The Relationship between Environmental Management Practices and Financial Performance of Ghanaian SMEs

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ABSTRACT

The main objective of this study is to investigate the impact of environmental management practices (EMPs) (energy efficiency, water, waste, material, pollution and biodiversity management) on financial performance (FP) of Ghanaian small and medium-sized enterprises (SMEs). The study also has two subsidiary objectives as follows: (1) To examine the nature and extent of EMPs among Ghanaian SMEs, (2) To identify the barriers to adopting EMPs by Ghanaian SMEs. This study examines the effect of environmental management practices and its six components on financial performance using the theory of the firm. The findings suggest the need to test the theory more by using all the dimensional constructs since the result differs from that of the aggregated index. The study also employs institutional, stakeholder and legitimacy theories as theoretical lenses to examine environmental management barriers and argues that institutional void, stakeholder distance and lack of threat to legitimacy explain perceived barriers to environmental uptake.

The study is based on a survey of 238 SMEs from two industrial sectors. The main tool for data collection was questionnaire designed specifically in line with the existing literature on SMEs' environmental practices and associated barriers. The collected data was analysed through descriptive statistics, univariate statistics and regression analysis using the Statistical Package for the Social Science (SPSS).

The results of the main objective of the study indicate that overall there is a positive and significant relationship between EMPs and SMEs' financial performance. The findings further suggest that the individual components of EMPs have a different influence on FP. EMPs relating to energy efficiency, water, waste and material management have a significant effect on FP. On the other hand, pollution and biodiversity management are not significantly associated with FP. In respect of subsidiary objective (1), the results suggest that the nature of EMPs among Ghanaian SMEs is more tilted towards resources conservation with most of the instituted measured being "common sense cost-cutting". The extent of EMPs is generally average and promising. The results of subsidiary objective (2) revealed that barriers perceived as limiting SMEs' environmental management practices uptake include limited resources, low support

services, low level of stakeholder pressure, poor enforcement of regulations and environmental knowledge and ownership attitude challenges.

The evidence from the study indicates that in spite of the socio-economic and cultural differences between Ghana as a developing country and those of developed economies from where institutional, stakeholder and legitimacy theories have been developed and tested, these theories provide the general framework to understand perceived barriers of Ghanaian SMEs. This is an indication that the key tenets of these theories are applicable in developing country's content as they are in developed economies for the proactive adoption of EMPs. Also, the testing of an aggregated variable or single indicator by existing studies might not give a full picture of how good is the theory of the firm since EMP is a multi-dimensional construct. This gives an indication that the support for the holistic testing by the theory may need to be modified based on the evidence of the disaggregated testing. The findings suggest the need to test the theory more by using all the dimensional constructs.

Another significance of the findings is that they enhance our understanding of the nature and extent of EMPs, barriers and the effect of EMPs' on the financial performance of SMEs in Ghana where such knowledge does not exist and to the dearth of literature in developing countries in general. The insights from the findings will help inform policy direction on dealing with environmental challenges associated with the dominant SMEs' sector in the Ghanaian economy.

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DECLARATION

This thesis is submitted in fulfilment of the requirements for the degree of Doctor of Philosophy (Accounting) at the Bournemouth University, United Kingdom. I declare that this thesis is based on my original work except for quotations and citations which have been duly acknowledged. I also declare that this thesis has not been previously or concurrently submitted, either in whole or in part, for any other qualification at the Bournemouth University or other institutions.

Gabriel Sam Ahinful
December 2017

DEDICATION

I dedicate this thesis to my parents Mr and Mrs Sam who through hard work supported my education and offered the needed encouragement especially in tougher times without employment.

LIST OF ABBREVIATIONS AND ACRONYMS

ACCA	-	Association of Certified Chartered Accountant
AGI	-	Association of Ghana Industries
BD	-	Biodiversity Management
CEP	-	Corporate Environmental Performance
COP	-	Conference of Parties
CPI	-	Corruption Perception Index
CSER	-	Corporate Social and Environmental Responsibility
CSR	-	Corporate Social Responsibilities
ECE	-	Environmental Compliance and Enforcement
EE	-	Energy Efficiency
EFA	-	Exploration Factor Analysis
EIA	-	Environmental Impact Assessment
EKC	-	Environmental Kuznets Curve
EMP	-	Environmental Management Performance
EMPs	-	Environmental Management Practices
EMS	-	Environmental Management System
ENEC	-	European Network of Eco-Design Centres
EOP	-	Environmental Operational Performance
EPA	-	Environmental Protection Agency
EPC	-	Environmental Protection Council
EU	-	European Union
FAGE	-	Firm Age
FP	-	Financial Performance
FSIZE	-	Firm Size
GAX	-	Ghana Alternative Exchange
GDP	-	Gross Domestic Product
GHBC	-	Ghana Business Code
GEDC	-	Ghana Enterprise Development Commission
GSS	-	Ghana Statistical Service

GTA	-	Ghana Tourism Authority
HIPC	-	Heavily Indebted Poor Countries
IEFE	-	Institute for Environmental and Energy Policy and Economics
IMF	-	International Monetary Fund
INDUS	-	Industry
KMO	-	Kaiser- Meyer- Olin
L.I.	-	Legislative Instrument
MASLOC	-	Microfinance and Small Loan Centre
MDG	-	Millennium Development Goal
MESTI	-	Ministry of Environment, Science, Technology and Innovation
MM	-	Material Management
MNEs	-	Multinational Enterprises
NACAP	-	National Anti-Corruption Action Plan
NBSSI	-	National Board for Small Scale Industries
NEAP	-	National Environmental Action Plan
NEP	-	National Environmental Policy
NGOs	-	Non-Governmental Organisations
NPV	-	Net Present Value
OMAGE	-	Owner-Manager Age
OMEDU	-	Owner-Manager Education
OMEXP	-	Owner-Manager Experience
OMGEN	-	Owner-Manager Gender
OWNTYP	-	Ownership Type
PCA	-	Principle Component Analysis
POL	-	Pollution Management
PPME	-	Programs Planning Monitoring and Evaluation
PURC	-	Public Utility Regulatory Commission
RBV	-	Resource Base View
ROA	-	Return on Assets

ROE	-	Return on Equity
ROS	-	Return on Sales
RPED	-	Regional Project on Enterprise Development
SD	-	Standard Deviation
SMEs	-	Small and Medium Enterprises
SPSS	-	Statistical Package for the Social Science
TRI	-	Toxic Release Inventory
UK	-	United Kingdom
UNDP	-	United Nations Development Program
UNEP	-	United Nations Environmental Program
UNIDO	-	United Nations Industrial Development Organisation
USA	-	United State of America
VIF	-	Variance Inflation Factor
WBCSD	-	World Business Council for Sustainable Development
WHO	-	World Health Organisation
WM	-	Waste Management
WMC	-	Water Management

CHAPTER ONE

Introduction and Overview of Research

1.0 Introduction

There has been significant interest among academic researchers and practitioners on environmental management practices of firms and its effects on financial performance (Christmann 2000; Darnall et al. 2008; Fujii et al 2013; Jackson and Singh 2015; Trumpp and Guenther 2015; O'Donohue and Torugsa 2016). This may reflect increasing attention by both primary and secondary stakeholders to actions being taken by businesses including SMEs to mitigate the impact of their operations on the environment. The current attention by stakeholders is part of growing concern worldwide about environmental sustainability and economic development. This was reinforced at the Conference of Parties' 21st summit in Paris in 2015 (COP 21) where all nations were required by the new treaty to "*put forward their best efforts and to strengthen them in the years ahead. This includes, for the first time, requirements that all parties report regularly on their emissions and implementation efforts, and undergo international review*" (Center for Climate and Energy Solutions 2015, p.1). Subsequently, COP 22 summit held in Marrakesh, Morrocco in 2016 was keen on setting out the details for achieving COP 21, indicating the seriousness attached to environmental impact on global warming. Environmental management which encompasses all efforts to minimise the negative environmental impact of a firm's products/service throughout their life cycle (Klassen and Mclaughlin 1996) is important for the sustainable use of natural resources by businesses and all others in order to achieve the COP 21 objective and reduce the impact of human activities on climate change. Businesses being key partners in development and contributors to negative environmental impact are expected to play the lead role in instituting measures to mitigate their environmental impact and achieve the global warming reduction envisaged by COP 21.

The realisation, a long time ago, that businesses needed to devote resources to environmental management led to questions as to how spending resources on managing the environment would affect the businesses' bottom line (Qian and Xing 2016; Cheon et al. 2017). For example, Friedman (1970) argued that environmental management divert funds from positive potential

projects thereby depriving shareholders of value for money, may increase prices for customers and reduce employees' wages. However, other researchers including Davis (1973) and Porter and van Linde (1995) have suggested that businesses engaging in environmental management result in a "win-win" situation and hence businesses may perform even better by managing the environment. Against this background, empirical studies have been undertaken on the link between environmental management and financial performance using varying measures and in most cases, a single indicator to proxy EMPs (Jaggi and Freedman 1992; Gonzales-Benito and Gonzales-Benito 2005; Lucas and Noordewier 2016). The results of the prior studies have been conflicting. For instance, whiles Montabon et al (2007), Pereira-Moliner et al (2015), Ramanathan (2016) and Gonenc and Scholtens (2017) demonstrated significantly positive relationship between environmental management and financial performance, Hart and Ahuja (1996); Cordeiro and Sarkis (1997), Filbeck and Gorman (2004) and Ennis et al (2012) found negative link between environmental management and financial performance. Others including Earnhart and Lizzal (2007), Nyirenda et al (2013) and Pintea et al (2014) found no association between environmental management and financial performance.

However, many of these prior studies took place in developed economies with relatively high environmental support culture and also the focus has been on large listed firms (Pintea et al. 2014; Qian and Xing 2016) even though SMEs in most economies constitutes over 90% of the business population (Strandberg and Roberson 2009). Overall, the research on the effect of environmental management on financial performance in SMEs has been very limited in spite of their pollution emission in the manufacturing sector being about 70% (Hillary 1995) and generation of commercial waste estimated at about 60% (NetRegs 2002). The notable exception being Clemens (2006) in the USA, Aragon-Correa et al (2008) in Spain and Qian and Xing (2016) in Australia. The limited empirical research on the link between environmental management and financial performance among SMEs has left unanswered the question of the importance of improving environmental management among SMEs (Qian and Xing 2016). This issue becomes very unclear from the context of a developing country like Ghana where research evidence regarding environmental management and its effect on firms' financial performance does not exist.

Again in spite of several documented research evidence of environmental management practices of large companies (Margolis and Walsh 2003; Lawrence et al. 2006; Clarkson et al. 2011) very little is known of the nature and extent of EMPs and barriers (Brammer et al. 2012; Pinget et al. 2015) of SMEs. The relatively low environmental management among SMEs is due to a number of challenges which include: ignorance of environmental laws; lack of capacity to tackle their environmental impact; and financial and administrative burden of environmental compliance as well as the perception of environmental management being costly but with no commensurate benefit for the business (Revell 2003; Iraldo et al. 2010). These challenges also affect the scope of existing research. Additionally, in most developing countries there is low demand for environmental quality due to a low awareness level, poverty and challenges facing state regulatory institutions (Sarumpeat 2005; Mensah 2006; Everett et al. 2010; Earnhart et al. 2014). Under such circumstances stakeholder pressure is seemingly absent, environmental management practices among businesses become voluntary and with SMEs well noted to face resource constraints it remains unclear the nature and extent of environmental management practices and the barriers encountered by SMEs.

Therefore, this study attempts to bridge these gaps by investigating the relationship between environmental management practices and financial performance among Ghanaian SMEs. In doing so, the nature and extent of environmental management practices as well as the barriers to environmental management practices will also be examined.

1.1 Why Ghana?

The manufacturing and service firms involved in this study are all located in the Kumasi metropolis. The metropolis is one of the only two metropolises with about 46% SME concentration (GSS 2016) and a population of 2.4 million. Hence a study using this area is considered highly representative of other metropolises and cities in the country. Also, the metropolis was the first to undertake environmental sanitation programme between 1989 and 1994 by UNDP and World Bank which has seen it built a reputation as environmental sanitation pioneer in Ghana (WaterAid 2016). Again, the traditional authorities together with the EPA, Metropolitan Assembly in Kumasi had launched environmental awareness and sanitation day

(which fall on the first Saturday of every month) prior to the national sanitation day. With these developments, firms and citizens were exposed to environmental management practices by officials (WaterAid 2016). It is expected that firms in this metropolis compared to others, to some extent possess relatively good environmental management knowledge and skills. It is, therefore, expected that the firms may have the capacity to provide the necessary environmental information needed to achieve the research objectives.

