90	95.05	325.00

	(456.90)	(169.70)	(129.40)	(127.10)	(144.10)	(180.40)	(291.40)	(392.90)	(763.60)	(1577.00)
Casuallabour	231.50	-23.14	57.24	54.51	31.30	-22.30	-78.05	-58.37	300.40	703.60
	(314.70)	(140.90)	(144.80)	(188.10)	(267.80)	(338.00)	(432.00)	(647.10)	(892.70)	(1515.00)
Hiredlabour	83.18	70.91	114.70	141.50	172.40	172.50	146.30	294.30	559.10	881.40
	(442.50)	(229.00)	(176.30)	(169.40)	(213.20)	(257.00)	(285.00)	(330.50)	(409.30)	(546.60)
Householdlabour	976.90	77.11	-458.90	-523.70	238.90	624.80	471.10	222.70	(153.40)	7,538*
	(1326.00)	(715.50)	(862.50)	(1001.00)	(1492.00)	(1744.00)	(2425.00)	(3268.00)	(3574.00)	(4078.00)
Location factors										
Urban	168.80	-131.50	95.88	142.80	128.10	126.20	236.10	123.70	181.30	296.80
	(319.10)	(264.00)	(197.90)	(173.10)	(202.70)	(222.70)	(257.90)	(290.80)	(355.70)	(520.60)
Savannah	-171.00	-66.09	-415.2*	-424.0*	-535.90	-389.20	-252.90	-285.30	-62.94	-928.20
	(594.70)	(252.50)	(225.00)	(253.00)	(342.70)	(430.30)	(530.40)	(651.40)	(1026.00)	(1751.00)
Forest	-776.6*	-216.00	-249.80	-214.30	-298.50	-369.90	-454.90	-539.40	-880.0**	-1,225**
	(461.30)	(265.90)	(221.10)	(207.40)	(223.70)	(257.70)	(284.30)	(346.40)	(428.50)	(611.50)
Constant	-1537.00	157.10	363.50	287.80	56.29	-396.50	-688.60	337.30	253.30	-787.20
	(1908.00)	(1064.00)	(981.20)	(996.80)	(1201.00)	(1343.00)	(1551.00)	(1643.00)	(2307.00)	(3288.00)
Observations	147.00	147.00	147.00	147.00	147.00	147.00	147.00	147.00	147.00	147.00
R-squared	0.22									
F	0.17									

Note: Standard errors are reported below the estimates in parenthesis. OLS was estimated using robust standard errors whiles standard errors for quantiles are bootstrapped based on 1000 replications. *, ** and *** are levels of significance at 10%, 5% and 1%, respectively.

Appendix 8: Two-sample t-test of Profits between Male and Female Enterprise Owners WithoutAdjusting for Risks

Two-sample t test with unequal variances

Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
profi~01	528	2111.25	194.0576	4459.104	1730.029	2492.471
profit	1359	993.7325	67.53083	2489.498	861.2565	1126.209
combined	1887	1306.424	73.77459	3204.74	1161.736	1451.113
diff		1117.518	205.472		714.0583	1520.977

diff = mean(profit_01) - mean(profit) t = 5.4388
Ho: diff = 0 Satterthwaite's degrees of freedom = 658.619

Ha: diff < 0 Ha: diff != 0 Ha: diff > 0
Pr(T < t) = 1.0000 Pr(|T| > |t|) = 0.0000 Pr(T > t) = 0.0000

Appendix 9: Two-sample t-test of Profits between Male and Female Enterprise Owners WithAdjusting for Risks using Sharpe Ratio

Two-sample t test with unequal variances

Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
sharpe~o	1359	.3991698	.0271263	1	.3459559	.4523838
sharp~01	528	.4734696	.0435194	1	.3879767	.5589624
combined	1887	.4199596	.0230272	1.000291	.3747982	.465121
diff		-.0742997	.0512813		-.1749362	.0263367

diff = mean(sharperatio) - mean(sharperatio_01) t = -1.4489
Ho: diff = 0 Satterthwaite's degrees of freedom = 959.826

Ha: diff < 0 Ha: diff != 0 Ha: diff > 0
Pr(T < t) = 0.0739 Pr(|T| > |t|) = 0.1477 Pr(T > t) = 0.9261

Appendix 10: Variance Inflation Factors for variables used in Determinants of Participation and Participation Intensity in Rural Ghana

Variable	VIF	1/VIF
spousehhhead	2.57	0.388970
Hhhead	2.37	0.422561
Female	1.59	0.627135
Forest	1.55	0.645928
savannah	1.51	0.661567
Married	1.35	0.742671
landholding	1.14	0.873400
Age	1.14	0.876096
mobilephone	1.13	0.884013
electricity	1.12	0.889994
School	1.10	0.911406
Credit	1.06	0.945713
distancekm1	1.03	0.975114
TLU	1.02	0.981274
Mean VIF	1.41	

Appendix 11: Variance Inflation Factors for variables used in Determinants of Enterprise Financial Performance in Ghana

Variable	VIF	1/VIF
Trade	3.47	0.288267
manufacturing	2.97	0.336940
Hotels	2.01	0.498750
savannah	1.54	0.649726
Forest	1.50	0.668038
Age	1.32	0.757678
yearsopera~n	1.31	0.761950
Male	1.22	0.818026
noeducation	1.18	0.846774
Urban	1.14	0.880340
formalregist	1.13	0.882337
Assets	1.11	0.902760
Hirelab	1.07	0.932849
apprentices	1.06	0.947121
Tertiary	1.05	0.953381
technical	1.04	0.960675
monthsoper~s	1.03	0.967986
hhemployees	1.03	0.970179
casuallab	1.03	0.971977
Credit	1.03	0.974842
Mean VIF	1.41	