Ghana is blessed with an abundance of natural resources but faces challenges in its management. Unlike developed countries where environmental agenda has been a prominent part of national agenda since the 1992 Stockholm environmental conference, the story is different when it comes to developing countries context. A recent study by Yale University that rated 178 countries (both developed and developing) on their environmental performance scores ranked Ghana at 151 with an environmental performance score of 32.07%. This result shows that the country fell short of the 45.88% expected environmental performance score of the country for the last 10 years (Yale University 2014). The country performed poorly and the ranking is a reflection of the poor environmental governance over the years. This also depicts the level of environmental performance of many Sub-Saharan Africa countries with all of them ranking in the last quarter. In Ghana, environmental management was not much of a concern during the colonial era and early days of independence (UNCED 1992). The developmental projects undertaken did not consider the impact on natural resources and the environment. This resulted in decades of significant unchecked damage to the human and physical environment (Betey and Essel 2013). It is estimated that the developmental path being currently pursued by the country put much stress on the environment. The poor management of the environmental impact reduces GDP by 10%. This figure shows an increase of about 6% from the previous estimate in 1988 which was 4% of GDP (UNEP 2012). This is a clear indication that the quest of the country for poverty reduction and a better standard of living have not followed the sustainable strategy and whatever have so far been achieved has come with some ecological and social costs (Domfeh 2006). It is estimated that about 69% of Ghana's total land surface due to poor environmental practices including lumbering, mining and agriculture are exposed to moderate to very severe erosion. The average forest depletion rate of 1.37% per annum between 2011 and 2012 (UNDP 2015) contributed to the county not meeting the MDG7 in 2015.

Businesses have played a key role in contributing to the environmental problems in the country. The Activities of various industrial players including large and small businesses contribute to water, air and land pollution in the country. Liquid and solid wastes generated by industries are disposed-off mostly into water bodies or open drainage either poorly treated or untreated due to limited availability of wastewater treatment plants (Boadi and Kuitunen 2002). Recycling of waste is not a common practice which also aggravates the situation (GNA 2007). The major producers of industrial pollutants in the country are textiles, food manufacturing, petroleum refining and handling, and mineral exploitation and processing (EPA 1991). These industries pollute water and soil through the discharge of effluents such as mineral acids, hydroxides, silicates, carbonates, chloride and bleaching detergents. The Korle lagoon is currently under restoration due in part to the waste discharged by industries into its basin. The Korle lagoon basin houses about 80% of the industries located in Accra and this has resulted in heavy pollution, low nutrients and dissolved oxygen concentration (Boadi and Kuitunen 2002; International Marine and Dredging Consultants 2012). Solid wastes (ferrous and non-ferrous) in the form of aluminium, scrap metal, spent oil, wax cotton fluffs, pallets, yarns, and cut-offs generated by firms are poorly handled leading to pollution.

Asmah and Biney (2001) identified emission from industrial processes, mobile and stationary combustion engines as the three main sources of air pollution in Ghana. The key source of wastewater discharge was from the food and beverage industry which accounted for about 80%. The study found that about 40% of all waste is usually discharged directly into drains. These observations indicate that the business community of which SMEs constitute over 92% contribute immensely to environmental problems in the country and raises questions about the nature and extent of environmental management practices by businesses as well as the barriers to environmental management by businesses. In addition, how if any, does environmental management practices affect the economic fortunes of businesses.

1.2 Motivation and Need for the Study

The motivation for the study stems from the fact that there is no consensus among researchers when it comes to the issue of environmental management and financial performance of enterprises (King and Lenox 2001; Cohen et al. 1997; Earnhart and Lizal 2007; Zeng et al. 2011;

Pereira-Moliner et al. 2016). Studies on the subject matter, both in large and small firms have failed to yield conclusive result necessitating the need for further studies. While Hart and Ahuja (1996), Montabon et al (2007), Trumpp and Guenther (2015) and Ramanathan (2016) concluded that there is positive relationship between environmental management practice and financial performance, others found negative (Jaggi and Freedman 1992; Cordeiro and Sarkis 1997; Hassel et al. 2005) and neutral (Elsayed and Paton 2005; Nyirenda et al. 2013; Pintea et al. 2014) relationship. The inconclusive nature of the result has been linked to small sample size, difficulties in measuring EMPs, lack of control variables, lack of theory, differences in years, differences in socio-economic and political conditions, different accounting standards and organisational structures (Albertini 2013). In the light of this evidence, the study seeks to contribute to existing knowledge on the relationship between environmental management practices and financial performance.

Another motivation for the study is that generally, research into EMPs have concentrated on large firms to the neglect of SMEs (Aragon-Correa et al. 2008; Torugsa et al 2012). This development is due to their visibility, availability of data and the believe that they have the resources to pursue environmental management (McKeiver and Gadenne 2005; Brammer et al. 2012). Most large companies are more formalised which aids proper information/record keeping irrespective of whether listed or non-listed. However, research findings from large firms may not be applicable to SMEs because SMEs are not "smaller larger firms" and therefore findings from larger firms cannot be scaled down to fit them (Tilley 1999). It is well noted that vast differences exist between SMEs and their larger counterparts in the areas of organisational structure, management style, knowledge level and owner-manager characteristics which are known to influence environmental behaviour to a greater extent (Williamson et al. 2006). This, therefore, calls for the study of environmental management practices in SMEs' context in order to help managers, researchers and policymakers to understand and develop policies suitable and applicable to this unique group than to scale down environmental management practices of larger firms for them.

Relating to above is the fact that there is paucity of literature on SMEs' environmental management practices especially so when it comes to developing countries coupled with the fact that most of the limited SMEs' environmental management studies have taken place in matured market environment (see, Clemens 2006; Aragon-Correa et al. 2008; Hillary and Burr 2011; Qian and Xing 2016). These matured markets are characterised by strong environmental legislation, high demand for "green product" and more organised SMEs and seems to have in place formal organisations supporting them in their environmental uptake (Brammer et al. 2012). This situation contrasts sharply with the operating environment of SMEs in less economically developed countries like Ghana which is characterised by weak environmental regulations, poor institutional governance structure, poverty, corruption and lack of green pressure groups. These in most instances have led to poor environmental behaviour by businesses in these countries (Hossain et al. 2012; Earnhart et al. 2014). There is, therefore, the need to explore the environmental behaviour of SMEs in such environment and how its impacts on their finances.

Also, the study has been motivated by the use of a single indicator to proxy EMPs. Majority of prior research examining the environmental-financial performance have used only one environmental management practices variable to analyse the effect (Jaggi and Freedman 1992; Sahu 2014; Pintea et al. 2014; Pham 2015). Trumpp et al (2015) argued that corporate environmental performance (CEP), environmental management performance (EMP) and environmental operational performance (EOP) are multidimensional constructs and therefore, studies capturing more dimensions are more coherent and comprehensive than studies using only single indicator. Single indicator studies do not allow for generalisation of conclusion regarding CEP, EMP or EOP. The multidimensional nature of environmental management practices has also been affirmed by prior studies (Xie and Hayase 2007; Schultze and Trommer 2012). The recent gradual acceptance of the multidimensional construct nature of environmental management practices is now motivating researchers to seek to determine whether the choice of environmental management variable/measure matters when investigating the relationship between environmental management and financial performance (Dixon-Fowler et al. 2013; Endrikat et al. 2014). This study uses multiple environmental management variables implemented by firms and has also decomposed these environmental management practices in order to analyse the effect of each individually implemented environmental management

practices on firm financial performance. This is important since not all environmental management practices are likely to yield the same result. Therefore, disaggregating environmental management practices into simple specific components can help untangle and understand the environmental-financial performance better (González-Benito and González-Benito 2005; Nollet et al. 2016). The study holds the view that a holistic and sub-systemic approach to examining the environmental-financial performance link will give a clear picture of the contribution of each environmental management practices variable to the outcome and should be the focus of management. This is very important especially in the SMEs' context where resource constraint is well noted and short-term profitability is of great concern for survival.

Again, in respect of the nature and extent of environmental management, many of the existing research is limited to large companies from developed countries. Such research may not be applicable to SMEs because of the differences between SMEs and their larger counterparts in the areas of organisational structure, management style, knowledge level and owner-manager characteristics which are known to influence environmental behaviour to a greater extent (Williamson et al. 2006). This, therefore, calls for the study of the nature and extent of environmental management practices in SMEs context, in order to help managers, researchers and policymakers to understand and develop policies suitable and applicable to this unique group than to scale down environmental management practices of larger firms for them.

Lastly, it has been documented that SMEs face barriers in environmental management uptake (Ervin et al. 2013; Pinget et al. 2015). However, most of the existing SMEs' studies on environmental management is limited to selected industries (Mensah 2006; Mir and Feitelson 2007; Aragon-Correa et al. 2008). According to Stevens et al (2012), SMEs' studies relating to barriers are based on small-scale case studies and anecdotal evidence (Williamson et al. 2006). This is often attributed to the lack of data, non-visibility and perception of limited environmental management uptake (Lefebvre et al., 2003). This limitation of the scope of existing studies hinders insight and deeper understanding of barrier peculiarities resulting from industry and does not allow for cross-comparison for policy design and implementation. This indicates that widening the scope of SMEs' studies to include more industries from different sectors will enrich the level of analysis relating to environmental management barriers of SMEs. This will help

reduce information deficit relating to other sectors for policymakers and implementers to formulate appropriate environmental policies aimed at reducing the estimated significant environmental impact of SMEs (NetRegs 2002; Labonne 2006).

1.3 Aims and Objectives of the Research

Main Objective

The main objective of this study is to investigate the relationship between environmental management practices and financial performance among Ghanaian SMEs.

Subsidiary Objectives

In addition to the main objective, the study has two subsidiary objectives as following:

1. To determine the nature and extent of environmental management practices (energy efficiency, water, waste, material, pollution and biodiversity management) of Ghanaian SMEs.
2. To identify barriers to environmental management by Ghanaian SMEs.

1.4 Research Questions

Main Research Question

To achieve the above-stated objectives, the main research question that this thesis will seek to answer is as follow. To what extent is there a relationship between environmental management practices and financial performance of Ghanaian SMEs?

Subsidiary Research Questions

In addition, the research will also answer the following subsidiary research questions.

1. What is the nature and extent of environmental management practices (energy efficiency, water, waste, material, pollution and biodiversity management) among Ghanaian SMEs?
2. What are the barriers that SMEs in Ghana face in managing their environmental impacts?

1.5 Summary of Research Methodology

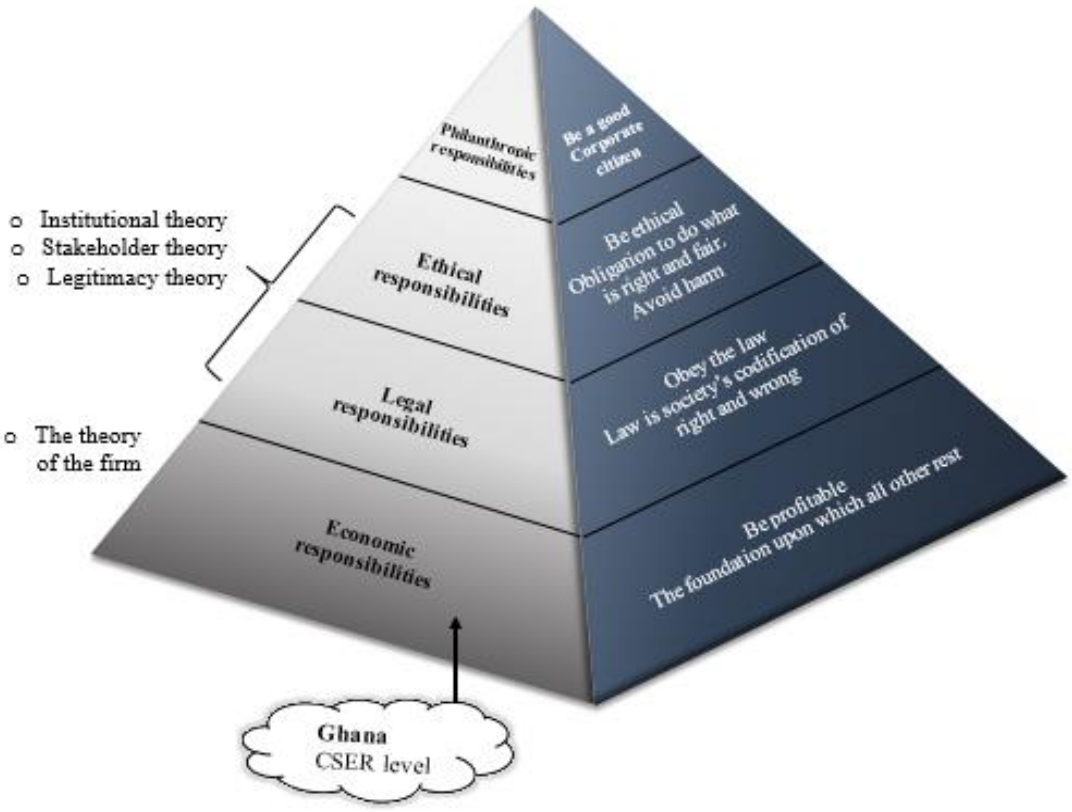
To achieve the set objectives of the research a questionnaire survey was undertaken among a sample of SMEs operating in the Kumasi metropolis in the Ashanti region of Ghana. The sample was made of 305 firms from a population of 494 firms operating in the manufacturing and service sectors in the metropolis who were registered members of the National Board for Small Scale Industries (NBSSI), Association of Ghana Industries (AGI) and Ghana Tourism Authority (GTA) operating in the Kumasi metropolis in Ashanti region. The NBSSI and AGI are the leading institutions for SMEs development with GTA responsible for tourism including hotel facilities. The questionnaire was made up of four parts. Part one solicited information on the demographics of the owner-managers and the firm. Part two was on the environmental management practices undertaken by the firms based on the review of the relevant literature on the subject. Part three collected data on the barriers perceived by respondents as affecting the environmental journey with part four containing questions relating to the firm's financial performance. The self-administered questionnaire was distributed to respondents at their work premises due to the poor postal system.

At the end of the survey period, 244 questionnaires were returned with 238 of them usable. This represents 80% response rate. For the main objective and two subsidiary objectives (1) and (2) the analysis was based on descriptive statistics using mean and ranking. For subsidiary objective (1), a t-test was also employed to test the mean significance. For the purposes of answering the main objective, the environmental management practices and financial performance responses were subjected to regression analysis after exploratory factor analysis (EFA). The main dependent variable was a financial performance which was an aggregated variable (Judge and Douglas 1998; Clemens 2006; Zeng et al. 2011). The independent variables consist of the environmental management practices (composite variable) and its six components (energy efficiency, water, waste, material, pollution and biodiversity management). Two sets of control variables identified as affecting firm financial performance were included in the regression analysis. These were owner-manager socio-demographic characteristics (age, gender, education and experience) and firm-specific characteristics (ownership type, age, size and industry).

1.6 Conceptual Framework

The current study sets out to investigate the relationship between EMPs and FP of SMEs in Ghana. The conceptual framework of the study, encompassing the developing country context of the study and the theoretical framework focused on the three objectives outlined in section 1.3 is presented in figure 1.1 below. Based on the corporate social environmental responsibility (CSER) literature and in line with the adapted classical CSER pyramid from Carroll (1991), a-priori one might expect that the level of CSER development in the Ghanaian context is infantile (see section 2.5 of chapter two and section 3.2 of chapter three) and corresponds with the base of the CSER pyramid where the focus of entrepreneurs is on economic gains and, where appropriate, compliance with legal requirements and little attention being paid to higher orders of the pyramid. Socio-environmental activities of firms operating in such an environment are expected to align with the CSER development level. Environmental management practices of firms are expected to fulfil the economic responsibility of the society.

Figure 1.1: CSER Pyramid



Source: Adapted from Carroll (1991).

To achieve the objectives, the nature and extent of EMPs of SMEs in the study context will be measured in line with DEFRA guidelines. The measured EMPs will be used to examine the link between EMPs and FP. The conceptual framework assumes that at the base of the pyramid, EMPs undertaken by the firms such as energy efficiency, water, waste, material, pollution and biodiversity management (see section 5.7 of chapter five) are expected to influence the financial performance of the firms after controlling for owner-manager and firm-specific characteristics. At this level of CSER development, the main theory which offers insight into the EMPs of the firm is the theory of the firm. This also fits with the neo-classical view of socio-environmental activities by the firm. The firms' engagement in EMPs is mostly directed by the expectation to be committed to being profitable and the firms' success is measured by consistency of profitability (Carroll, 1991). Further, the conceptual framework focused on legal and ethical responsibility levels which also influence EMPs and the role of institutions, stakeholders and

legitimacy factors to identify the barriers to EMPs (see section 5.7 of chapter five). Philanthropic responsibility was not included due to its social orientation in developing countries context (Visser 2006). The theories underpinning the study which are deemed to offer insight into the objectives of the study are those listed on the left-hand side of the pyramid corresponding to the relevant component above. These include the theory of the firm which relates to EMPs and FP and institutional, stakeholder and legitimacy theories which offer an explanation for perceived EMPs barriers in the study context by SMEs. These theories have been discussed in detail in chapter three.

1.7 Main Findings

The main objective of the study was to examine the link between environmental management practices and financial performance. The evidence from the study indicates that there is a positive and significant relationship between environmental management practices and firm financial performance. This provides support for the business case argument that reducing the negative impact of organisational activities may equally improve the financial performance of the firm (Trumpp and Guenther 2015). Further investigation into the effect of each component of environmental management practices on financial performance revealed a positive and significant relationship between energy, water, waste and material management and financial performance. However, pollution and biodiversity management did not have any significant relationship with firm financial performance. This is an indication that different environmental management practices undertaken by firms may have varied impact on their financial performance. From this evidence, firm managers of SMEs will know where to spend their limited resources and policymakers also can come out with policies which will seek a balance from SMEs in all aspects of their environmental management practices since they know areas which need attention.

The results of the study relating to the subsidiary objective (1) also suggest that the nature of environmental management practices of responding firms is more of “common sense cost cutting” resources conservation. The level of practices adopted by respondents in the identified categories involves simple changes in coordination, routines and operations with more focus on short-term economic benefit(s) (Aragon-Correa et al. 2008; Kasim 2009; Nyirender et al. 2013).

This supports the theory of the firm and minimalistic approach to environmental management by SMEs due in part to resources constraints, scepticism of the benefits of environmental investment and short-term profitability of the firm. The results also indicate that Ghanaian SMEs are involved in various practices which have an impact on the business and the natural environment supporting the "win-win" and the business case advocacy. The Ghanaian SMEs are engaged in several measures in the areas of energy, water, waste, material, pollution and biodiversity. This supports prior studies assertion that SMEs' usually undertake several activities with a positive effect on the natural environment which may not be termed as environmental management practice (NetReg 2002; McKeiver and Gadenne 2005; Lawrence et al. 2006). The results indicate that generally, the extent of the sampled Ghanaian SMEs' environmental management practices is average with biodiversity recording relatively low score among all the practices. The results further show that the extent of application of technological measures within categories of the six environmental management practices is low.

Thirdly, on the perceived barriers of environmental management practices of SMEs (subsidiary objective 2), the study found resources limitation, lack of regulation enforcement, low level of environmental support services, lack of knowledge and owner attitude to environmental management practices as factors deemed to affect environmental improvement. Also, some stakeholders were not exerting much pressure on SMEs when it comes to environmental uptake. This evidence is consistent with Revell and Blackburn (2004) who found that stakeholders in the construction and restaurant industries are not concerned about quality environmental management which hinders environmental improvements.

1.8 Contributions of the Research

The study makes the following contributions relating to the main objective which examines the relationship between environmental management practices and financial performance. First, the study contributes to the provision of evidence of how environmental management practices influence financial performance of SMEs in Ghana, where such evidence does not exist, and more generally in developing countries where such evidence is limited. Also, because the research used multiple environmental management practices (EMPs) measures as opposed to single measure in many previous studies, energy (Pham 2015; Sahu 2014), toxic release (Jaggi

and Freedman 1992) or aggregated measure such as energy or eco-efficiency (Aragon-Correa et al. 2008; Molina-Azorin et al. 2009; López-Gamero et al. 2009) the study additionally contributes by reporting evidence which suggests that the overall measure of EMPs (consisting of energy, water, waste, material, pollution and biodiversity) and individual EMPs (energy, water, waste and material) are associated with financial performance of SMEs while other EMPs (pollution and biodiversity) are not. Thus, overall, the study's results contribute by showing the dangers of using aggregate measures of EMPs in examining the relationship between environmental management and financial performance.

Another important finding of the thesis provides further insight into the theory of the firm in relation to the extent to which the theory helps explain the link between EMPs and FP in the context of developing country. The findings from the hypotheses testing indicate that similar to results obtained by studies testing composite variable in developed countries (McWilliams and Segiel 2001), Ghanaian SMEs' overall score (Composite) of EMPs is significant and positively related to FP. However, additional insight is provided which prior studies using the theory of the firm did not consider. When the disaggregated EMPs were tested, energy, water, waste and material were found to be significantly related to FP but not pollution and biodiversity. This gives an indication that the support for the holistic testing by the theory may need to be modified based on the evidence of the disaggregated testing. The testing of an aggregated variable or single indicator by existing studies might not give a full picture of how good is the theory of the firm since EMP is a multi-dimensional construct. Therefore, for the purposes of theory building, there is the need to test the theory more by using all the dimensional constructs. Research findings from aggregated or single variable studies need to be examined carefully for its suitability for the application. Also, the study integrates the theory of the firm and stage of CSR development to investigate EMPs and FP thereby contributing to the extension of the Carroll pyramid in developing country context.

Again, the evidence from the study indicates that in spite of the socio-economic and cultural differences between Ghana as a developing country and those of developed economies from where institutional, stakeholder and legitimacy theories have been developed and tested, these theories provide the general framework to understand perceived barriers of Ghanaian SMEs.

This is an indication that the key tenets of these theories are applicable in developing country's context as they are in developed economies for the proactive adoption of EMPs.

Third, the current study contributes by providing SME specific evidence on the environmental management-financial relationship. Although the relationship has been the subject of prior studies (King and Lenox 2001; Montabon et al. 2007; Trumpp and Guenther 2015), these studies are mainly based on data from large firms as opposed to SMEs that are the focus of this study. The concentration of studies on large firms may be attributed to the fact that most SMEs are privately owned, not listed in most countries and regulations relating to their financial statement do not mandate its publication. Also, there is much secrecy among owner-managers of SMEs especially when it comes to financial and other business-related information. This makes it costly and time-consuming in gathering SME data for research in this area. All these factors lead to more focus on large firms especially publicly trading firms where there is much and relatively easy access to data contributing to the scarcity of SME environmental-financial performance studies. The results of the current study, therefore, add more evidence about how environmental management practices affect the financial performance of SMEs in a field where there is sparse research evidence.

Fourth, the research results also contribute by providing further evidence of the effect of environmental management practices on financial performance of SMEs in the context of the less developed country. Most of the existing literature to the best of our knowledge has only documented evidence pertaining to western economies where the concept of environmental management as part of CSR was developed (Clemens 2006, Aragon-Correa et al. 2008). Western economies differ in various aspects such as strong environmental legislation, demand for 'green product', formal organisation of SMEs with formal organisations supporting them in their environmental uptake (Brammer et al. 2012) from those of developing countries. The new evidence provided by the current study on the inconclusive debate on the relationship between environmental management practices and financial performance from the perspective of less economically developed country like Ghana whose environment is classified as weak in terms of environmental performance (MESTI 2012; Yale University 2014, 2016) will enhance our understanding of this relationship in different geographical context with relatively different

environmental regime from the west. The socio-economic and political realities in most developing countries including Ghana are different from that of the developed economies of the west. Most developing countries are currently pursuing economic growth agenda and this comes with its own social and environmental challenges. It is difficult for most of these countries to balance the growth and the associated challenges due to weak environmental regulations, poor institutional governance structure, poverty, corruption and lack of green pressure groups. These in most instances have led to poor environmental behaviour by businesses in developing countries (Hossain et al. 2012; Earnhart et al. 2014). In the mix of all these issues, it is unclear how environmental management practices undertaken by SMEs affect their financial performance.

The inconclusiveness in prior results in the relationship between environmental management and financial performance has been partly attributed to the variable measurement. Different measurement indicators have been used as proxies for EMPs (Claver et al. 2007) and in some studies, either aggregated or single indicator has been used to proxy EMP (Jaggi and Freedman 1992). However, research has indicated that EMP is multi-dimensional variable (Xie and Hayase 2007 Trumpp et al. 2015) and therefore studies using single indicators fail to account for the theoretical foundation of the EMP construct which also contributes to the inconclusive results. The current study employs six sub-components of EMP as recommended by DEFRA (2013) and its aggregated score to proxy for EMP which is comprehensive and provide much insight about the EMP-FP link. The results show that there is a significant relationship between the aggregated EMP and FP. Further analysis indicated that the extent of implementation of the practices influences its effect on FP. An analysis of the mean difference between two groups of results of the study (see Appendix 3 for results) of the sub-components indicates that there are significant differences between the group of variables with a significant effect on financial performance (Group A) and a group of variables without significant effect on financial performance (Group B). The group A has significantly higher mean than group B indicating that the overall level of effort in group A is better than that of group B. This effort difference to some extent is reflected in the impact on financial performance. Therefore, focusing measurement on effort or degree of implementation and recognising the multi-dimensional nature of EMP may help move towards a common ground in this debate since effort is the key.

Moving on to the contribution of the study relating to subsidiary objective 1, the study contributes by demonstrating that the nature and extent of environmental management practices in SMEs are limited. Specifically, the study has documented the nature and extent of environmental management practices relating to energy, water, waste, material, pollution and biodiversity management by SMEs with a wide range of activities cutting across manufacturing and service industries which contribute to the depth of knowledge on the topic in the Ghanaian environment. Consistent with the anecdotal literature, the evidence of limited environmental management practices is consistent with small firms having limited resources, different management structure and style compared to large firms which affect their ability to undertake environmental investment. The result further provides an insight into the nature and extent of environmental management practices of Ghanaian SMEs operating in two different industrial sectors for the first time. Current studies have focused on a specific industry or mainly on corporate social responsibility (CSR) with flashes of environmental issues of large organisations (Ofori and Hinson 2007; Amponsah-Tawiah and Dartey-Baah 2011; Mensah 2014).

Finally, in relation to subsidiary objective 2, the study has documented the barriers facing SMEs in their environmental engagement in Ghana - a developing country in both manufacturing and service sectors. The evidence contributes to limited evidence since there has been much attention on drivers of environmental management among large firms than SMEs (Pinget et al. 2015). The evidence will help policymakers to come out with policies to mitigate SMEs environmental impact and contribute to climate change effort (Williamson and Lynch-Wood, 2005).

1.9 Outline of the Research

This thesis consists of seven chapters organised as follows. Chapter one covers the overview and background of the study, the motivation and need for the study, the aims and objectives and the research questions to be answered. It also outlines the research methods, key findings and the contribution being made to existing studies by the current study.

Chapter two discusses the environment of SMEs. It focuses on the socio-economic, environmental and political conditions in Ghana in which SMEs operate. The effect of this

environment on SMEs' operations and ability to manage their environmental impact is also discussed. It also looks at the various agents and environmental legislation in the country responsible for ensuring the natural environment is well managed. The challenges faced by the Environmental Protection Agency (EPA) in dealing with SMEs is also examined.

Chapter three presents the theoretical frameworks of the study. The theories discussed focused on explaining the rationale for any identified patterns of environmental practices, barriers and relationship between environmental management practices and financial performance. The main theories adopted for the study were the theory of the firm, institutional theory, stakeholder theory and legitimacy theory. The underlying principles, challenges and applicability to the current study context were discussed.

Chapter four presents the literature review and the developed hypotheses of the study. The aim of the review was to identify what existing studies have so far covered on the subject matter and areas that still need attention. The chapter discusses the nature and extent of environmental management practices. This is followed by environmental barriers among firms and empirical literature review on the relationship between environmental management practices and financial performance. It also discusses the hypotheses based on both the literature review and theoretical framework of the study in chapters three. The chapter concludes with a summary of the results of previous empirical studies, limitations and summary and conclusion.

Chapter five is about the methodology of the study. Research philosophies relevant to the current study are briefly discussed. The population, sample and sampling procedure are explained together with data collection and analytical procedures. Details of questionnaire design and rationale for the choice of questionnaire administration is provided. This is followed by a pilot study conducted and the chapter ends with a summary.

Chapter six focuses on the results and analysis of the survey questionnaire. From the responses obtained from the respondents, the study analysed the nature and extent of specific measures been implemented in the firms relating to environmental management practices. Also, the perceived barriers encountered by firms in the course of their environmental uptake are identified. Using the data collected, regression analysis is carried out to test the effect of the

environmental management practices undertaken on the financial performance of the sample firms. The chapter, in addition, contains the results of robustness tests.

Chapter seven concludes the thesis summarising the applied methods, the main results and contributions. It also discusses policy implications and recommendations as well as limitations and suggestions for future research. The chapter ends with a conclusion.

CHAPTER TWO

Environment of SMEs in Ghana

2.0 Introduction

The objective of the chapter is to provide a comprehensive overview of the socio-economic and environmental management in Ghana by examining the environmental legislation in place and how effective compliance and enforcement of the legislation have been among businesses operating in Ghana. The socio-economic and regulatory environment of Ghana like other emerging economies differs from those of the advanced economies which present unique challenges for environmental management practices of businesses including SMEs. These socio-economic and regulatory challenges represent barriers which may limit nature and extent of EMPs among SMEs which may impact on their FP differently. This overview, therefore, provides the context for interpreting and understanding the environmental practices of Ghanaian SMEs.

The operational performance and environmental behaviour of SMEs to some extent reflect the general economic, socio-political and legislative environment of the country. A sound socio-economic and political environment not only leads to predictable and higher returns but boost investment as well. The socio-economic environment of a business may explain the business' performance and challenges encountered. This is because the socio-economic and political environment in which SMEs operate presents opportunities and threats which have implications for their performance. The opportunities and threats in the environment of a business might impact on environmental management practices of the business. It is noted that economic growth and social development ensure that businesses acquire resources necessary to meet stakeholders' environmental demands since such conditions necessitate the demand for environmental improvement. The economic pathway being pursued by a country for growth also affects the environmental behaviour of economic agents in the economy (Everett et al. 2010). Also, the various environmental legislation and institutions of the state are expected to create awareness through education and where necessary enforcement to protect and improve the natural environment against any adverse effects of economically and socially desirable behaviour. This is important because regulatory considerations are known to produce better environmental

participation among businesses than business performance (Lynch-Wood and Williamson 2014). Therefore, having environmental regulations and institutions may be considered as the first step of giving backing to any national environmental policy.

The chapter is made up of six sections. Section 2.1 presents the historical and geographical settings of Ghana. This is followed by a discussion of SMEs contribution in Ghana at section 2.2. Section 2.3 covers the economic and socio-political developments of the country. Section 2.4 focuses the link between socio-economic development and environmental degradation. Section 2.5 discusses how the socio-economic challenges affect SMEs' environmental management practices. Section 2.6 discusses environmental legislation and policies as these form the bases for education and implementation to help create the needed awareness among economic agents Section 2.7 covers the provisions on compliance and enforcement of the environmental regulations. The challenges affecting effective and efficient implementation of the regulations by state institutions are outlined in section 2.8. Section 2.9 summaries the chapter.

2.1 History and SME Development

Ghana used to be called Gold Coast due to the abundance of the precious mineral in the country. This led to Europeans occupation of the country for gold trade from the early part of 1471. The British, however, dominated affairs in the country leading to its colonisation by the British in 1874. Infrastructural development and education were very important to the British administration which saw 25% increase in adult literacy rate and English becoming the official language (Bruckner 2008). It can be argued that prior to the coming and during the period of the Europeans, the traditional areas were dominated by small-scale farmers and traders who sold gold to merchants. The British administration did concentrate efforts on agriculture but not industrialisation. This was supported by the allocation to the agricultural sector of £150,000 being the entire budget for the productive sector in the ten-year development plan of the 1920s which was discontinued in 1927. This development in a way restricted technological development in the productive sector (Kay 1972). The lack of industrialisation to support an economy which is primary base means that small businesses continue to play a key role in all aspects of the economy since they are not too technologically inclined (UNEP 2003; Ahinful 2012). According to Kay (1972), the lack of willingness for industrialisation by the colonial

masters partly explains why the economy is basically an exporter of primary goods. However, the country gained independence from the British in 1957 and became the first country in Africa to gain independence.

The country after independence embarked on industrialisation. The lack of development of the agricultural sector meant that these industries must rely on imported raw materials. Cocoa which was the leading foreign exchange earner was neglected leading to foreign exchange constraint and hence poor output from the new industries which were mostly state-owned. During this period, the production gaps caused by the large enterprises were partly met by small-scale firms (Sowa et al. 1992) which is known to be more resistant to foreign exchange shocks due mostly to their use of local materials. Ghana's economy in the mid-1970s to mid-1980s faced economic decline resulting in negative growth rates, food shortages, hyperinflation, massive unemployment, road and communication network deterioration, environmental degradation and weakening social welfare and health (Dzorgbo 2001). Poverty coupled with frustration may have a negative implication on the environment as people and businesses become more interested in survival than the environment (Sarumpaet 2005; Alberton et al. 2009). The worsening economic situation also implied more people including public sector employees went into small scale businesses as a means to earn enough income to sustain their family (Pickett and Shaeeldin 1990). To address these economic challenges, in 1983 the country formalised the Economic Recovery Program which has been acclaimed to have helped the bad situation to improve by the end of 1991 (Aryeetey et al. 2000). However, in 2001 the country was back in the Heavily Indebted Poor Countries (HIPC). The economic situation of the country has not been smooth and this has also not helped the environmental situation as the country tries to attain economic growth/independence leading to over-exploitation of natural resources. The act of balancing economic growth and socio-environmental improvement is noted to be very difficult task for developing countries (Everett et al. 2010).

Ghana has been identified as having serious environmental problems including, coastal erosion, land degradation, pollution of air and water bodies, waste management, desertification, deforestation and large-scale development. These are caused by both human and business activities (Van Roosbroeck and Amlalo 2006). The poor attitude towards the environment may

also be linked to the historical state dominance in all sectors (socialist stance) particularly after independence which created the believe that state-owned enterprises can solve all socio-environmental problems and that the sole responsibility of the citizens and businesses was tax payment (Amponsah-Tawiah and Dartey-Baah 2011). The country, however, has taken steps aimed at addressing the challenges including the establishment of environmental ministry and agency, implementation of the National Environmental Policy (NEP), the National Environmental Action Plan (NEAP), and the Environmental Education Strategy which aims to increase environmental awareness. The corporate sector has also shown commitment by coming out with the Ghana Business Code (GHBC) in 2006 and CSR award for SMEs.

2.2 Contribution of SMEs in Ghana

Private sector development has a significant bearing on economic development and this was evident especially after independence in Ghana. In periods when economic conditions were tough and larger firms resort to lay off in order to be profitable and survive, SMEs serves as the destination place for such workers mainly due to its resilience to economic shock due to the use of local raw materials and parts. The inability of the state to sustain the large state-owned enterprises due to economic downturn necessitated the need to turn to the private sector to sustain the economy and employment (Sowa et al. 1992). The early day's marginalisation of local enterprises by both colonial masters and Dr Nkrumah's (the first president after independence) government after independence was a deliberate ploy devised to lessen their economic growth in order to avoid political threat or participation by their owners (Anyormi 2007). However, after the economic challenges, Dr Nkrumah's government had no much choice than to turn to the private sector for help. The small-scale employment during this period grew 2.9% per annum which was tenfold of what was created in large firms (Storey 1994). This development alerted government about the readiness of SMEs to take over the responsibility of direct production from the state, reduce unemployment and develop managerial and entrepreneurial skill. The SMEs' sector has since then seen several interventions aimed at its development to continue its critical role in the country's economy (Sowa et al. 1992).

The Ghanaian private sector is dominated by SMEs which constitute about 92% of all enterprises registered in the country, provide about 80% of all employment, 85% of manufacturing

employment and contributes about 70% to GDP (GSS 2015; International Trade Centre 2016). SMEs are known to be able to create jobs for the unemployed and low skilled labour in the economy due to the large numbers and labour-intensive nature which is the result of their non–reliance on complex technology. In Ghana, about 17% of unskilled labour is employed by SMEs.

Another factor that helps SMEs to generate employment is their innovative skill. The ease with which SMEs' adapt to economic condition changes is better than larger firms (Kayanula and Quartey 2000; Bianchi et al. 1997). This because SMEs' operate less formal structure which facilitates communication flow and key decision making is based on few individuals. The lesser capital intensity in their production process is a plus in their quick response to required changes in both production and market conditions (Steel and Webster 1992) which facilitates performance. SMEs' ensure efficient use of scarce resources by serving as customers/market for materials considered as waste or scrap by larger firms in Ghana. In the study area (Ashanti region), SMEs constitute about 99.74% of all registered non-household establishments and employ about 84.50% of total labour force (GSS 2015). SME also contribute to export and foreign exchange earnings in the economy, however, information on actual figures are not available. SMEs' dispersion across the nation also promotes better income distribution which helps in poverty reduction. SMEs, therefore, have an impact on economic growth, employment and income in the country and the region.

These enormous contributions of the sector to the economy suggest that SMEs impact every aspect of the nation's life including resources consumption and waste creation. SMEs exhibit similar characteristics across different sectors of an economy and cumulatively their activities can have very significant impact on the environment (Iraldo et al. 2010). It has been argued that with such enormous contribution comes with its high level of waste generation since SMEs mostly operate in resources intensive sectors (UNEP 2003).

2.3 Economic and Socio-Political Development

Over the past six years, Ghana's economy has been growing at an average of 8% per annum. The economy recorded a higher growth rate of 15% in 2011. This commendable growth rate has been partly the result of the private sector investment, improved public infrastructure, oil production and political stability. The contribution of oil production to GDP in 2014 was 6.3%, an increase

of 1.3% from 2013. The significant foreign exchange inflow from the oil production adds around 8% to total domestic revenue. However, the economic growth has been on the back of macroeconomic imbalances. The budget deficit at the end of December 2014 was 67.1% of GDP, high inflation (17.7%), currency depreciation (over 40% against the major trading currencies) and current account deficit. The situation is aggravated by the extensive energy crisis and poor performance of oil, cocoa and gold in the international market. The economy recorded a growth rate of 3.9% in 2015, slightly lower than 4.0% recorded in 2014. However, with the country committed to International Monetary Fund (IMF) stabilisation programme, the economy is expected to make gradual recovery by 2016. The country's economy is now driven by oil production, followed by industry with agriculture at third. Sector contribution to GDP is led by the service sector (53.3%), followed by industry (26.6%) and agriculture (20.2%). The service sector continues to provide the bulk of employment (87%) followed by industrial sector (12%) and agriculture (1%) respectively. The industrial growth experienced a minimal increase of 0.2% to end 2015 at 1.0% (PricewaterhouseCoopers 2013, 2016; GSS 2016). The industrial sector is affected to some extent by the high cost of credit and unreliable power supply (Okudzeto et al. 2014). Employment in the industry is limited because the formal mining companies which dominate the sector are more capital intensive which limit employment created (MESTI 2012) but the SME sector which is more labour intensive is also financially constrained.

The Ghana Alternative Exchange (GAX) established in 2013 is to help SMEs overcome financial constraints by mobilising long-term savings and channel it to long-term investment for the benefit of the economy. The cost and requirements of listing on GAX are far less than that of the main exchange. Listing is open to all including start-ups and loss-making SMEs with the potential of making profit three years after listing. Also, SMEs do not pay listing and application fees except small annual subscription fee of GH¢ 2,000. All these measures are to encourage SMEs to list on the GAX to help overcome their financing constraint and grow. This has the benefits of helping SMEs raise capital to embark on a long-term project at relatively cheaper cost, improve its governance and reputation among financial institutions and investors. However, the patronage of GAX by SMEs is very low with only three SMEs approved so far. Factors contributing to the low listing includes refusal of SMEs' owners to share ownership right with someone they consider an outsider who did not start the business, avoidance of making their

entire financial affairs public (lifting the privacy veil) and the perception of stock exchange listing being the preserve of their larger counterparts (large-scale firms) (Bortey 2013; Domfeh 2014).

The country has made some strides towards the attainment of the millennium development goals but the results are still mixed. Targets on access to safe drinking water and extreme poverty have been achieved. As at 2010, extreme poverty has been reduced from 51.1% to the set target of 18.2%. However, there is vast inequality in wealth distribution not just among regions but also the population. Nearly half (49.6%) of the national income/expenditure is enjoyed by the richest 20% as against 5.6% enjoyed by the poorest 20% (UNDP 2006). This is a clear indication that greater majority of the populace lives in poverty even though extreme hunger and access to education has improved significantly. According to UNDP (2006), 78.5% of the people live on less than $2 a day with 40.5% on less than $1. The enrolment at a basic and secondary level has improved considerably (GSS 2012). At the basic school level, the introduction of school feeding programme, free uniforms and books have served as a booster to enrolment. The country is not in a position to meet targets relating to improved sanitation, loss of environmental resources and reduction of slums accommodation partly due to the current economic conditions.

On the political front, the country has been very stable with seven peaceful democratic elections held since 1992. This stability in the political atmosphere has increased foreign investment due to a high level of investor confidence. Corruption continues to be a challenge with several publicised cases in the court. To improve the corruption situation and governance, the National Anti-Corruption Action Plan (NACAP) was launched in 2014. The government has since 2011 increased its anti-corruption effort which improved the country's corruption index from 64 to 63 in 2013 by Transparency International's Corruption Perception Index (CPI). Press freedom and freedom of speech which is guaranteed by the 1992 constitution has improved remarkably (Okudzeto et al. 2014).

2.4 Economic Development and Environmental Degradation

The proponents of the effect of economic growth on environmental quality often use the Environmental Kuznets Curve (EKC) to describe the relationship (Stern 1996). The EKC hypothesised that there is an inverted U-shape relationship between economic growth (per capita

income/GDP per capita) and environmental degradation. A rise in GDP per capita causes environmental degradation to rise but up to a certain point (turning point) after which a rise in GDP per capita decreases environmental degradation. The logic behind the EKC hypothesis is that at low levels of income usually associated with agrarian and pre-industrial economies much focus tends to be on subsistence and therefore economic activities' effect on environmental conditions is relatively low. As industrialisation and development accelerate, environmental degradation increases due to intensive natural resource usage, increased pollutant emission, the operation of relatively dirty and inefficient technology. Material output increases are of high priority with no regard for environmental damage caused by the growth at the early stage. At this stage whiles depletion of resources increases at an increasing rate, regeneration of resources increases at decreasing rate and waste generated increases in both quantity and toxic levels. However, at a higher level of development particularly in the post- industrialisation period, the emergence of cleaner technologies, a shift to information and service-based activities together with willingness and growing ability to improve the environment becomes a priority (Stern 2004). The economic growth-environmental link at the various developmental stages shows how individuals/economic agents in society behave towards the environment as their income improves. Everett et al (2010) explained that with low-income level, individuals are more concerned about meeting their basic consumption needs with their limited income and less concern about pollution reduction. This means that consumers at this stage are more price-sensitive and give much consideration to price levels in their purchasing decisions than the environmental qualities of a product (Hart 1995; Sarumpaet 2005). Once industrialisation has taken off with increasing economic growth with individuals attaining a certain level of income (income threshold), due consideration is given to trade-off between economic development and environmental quality. After attaining the income threshold, high priority is given to environmental improvement over-consumption. That is demand for better quality of life means environmental quality becomes important.

The current economic situation in Ghana which has been characterised by rising GDP and high environmental challenges gives some indications that the country has not reached the income threshold which serves as the turning point for environmental quality demand. Ghana's path to achieving economic development seems to entail huge environmental costs in almost every

sector of the economy. There is a high level of pollution and degradation in the mining sector with gas flaring been practised by some oil companies. Small-scale artisanal miners keep destroying lands, vegetation and use hazardous chemicals which pollute water bodies. The environmental cost of natural resource consumption is very high. It is estimated that in 2009 the country injected only 22% of gold earnings into the economy and this was almost at par with the socio-environmental costs of mining (Tutu 2011). It is anticipated that if the current rate of deforestation continues, the country will not meet the millennium development goal on increasing forest cover (Environmental sustainability- MDG 7). Industrial discharge, poor agricultural practices and waste management have resulted in the pollution of water bodies in the country. The country's environmental management quality has been described as weak (Yale University 2016). This indicates that Ghana's attempt to industrialise and develop involve huge environmental costs.

GDP growth it is argued necessitates the demand for environmental improvement but at the same time, it also makes it possible for businesses including SMEs to acquire the resources necessary to meet the environmental demands of their stakeholders. Economic growth thus becomes a game changer and plays important role in the dynamism and investment which are needed by businesses in order to develop and use new technology deemed necessary and basic for managing the environmental resources and productivity for growth (Everett et al. 2010). However, the magnitude of growth in per capita income of Ghana is quite small due partly to high population growth (MESTI 2012). This situation coupled with inequality in income distribution, high unemployment has impacted on savings, consumption, investments and demand. Citizens and businesses, especially SMEs, are more concern about survival and profitability such that very little or no consideration is given to the quality of the environment. The general economic development path/income levels in the country to a greater extent, therefore, dictate the extent of environmental management practices pursued by businesses.

2.5 Effect of Socio-Economic Development Challenges on SMEs' Environmental Management Practices

The current state of the economy has implications for the development potentials of Ghanaian SMEs and their environmental management practices. The socio-economic climate under which

SMEs operate impacts on their profitability and also shape their environmental initiative. The performance of the economy has a profound effect on the performance of businesses since it affects unemployment, consumption, savings, investment and international trade. It is noted that macroeconomic instability usually characterised by poor GDP growth, high inflation, high-interest rate, high depreciation of the local currency and high fiscal deficit constrains investment in the private sector and savings in the economy (Agenor 2000).

The current high level of inflation, government borrowing from the domestic market and the volatile exchange rate all have implication for environmental management practices through their impact on SMEs' access to finance and profitability. SMEs operating under such circumstances are more likely to focus all efforts and attention on generating sales and making a profit in order to be able to meet the firm's financial obligations arising out of any prior commitment. This situation may prevent the firm from making any environmental investment which may not have the immediate financial benefit (s) for the firm. This is because the funds given by lenders are usually for a short-term therefore any mismatch of investment may have undesirable consequences on the firm's operation. SMEs facing financial constraints may be very cautious of engaging in any activity which is not directly related to its main objective. The financing constraints occasioned by the macroeconomic instability pushes businesses to focus more on profitability and survival which to some extent will impact on the extent of their environmental management practices especially under conditions where environmental awareness and enforcement are low.

The low interest shown by SMEs concerning listing on the GAX affects their investment potentials including investment in more pollution prevention technologies which requires relatively more capital. The funds raised on the GAX are relatively cheaper and for a longer period which helps alleviate the high-interest rate and short-term funding system under which majority of SMEs operate. This in a way will reduce the pressure on SMEs' owner-managers and may help the development of the needed expertise in environmental management since access to credit has been identified as a major constraint by SMEs in Ghana (AGI, 2016). The new investors are likely to bring the firm new knowledge, skills and expertise which may include good environmental management practices on how to improve the firm's performance. The

availability of long-term funding and different investors may impact on the nature and extent of environmental management practices of the firm since limited financial resources and expertise have been identified as barriers to environmental initiatives.

Contributing to the financial challenges is lack of information about state institutions designated to support SMEs' financially due in part to challenges facing these institutions themselves in terms of human resources, logistics and budgetary allocation (Arthur 2001). State institutions such as National Board for Small Scale Industries (NBSSI) and Microfinance and Small Loans Centre (MASLOC) are supposed to educate/train SMEs on financial and operational management as well as providing funding or information on funding to SMEs to help them develop. These institutions themselves have been facing operational constraints due to budgetary allocation cuts because of fall in government revenues, huge fiscal deficit and lack of donor support. SMEs are therefore not receiving the necessary services from these institutions which affect their financial access information and other operational activities with implication for their environment engagement. This is because most part of the SMEs owner-managers time will be spent on day to day as well as on trying to access financing information with little or no discretionary time left to devote to other activities such as environmental management mostly considered as a secondary issue.

The trade liberalisation policy brought about by the Economic Recovery Program has increased competition and affected the market share of SMEs. The anticipated export potential of SMEs under the liberalisation was also affected by lack of technology, product quality and cost of production (price)(Steel and Webster 1992; Aryeetey and Ahene 2005). The low level of export in a way implies lesser linkages with international community or companies which mean that large number of SMEs may not come under supply chain pressure applied by international customers with concern for the environment (Lin and Sheu 2012). The low usage of technology has implication also for environmental management especially in the areas of pollution prevention by application of prevention technologies (Montabon et al. 2007)

Managerial skills of SMEs have also been found to constraint not only their growth but access to information, support and finance since it affects the quality of operational management (Oppong et al. 2014). Low levels of education of most SMEs' owner- managers affect their managerial

skills. Also, high brain-drain and low-profit margins of most SMEs make it difficult for Ghanaian SMEs to attract and retain managers with the competencies required to foster growth and development (Abor and Biekpe 2006a). The socio-economic condition in the country has been a major factor in managerial skill development constraint since there is a high level of youth and graduate unemployment. This makes it difficult for one to develop the needed skills after school. This situation has also not been helped by the inadequate support services and the high cost of training and advisory services provided by private consultants (Oppong-Boakye et al. 2012; Erastus et al. 2014). The low level of managerial skills and training cost may affect SMEs' environmental management because knowledge may be low and this will affect the ability to locate quality environmental information and advice (UNEP 2003).

2.6 Environmental Legislations and Policies

The EPA Act (Act 490) serves as a general environmental legislation in the country. Act 490 section 2 (h) mandates the EPA to prescribe standards and guidelines relating to air, water, land and other forms of environmental pollution including the discharge of wastes and the control of toxic substances. The prescription of acceptable standards and guidelines in line with internationally accepted best practices is a key step to achieving any meaningful improvement in the fight against environmental degradation. These standards serve as a yardstick for businesses and for conducting research to determine pollution levels. The EPA Act 1994, Act 490, section 2 (m) and (p) mandates the institution as part of its functions to create public awareness about the socio-economic importance of the environment through the initiation of formal and non-formal education, seminars and training programmes. It is also required to publish environmental information and reports to enable stakeholders to become abreast with issues affecting the environment and how it can be handled.

The objective of such information is to help consumers develop preferences and signal firms about their readiness for consumption of products and services with less negative environmental impact (Vijfvinkel et al. 2011; Hoogendoorn 2014). Armed with this information, consumers are expected to be better placed to make an informed decision about the environmental impact of their consumption decisions. This basically provides communities, customers and the general public with environmental information relating to firms and their products to obtain the support

of market forces, communities and the general public in generating demand for products and services of firms which are environmentally responsible (Khnan 2001) and increase environmental accountability by firms through stakeholder demand pressure. Also, the EPA through the Ghanalex project is providing information on environmental legislation and policies to the general public, consumers, legal practitioners, government officials, magistrates and judges, the academia and civil society groups to enhance decision-making relating to environmental management and sustainability (EPA 2015). It must be stated that the Ghanalex project has just started and the general provision of environmental information to the general public is very low. The low level of environmental information among the populace together with high level of poverty seems to lower environmental accountability demands from the businesses.

Additionally, section 12 (1) of Act 490 empowers the EPA to issue a notice in writing to any person/business whose undertaking(s) in the opinion of the Agency Board has or is likely to affect the environment unfavourably. Such person(s)/business (es) may be required to submit environmental impact assessment to the EPA within a specified period in the notice. In order to give effect to the provisions of the Act 490, legislative instrument (L.I) 1652 – environmental assessment regulation came into effect in 1999. Under sections 1(1) (2) and 2 of this legislation all new and existing undertakings/projects are required to register their activities and obtain a permit from the EPA and where required undertake environmental impact assessment (EIA) and submit annual environmental reports and environmental management plan to EPA every three years. The types of undertakings/projects requiring registration and permit include those operating in manufacturing, agriculture, mining, accommodation, some wholesale trade and services. Where applicable such undertakings/projects are required to undertake EIA to assess their social, economic and cultural impact (see schedule 2 of L.I 1652). Notwithstanding any condition(s) applicable to registration, permit and EIA, section 1(2) of L.I 1652 mandates that no undertaking/activities shall be commenced by any person/business which in the opinion of the EPA has or is likely to have adverse effect on the environment and public health without prior registration.

These provisions give EPA a broader scope of activities it can control as well as unlimited geographical, industrial and residential coverage. This implies that business entities in Ghana no matter their size is under a legal obligation to conduct their activities in such a way that minimises any negative impact on the natural resources and the environment at large. This includes managing natural resources usage, waste generation and disposal, hazardous chemicals handling, emissions and nuisances. This is because the EPA has the legal authority to sanction corporate bodies and individuals for violating environmental policies and legislation. This unlimited sectoral and geographical coverage requires that the EPA works with other bodies in order to achieve its objective(s). Section 2 (b) and (c) of Act 490 mandate the EPA to coordinate activities of all relevant institution and bodies with responsibilities relating to technical and practical aspects of the environment for the purpose of controlling, generation, treatment, storage, transportation and disposal of industrial waste. These other state institutions with specific sectoral responsibility are also backed by legislation in their areas of operation.

2.6.1 Energy

In the area of energy, the Energy Commission Act, 1997 (Act, 541) requires the Energy Commission under section 1 to perform several functions aimed at ensuring efficient utilisation of energy resources in the country. The Commission is expected to advise the Energy Minister on the economic, efficient and safe supply of petroleum products, natural gas and electricity. In line with this, the Commission is to prepare, review and update on regular basis plans for meeting reasonable national demand for energy and develop a national energy utilisation database for national decision making. The effort to achieve its objectives and function properly has led to enactment of several regulations. These include Energy Efficiency Standards and Labelling Regulations, 2005 (L.I 1815) and Energy Efficiency Regulations, 2008 (L.I 1932). In the area of energy efficiency, for instance, Regulations, 2005 (L.I 1815), and Regulations, 2008 (L.I 1932) require energy efficiency labelling for non-ducted air-conditioners and self-ballasted fluorescent lamps and prohibit manufacture, sale or importation of incandescent filament lamp, all used refrigerators and air-conditioners respectively.

These actions are expected to impact on the environment positively since its effective implementation will ensure that only energy efficient lights and appliances are available in the

market which is likely to result in reduced energy consumption. It has also been suggested that in recent years Public Utility Regulatory Commission (PURC) established by Act, 538 has also been using price regulation system as a tool for energy and water efficiency. This is a state institution set up to regulate utility charges to protect all stakeholders in the various industries. However, it has been contended that the Commission has resorted to using pricing to control energy consumption among businesses and the general public since demand in most instances is price elastic. In a recent report, it was stated that consumers are being compelled by the utility price increase to switch off appliances voluntarily which is helping to conserve energy. This according to PURC has saved the country 300 megawatts of energy in a period of about two months (Daily Graphic 2016). The implication for the environment is a reduction in greenhouse gases emission and to businesses cost savings.

2.6.2 Water

Ghana water and sewerage corporation Act, 1965 (Act 310) seeks to distribute and conserve water for both domestic and industrial use. The Act 310 empowers the board to enact regulations to prevent water pollution and water wastage. Water resources are also regulated by the Water Resources Commission Act 522 and Water Use Regulations L.I 1692, 2001. The Water Use Regulation L.I 1692 generally makes it mandatory for all water users to obtain a permit and where permit exemption is given (see section 10 (1)) water use application is required to be submitted to the relevant District Assembly. A water use permit holder is required to keep correct and up to date records of all water used, abstracted, stored and diverted including the method used under section 22. Act 522 section 2 (I) and (2) require the Commission as part of its functions to regulate and manage water resources utilisation as well as proposing comprehensive plans for guiding utilisation, conservation, development and improvement of water resources. The Act 522 also empowers the Commission to initiate, coordinate and control utilisation of water resources and grant water rights. Section 2 (g) and (h) mandate the Commission to advise both government and pollution control agencies about any activity likely to have an adverse effect on water resources in the country. Therefore, the water resources commission with the backing of Act, 522 has oversight responsibility for water abstraction, usage and effluent

discharge in the country and in collaboration with EPA is expected to control environmental pollution of water resources by both businesses and the general public.

2.6.3 Waste

The national environmental sanitation policy of Ghana enjoins all industrial /commercial set-ups to adhere to EPA set standards for disposal of waste. The business organisation is responsible for conveying its solid waste to a designated disposal site. Liquid, gaseous and toxic waste shall be pre-treated/treated before discharged or disposal takes place. The various local assemblies have been empowered under the Local Government Act, 1993 to ensure that waste disposal is properly handled. Property abandonment is also regulated to avoid danger to public health and the environment by Abandoned Property (disposal) Act 1974.

2.6.4 Pollution (Emission to Air, Water and Land)

Again, Legislative Instrument 1812 regulates the import, export, manufacture, use, sales, disposal of substances deemed to be harmful to the ozone layer. Management of Ozone Depleting Substances and Products Regulation, 2005 (LI 1812) makes it illegal for any person/business to import or export controlled substance without a permit. In addition, no one shall manufacture any product that contains or is supposed to use control substance in the country. Under section 15 (1) and (2) of L.I 1852 the EPA as part of awareness creation will undertake public education to sensitise the general public on the elimination of ozone-depleting substances and products. The EPA is also required to annually publish at its various offices and in mass media the lists of controlled substances and products together with those authorised to import or manufacture it. The essence of this regulation is to help control harmful emission from these substances and products to the air which has a negative impact on the ozone layer. The educational programmes are supposed to equip general public and customers with necessary information to demand proper handling or report any mishandling of such substance to the appropriate authorities to reduce any subsequent environmental impact.

2.6.5 Biodiversity

The importance of biodiversity has been recognised which has led to the drafting of the national biodiversity strategy. The strategy recommends the sitting up of a commission which will be responsible for harmonising all biodiversity policies and coordinate implantation strategy among agencies (Ministries, NGOs, local communities and donor organisations). Also, the Wildlife Division guided by the Wild Animal Preservation Act 1961 (Act 43) protects animals and birds. The sections 4, 6 and 7 of the Act prohibit the import and export of animal trophies without a certificate. It also prevents the hunting of animals with motor or lighter aircraft and fire. The main purpose of the Act is to preserve and prevent the extinction of wild animals and birds which forms part of the fauna and flora of the ecosystem. The Fisheries Act 2002 (Act 625) mandates the Fisheries Commission to manage and regulate fishery resources utilisation and formulate policies on them. Section 2(i) of Act 625 requires the Commission to ensure that other water uses and environmental protection are correlated so that fish resources and food chains in lagoons, rivers, lakes and sea shelf along the coast are not affected. The Commission in the performance of its function of protecting fishery resources is expected to liaise with other bodies with environmental responsibility to prevent industrial pollution of water bodies which in a way will affect fish and food resources from the various waters.

Another institution with environmental responsibility (biodiversity) is the Forest Service Division mandated to protect forest and forestry products. The Timber Resources Management Act 1998 (Act 547) and Timber Resources legislation, 1998 (L.I 1649) regulate the harvesting of timber products by businesses in the country. Section 1 of Act 547 prohibits any business or individual from harvesting timber without timber utilisation contract. Section 16 of L.I 1649 further requires that logging should be done in accordance with logging manual produced by the Forestry Department and specific endangered species are not to be harvested. The transportation or movement of timber without conveyance certificate is also prohibited by section 24 of L.I 1649. Timber contractors are supposed to provide an undertaking for reforestation or afforestation of approved area(s) of operation under section 11(d)(ii) of L.I 1649. The combined effect of these legislations (Water Resources Commission Act 522; Wild Animal Preservation

Act, 1961, Act, 43; Fisheries Act, 2002, Act, 625; Timber Resource Management Act, 1998, Act, 547) is to help protect the biodiversity and ecosystem of the country.

In this regard, the EPA is expected to work in partnership with all the other state institutions such as the Energy Commission, Water Resources Commission, Forestry Service Division, District Assemblies etc. to ensure sound environmental practices by both individuals and businesses. The EPA is also expected to serve in an advisory and communication role between MESTI and innovation and all relevant bodies on issues and policies affecting the effective and efficient management of the environment. The operationalisation of the functions of the EPA requires funding to a greater extent. Therefore, section 16 of Act 490 set up the national environmental fund for the Agency to undertake its mandated functions. The main sources of funds into the account are government subvention, fees and fines generated by the Agency and donor funding. For the purposes of environmental management, it could be said that the country to a greater extent has put in place institutional structures with a leading environmental organisation backed by the environmental framework (s) which is adequate for managing its environment. The legislation serves as good environmental governance framework with the intent of achieving quality improvement of the environment and ensuring sustainability of the natural resource base of the country. Table 2.1 below presents lists of selected environmental legislation in Ghana.

Table 2.1. Environmental Laws in Ghana

1	Environmental Protection Agency Act, Act 490,1994
2	Environmental Assessment Regulation,1999, LI 1652
3	Environmental Assessment (Amendment) Regulation 2002, LI 1703
4	Pesticides Control and Management Act, Act 528, 1996
5	Environmental Sanitation Policy, 1999 (2001)
6	Management of Ozone Depleting Substances and Products Regulations, 2005 LI1812
7	Water Resource Commission Act, Act 522, 1996
8	Water Use Regulations, 2001, LI 1692
9	Drilling License and Groundwater Development Regulations, 2006, LI 1827
10	Irrigation Development Authority Act 1977

11	Ghana Water and Sewerage Corporation Act, Act 130, 1965
12	Community Water and Sanitation Agency (CWSA) Act, Act 564, 1998
13	National Irrigation Policy, Strategies and Regulatory Measures, 2006
14	Wetland Regulation 1997
15	Buffer zone policy 2008
16	Abandoned Property (Disposal) Act 1974
17	Ghana National Fire Service Act 1997
18	Fire Precaution (Premises) Regulations, 2003, LI 1724
19	Control and Prevention of Bush Fires Act 1990
20	Energy Commission Act, Act 541, 1997
21	Atomic Energy Commission Act 2000
22	Energy Efficiency Standards and Labelling Regulations, 2005, LI 1815
23	Energy Efficiency Regulations, 2008, LI 1932
24	Lands Commission Act, Act 767, 2008
25	Land Planning Soil Conservation Act 1953
26	Concessions Act, Act 124, 1962
27	The Fisheries Act, Act 625, 2002
28	Wild Animals Preservation Act, Act 43, 1961
29	Wildlife Reserves Regulations, 1971, LI 710 (and Amendments)
30	Wildlife Conservations Regulations, 1971, LI 685 (and Amendments)
31	Timber Resource Management Act, Act 547, 1998
32	Timber Resources legislation, 1998, LI 1649
33	Minerals Commission Act 1993
34	Minerals and Mining Law 1986
35	Small-scale Gold Mining Act 1989
36	Forest Plantation Development Fund Act 2000

Sources: The World Law Guide (Laxadin), 2009

2.7 Compliance and Enforcement

All the legislation discussed above including Act 490 make several provisions for ensuring compliance and enforcement of environmental regulations in the country by individuals and businesses. These include the periodic submission of information on activities and renewal of permits and licences by the specific regulating authorities. Under Act 490 the issuance of environmental permit every 18 months and certificates are provisions for ensuring that business entities comply with the requirements of the Act. The submission of the annual environmental report and environmental management plan every 3 years are required for the EPA to abreast itself with what environmental activities were monitored by the submitting business organisations and where the required limits have been exceeded the measures being instituted to meet acceptable limits. The annual reports may enable EPA to take corrective action where deviations are persistent. This is because the submitted annual environmental report by industries details their overall environmental performance during the period including what parameters were achieved and what was not achieved and why those were not achieved. These reports compiled on sector basis compared with expected reports from registered firms and with those of the other relevant environmental bodies give some indication of the level of compliance.

The EPA through its AKOBEN environmental disclosure programme assesses adherence to environmental regulations (EPA 2015). Under the AKOBEN environmental performance disclosure, for instance, the EPA using environmental data on the environmental management practices of participating firms and other submitted environmental documents such as EIA is able to assess the environmental performance and compliance of firms. This provides evidence of compliance with set environmental standards required to be met. Evaluating companies on more than hundred environmental indicators the programme uses colour codes to denote the performance of the firms (see table 2.2 below)

Table 2.2. Explanation to AKOBEN Colour Coding

Rating level	Performance	General Description
RED	Poor	Failed to follow environmental law (LI 1652), shows the pattern of chronic exceedances, and creates risks from toxics and hazardous wastes mismanagement and discharges

ORANGE	Unsatisfactory	Exceedance of regulatory standards for non-toxic, weak environmental monitoring, and incomplete fulfilment of reclamation bond criteria
BLUE	Good	Adequate compliance with environmental standards and reclamation bond criteria
GOLD	Excellent	Green + mine site follows its corporate social responsibility policies

Source: www.epaghanaakoben.org [Accessed 13 June 2015]

In 2012 AKOBEN disclosure rating, seven out of sixteen mining firms rated had red, two had blue, five had orange and two had gold. In the manufacturing sector, over 50% of the 103 firms were rated poor (Red) in environmental performance. The EPA has indicated that companies which have consistently received a red rating from 2009 to 2012 will be sanctioned and offered assistance (Smith-Asante 2013).

The EPA's function of coordinating all activities of relevant bodies with environmental responsibilities further ensures compliance in that these bodies will not grant any right without an environmental permit from EPA. For instance, an environmental permit is part of the documents required by the Energy Commission in order to issue a licence of operation to energy investors or businesses. The power to issue directives and warnings to persons and business institutions as well as educational programmes offered by the EPA serves as other means to enhance compliance. Where persons and businesses failed to comply with environmental legislation, enforcement is one of the ways of stopping any activity being carried on with an adverse effect on the environment. The various Acts and regulations provide enforcement mechanisms as well. Under sections 12 of Act 490, the EPA can require any person or business to submit EIA where the Agency feels that their activities may have or is likely to have adverse environmental and health risk. Where such notice is issued, all relevant bodies involved in granting of licence, approval or permit shall be informed to halt the process until written approval from the Agency. Under section 13 of Act 490 the Board of EPA where it considers it necessary may serve a notice requiring stipulated steps to be taken by a person or business to abate environmental and public health risk associated or likely to be associated with its activities. Section 14 of Act 490 empowers the Minister of the environment to authorise law enforcement

officers and/or environmental officers to take appropriate action(s) to ensure compliance. The EPA Board under section 15 may appoint inspectors who may enter any business premises at any time to ensure compliance and the Board have the power to request for any information from persons or businesses which it deems fit for the purposes of Act 490 under section 27. Under section 29 of L.I 1652, any person or business who fails to comply with any provisions of the regulation is liable on conviction to fine or imprisonment or both. Under section 26 of L.I 1652 contravention may lead to environmental permit and certificates being suspended, cancelled or revoked. Similar sanctions apply under all the legislation. For example, section 19 of the Energy Commission Act; Act 541 makes it clear that failure to comply with licence conditions may lead to its suspension or cancellation. The main purpose of enforcement and controls is to ensure that businesses put in place preventive measures to avoid environmental harm or comply with the laws and are held accountable when failures occur.

There have been few instances where the EPA has taken sanctions against businesses found of violating environmental regulations, signalling that with the needed support expectations may be met. The EPA in 2014 revoked the operating license of Romex Mining Corporation for breaching environmental regulations. The company's operation suspension follows its refusal to construct a pond to contain the wastewater of the ore and to divert the Ahensu stream course to avoid the ore wastewater from contaminating it (Badu 2014). Similarly, Adams (2015) reported that the regulatory authority (EPA) closed Adamus Resource Limited (ARL) a mining company operating in Anwia following complaints of the negative impact of blasting on the people and properties in the operational area. In the Brong Ahafo region, 35 hospital facilities and 41 fuel stations were earmarked by the EPA to be closed due to breaches of environmental impact assessment regulations in 2014 (Business and Financial Times 2014). The EPA also closed two fuel stations and more than three accommodation facilities in Ashanti region for violating their environmental permit and other environmental offences (Asamilbila 2016). In the Upper East region, some facilities were also closed for operating without an environmental permit or operating in an environmentally unfriendly manner which according to the EPA creates pollution and other health hazards (Ghana News Agency 2016).

The various environmental legislations in place in Ghana for regulating environmental and public health risks seem to contain the needed controls and deterrents for environmental governance. However, the framing of the necessary laws set the tone for action on the environment but its effective practical implementation needs other supplementary resources. Where these resources are not adequately available, the needed result may not be achieved and this seems to hinder the total effectiveness and efficiency of the EPA.

2.8 Challenges and Priorities

For the EPA and other relevant environmental bodies to effectively and efficiently perform their functions as contained in Act 490 and other relevant legislation, there is the need for financial, human, political will and other logistics. The operational field supposed to be covered by EPA is very extensive comprising almost all types of industries in the various sectors which means that the Agency must have enough staff in terms of numbers and required skills to fulfil its mandate. Ensuring that all business organisations comply with environmental requirements require huge monitoring and enforcement effort which requires operational logistics, human and financial resources. The monitoring and enforcement are further compounded by the haphazard citing of industries. There are no well-designed industrial locations within towns and cities even though there have been recent attempts to correct this deficiency, it is limited to few cities and does not cater for SMEs. The human resources capacity of the Agency is quite low affecting its operations in the various divisions responsible for compliance and enforcement. The Agency staff level stood at 200 as at 1999 with only one legal officer in 2000 and staff strength increased to 300 in 2010 (Akabzaa and Darimani 2001; Nukpezah 2010).

The EPA currently has presence mostly at the regional level even though Act 490 enjoins it to open offices in the District Assemblies which are to implement and enforce the environmental policies and laws at the local level. This is very important because of the policy of decentralisation being practised currently by the country. This means that national policies and programmes are mainly pursued through the various District Assemblies which operate at the local level. According to the Agency due to personnel and logistics constraints district representation has not materialised, however, there are plans to open up 12 zonal offices at the district level and each zonal office shall manage five districts (Ajarfor 2014).

Financing the day to day activities of the Agency has also been identified as adding to the challenges faced. The framers of the Act 490 realising the importance of finance in the scheme of affairs of the Agency made provision for the establishment of a fund solely for its activities. However, the sources of funds have been declining over the years. The main source of funding which is central government subvention has seen a continuous reduction due to high government budget deficit and is often released late. There are proposals underway currently to cut government funding and make the Agency self-funding institution as part of an attempt to cut down government expenditure and deficit. Fees and fines from the Agency's operations are also not enough due to their low levels and inability to monitor and fine non-compliant persons/businesses. It has been suggested that the low level of fines/penalty set by the Act does not encourage compliance since its financial implications are not burdensome and this leaves the EPA with the threat of permit withdrawal as the only effective tool. The financial challenges have implications for other logistics such as vehicles and equipment for operations.

Political will is another challenge of environmental improvement. This is an issue because the Act arrogates a lot of power to the sector minister who is a political appointee making control from above easy. In an economy where mining and lumbering contribute significantly to national development in terms of revenue generation, it becomes difficult for political authorities to back implementation of strict national environmental policies since it will affect their ability to fulfil political promises.

These challenges have an effect on environmental management in the country. For instance, the finance and human resources problems affect seminars and workshops organised by the Information, Education and Communication Unit to disseminate relevant environmental information to both businesses and the public which will improve environmental management and demand accountability. Again, the Environmental Compliance and Enforcement (ECE) and Programs Planning Monitoring and Evaluation (PPME) divisions are not able to perform their functions leading to high level of non-compliance. It must be stated that similar challenge confronts all the other state institutions in the performance of their functions.

The above challenges have resulted in EPA concentrating its efforts and limited resources in areas and industries traditionally considered as "dirty" or high polluting sectors such as mining

and manufacturing. The strict enforcement of the environmental requirements for all businesses is limited with greater attention given to larger mining and manufacturing enterprises probably due to their high level of visibility and the perceived high pollution coupled with poor past environmental track record. Even within these sectors size is of importance in EPA's consideration. The EPA has recently initiated the AKOBEN programme for mining and manufacturing firms as a voluntary programme to help improve the environmental management and compliance which is further evidence of the high level of attention for these industries. Limited budget, capacity and logistic constraints may also explain to a large extent the limitation of all agencies involved in the environmental regulation. The bigger picture is that most of the activities of the environmental bodies tend to concentrate on the supply side and few large companies with much lesser attention to what happens on the demand side. For instance, there are regulations on prevention of sale of non-labelled refrigerators and inefficient energy lights but not on end users not using energy efficient appliances.

Other challenges include the fact that the Act does not make provision for extended product stewardship. This allows manufacturers and importers to have a field day once their product is sold and there is no responsibility on them concerning the waste generated by their product during usage and after usage (life cycle). Such a provision will help reduce the environmental challenges associated with a product since the manufacturer or importer will be obliged to put in place measures to ensure that the product does not contravene the environmental regulations.

Also, there is a low level of coordination among the various relevant environmental bodies. Environmental policing is complex and requires a lot of coordinated effort from all players. There is, therefore, the need for all the state environmental institutions to coordinate their activities to achieve the desired results. There have been reported cases of unilateral action whereby mining companies obtaining a licence of operation from Minerals Commission without EPA, Water Resources Commission, Forestry Commission or Lands Commission's consent even though the operations of the mining company may impact on air, water, vegetation cover and landscape negatively (Akabzaa and Darimani 2001).

In the mix of these challenges majority of SMEs are left unattended to resulting in the indiscriminate disposal of waste, uncontrolled emission, noise and odour and non-compliance

with environmental regulations. Thus, the large SMEs' sector in Ghana has implications for monitoring and enforcement of standards especially under the current circumstances of regulatory institutions. We, therefore, contend that under such operational challenges facing environmental regulatory bodies businesses particularly SMEs with limited resources will allocate resources and effort in areas with higher expected benefits.

2.9 Summary and Conclusion

The economic and socio-political and regulatory environment of SMEs is weak and this may have implication for environmental initiatives undertaken by SMEs in relation to nature and extent, barriers and its impact on their financial performance. Poor and ineffective enforcement of environmental legislation, low economic development, poor level of customer/public awareness and financial challenges affect the nature and extent of EMPs among SMEs. Gadenne et al (2009) demonstrated with empirical evidence from SMEs in Australia that lack of financial resources affects SMEs' owner-managers' level of environmental awareness since it limits their time and ability to search for environmental information which impacts on their ability to implement EMPs. Ghanaian SMEs are well known to finance their operations with high level of informal sources of finance and trade credit (Abor 2007, Abor and Quartey 2010). In an unstable economy like Ghana with high-interest rate and inflation the ability of SMEs to obtain credit and be profitable is hampered by the uncertainties and the high cost of finance. The financial challenges, therefore, limit the focus on EMPs and hence may limit the nature and extent and range of EMPs within the firm.

Also, enforcement of environmental legislation among small businesses gives them a clear signal that environmental management is of priority and that reducing the impact of their footprint on the natural environment need to be seen as an urgent business requirement (Revell 2003). However, the strict enforcement of the environmental requirements for all businesses in Ghana is limited with greater attention given to large mining and manufacturing probably due to their high level of visibility, limited budget, capacity and logistic constraints of regulatory institutions. Such conditions create the impression that SMEs are environmentally laggards and tend not to be the focus of empirical research (Tilly 1999; Hillary 2004; Vifjinkel et al., 2011) dealing with the environment thereby limiting our understanding of SMEs' environmental management practices

in terms of nature and extent and its financial effect. There are therefore very limited SME studies on EMPs in Ghana and these are often limited to only hotels (Mensah 2006, 2014).

The current operating policies and regulations require all businesses to manage the impact of their operations on the natural environment and failure to adhere to this requirement may result in the imposition of sanctions against the business. A large number of SMEs sector in Ghana has implications for monitoring and enforcement of standards. The EPA must, therefore, intensify its educational and information dissemination mandate under Act 490 to increase the level of environmental awareness among all businesses particularly those that are not in the mining and manufacturing sectors since they also impact significantly on the environment. For an effective implementation of national environmental standards, there is the need for better cooperation among all the state intuitions including police, Customs and Excise and Preventive Service and Food and Drugs Standard Authority. The judiciary should be abreast with the environmental policies and regulation to be able to deal with environmental cases and the punishment must be stiffer to serve as a deterrent (Van Roosbroeck and Amlalo 2006).

CHAPTER THREE

Theoretical Framework

3.0 Introduction

Environmental management practices, barriers associated with the practices and its influence on the financial performance (NetRegs 2007; Mir and Feitelson 2007; Revell et al. 2010; Hoogendoorn et al. 2014) of businesses have been explained and analysed from different theoretical perspectives by prior literature. This multi-theoretical approach may be explained by researcher's background, values, ideologies and hypotheses being tested. The importance of theory in research is based on the fact that it helps to identify what is possible to do and therefore directs the research. In other words, it helps prior identification of variables deemed necessary in a research. According to Reeves et al (2008) theories provide researchers with different "lenses" for analysing complicated issues and social problems thereby focusing attention on the data and providing the researcher with the analytical framework. It has been widely acknowledged that since environmental management practices are complicated as well as social issues, multi-theoretical perspective is better placed to offer rich insight than single theory (Gray et al. 1995; Deegan 2006).

Theories which have been used to examine the environmental phenomena in this study include; the theory of the firm, institutional theory, stakeholder theory and legitimacy theory (McWilliams and Siegel 2001; Céspedes-Lorente et al. 2003; Campbell 2007; Lopez-Gamero et al. 2009). The current study focuses on the nature and extent of environmental management practices, barriers and the impact of environmental management on financial performance. The theory of the firm, institutional theory, stakeholder theory and legitimacy theory are used to explain the extent of environmental management practices, barriers and its influence on financial performance among SMEs' respondents. The rest of the chapter covers the following sections. Section 3.1 discusses environmental theories and developing country. Section 3.2 to 3.4 discusses the theory of the firm, institutional theory, stakeholder theory and the legitimacy theory with section 3.5 outlining reasons for the chosen theories. Summary and conclusion are under section 3.6.

3.1 Environmental Theories and Developing Country Context

Environmental management issues and related theories are predominantly developed in the west where there are strong institutional frameworks, economic development and general environmental culture among citizens, which are not the same among developing countries where the institutional environment is weak, characterised by poor economic and social development as well as less regard for the natural environment (Ernhart and Lizal 2014). These weaknesses in developing countries possess considerable challenges for environmental management practices and it remains unclear if theories developed in line with environmental management practices of the west (Russo and Fourt 1997; McWilliams and Segiel 2001; Trumpp and Gunther 2015) will hold under developing countries condition. In general, issues of environmental management fall within the broader category of corporate social responsibility (CSR). Depending on the stage of CSR development in the operating environment the motive, nature and the extent of environmental activities undertaken may differ (Visser 2006; Jamili 2008; Amashi et al. 2016). This may also help to understand the theoretical underpinnings of environmental activities. The overall stage of CSR development also guides business managers in knowing the stage of their firms in meeting its environmental obligations. Through this knowledge, strategies relating to future directions, goals, benchmarks and policies to create internal awareness about the environmental impact of the firm's activities are deepen (Mirvis and Googins 2006). The concept of CSR according to McAdam (1973) serves as a strategic guideline for resource allocation and integration of social-environmental responsibility thinking within the day to day organisational planning, management and evaluation.

Carroll (1979) defined the corporate responsibility of organisations to encompass the economic, legal, ethical, and discretionary (philanthropic) expectations that society has of organisations at a given point in time. These four responsibilities set out clearly the expected responsibilities of businesses in the society of which it is a part (Carroll 2016). In his review of 1991, Carroll constructed a pyramid to depict the four categories of CSR. The structure of the pyramid indicated the bottom layer as economic, followed by legal, ethical and the upper layer is discretionary (see figure 3.1 below). The revised conceptualization implies that the four responsibilities are additive or aggregative (Jamili 2008). This shows that economic and legal obligations are required socially (mandatory), ethical duty is socially expected with philanthropy

being socially desired (Windsor 2001). Together, however, these responsibilities form the total social responsibility of a business firm. A fundamental responsibility accorded to business by society is economic. Society expects businesses to be profitable, reward owners and continue to have resources to sustain it to continue to fulfil its role in society. In order to fulfil this economic responsibility, businesses employ various business concepts which help them to be financially sound such as cost-effectiveness, revenue flow, investment appraisal, strategic marketing etc to ensure the long-run financial success of the business (Carroll 2016). Carroll (2016, p.3) stated that "firms that are not successful in their economic or financial sphere go out of business and any other responsibilities that may be incumbent upon them become moot considerations". Therefore, the economic responsibility is a baseline requirement that must be met in a competitive business world.

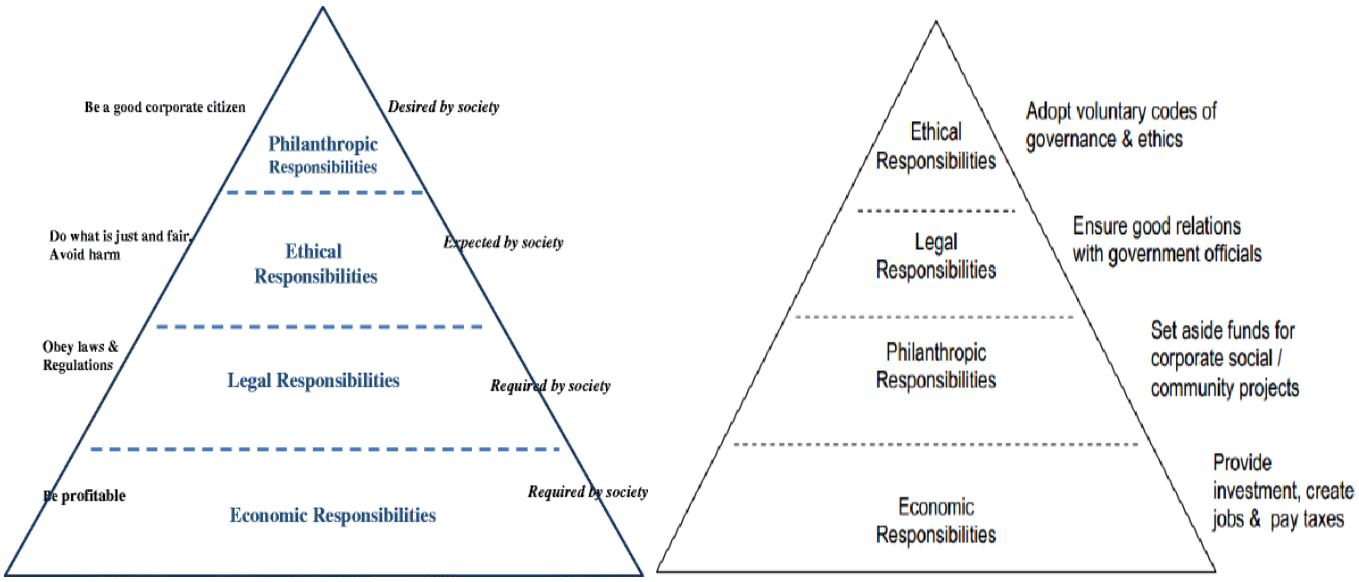
Visser (2006) has applied the CRS concept to Africa and found that it differs in developing countries as economic is followed by philanthropic (see figure 3.1 below). Visser (2006) argued that in Africa, the relative importance assigned to the responsibility elements of Carroll's pyramid differs since economic is followed by philanthropy at the base with legal and ethical responsibilities at the top. This is attributed to high unemployment leading to economic priority, socio-economic demand accounts for high place of philanthropy and poor and weak legal structure mean lower priority for legal responsibility. Ethic responsibility even though important still remains the exception rather than the rule.

This indicates that different factors may be at play when it comes to CSR practices in developed and developing countries. Therefore, environmental practices of firms in developing countries may not follow the same approach and explain by the same theories as those of their counterparts in the west. CSR practices of which environmental management practices is part has been dominated by views from the developed countries of the west which has also influenced the development of theories explaining socio-environmental issues of firms particularly large firms (Abugre 2015). Chambers (2003) and Matten and Moon (2004) have all discussed and enumerated the gaps that exist when CSR in developed and developing countries are compared. The importance of context in CSR and general research has been noted by Schneiberg and Clemens (2006) who suggested that context facilitates the responses to economic, social and

political problems. Visser (2008) argued that developing countries offer a distinctive set of CSR challenges which are collectively somewhat different from the CSR challenges faced in the developed world.

Poor countries such as Ghana with limited resources which are mostly developing tend to place much emphasis on immediate needs necessary for survival than long-term social goals ie environmental protection. This includes job creation and poverty reduction which places much economic responsibility on businesses. This suggests that socio-environmental activities undertaken by firms maybe geared towards firm level outcome since such activities are perceived as a social investment (Kuada and Hinson 2012). This to some extent indicates that more attention is paid to the economic responsibility of businesses in such environment which implies that the role of the businesses in such environment will be more tilted towards the classical view of the theory of the firm (Clarke 1998; Lantos 2001). Also, Ofori et al (2007) examining CSR strategies in Ghana noted that cultural complexities and societal idiosyncrasies seem to impact significantly on the CSR practices making foreign CSR strategies' applicability questionable. This is because foreign firms operating in Ghana find it difficult to implement CSR strategies formulated by their foreign headquarters and are therefore more comfortable formulating their own CSR strategies locally. This gives some indication that it remains to be seen whether strategies and theories of socio-environmental management developed based on practices of developed countries may be applicable to small firms in a developing country context.

Figure 3.1: CSR Pyramids



Carroll Pyramid

CSR (Visser) Pyramid for developing countries

3.2 The Theory of the Firm

From the theory of the firm, it is suggested that the operation of the firm is to maximise profit by meeting marginal relevant conditions in respect of input and output (Jensen and Meckling 1976), thereby ensuring economic prosperity and growth of modern society (Holmstrom and Tirole 1987). Therefore, firm behaviour in a network of agency relationship should result in profit maximisation. Based on this profit maximisation view, the agent is supposed to undertake activities that will enhance the value of the firm for the principal. From this perspective, therefore, environmental management expenditure is seen as a valuable investment if it will result in improvement of the firm's performance (environmental resources-input and output)(McWilliams and Siegel 2001; Olusegun 2012). This is in line with the neo-classical view which suggests that managers' decisions should maximise the wealth of the company for shareholders (Friedman 1970).

The neo-classical view of the firm championed by Friedman and others is that the social responsibility of the firm is to maximise profit within the confines of the law (Friedman 1970; Bryan and Salazar 2006). In the view of Friedman (1970), "The Social Responsibility of Business is to increase its Profits." In a capitalist state, the business is therefore expected to use it available resources to engage in activities which will increase its profits so long as it stays within the rules of the game, which is to say, engages in open and free competition without deception or fraud. According to Friedman (1970), CSR activities are only justified when companies could benefit by some social issue that made them more profitable by paying less tax, obtaining better access to resources, or something similar. Thus, making or increasing profits for shareholders is considered the only objective of the firm and as such any other object which is against the wealth creation for shareholders is not in line with the aim for the existence of the firm. Therefore, CSR activities undertaken by the business should be geared toward satisfying the shareholder wealth creation rather than meeting the interest of the wider stakeholders. In the neo-classical view of the firm, the interest of stakeholders is incorporated into that of the shareholders.

In the neo-classical economic sense, pursuing social responsibility beyond maximisation of profit within the law impose a significant private cost on the firm. This position creates a challenge between social responsibility and profit maximization making it incompatible with the profit maximization objective of the firm. This viewpoint is underlined by the shift in focus hypothesis (Becchetti et al. 2007). The shift in focus hypothesis argues that most social and environmental activities such as providing employees training, community development, good corporate governance and environmental protection may shift the focus of management from the profit maximization for shareholders to the wider interest of stakeholders which is likely to increase costs for the firm. The mere existence of CSR is deemed to signal agency problem within a firm as it indicates misuse of firm resources with no economic return. This may suggest that managers are using CSR to further their personal careers or agenda which may be seen as an executive perk (Friedman 1970). This suggests that social responsibility may negatively impact on the firm financial performance through additional cost of implementing CSR which may put the firm at a competitive disadvantage (Aupperle et al. 1985).

The neo-classical notion of the firm has implication for CSR. The neo-classical notion has a narrow focus for CSR in modern society and little tolerance for social role of business, reasoning that CSR inevitably reflects in additional costs and reduced firm competitiveness (Jamali and Sidani 2012). It puts greater emphasis on cost of CSR for the business and views profit as the only criterion for assessing efficiency of business CSR activities, thereby ignoring the fact that the business is a part of the larger society with a much wider responsibility which goes beyond the narrow perspective of making money for owners and obeying relevant rules (Quazi and O'Brien 2000). From this perspective, CSR activities which go beyond the economic focus (that is cost bearing activities) of the firm is considered as the obligation of the state and other non-business entities of society such as NGOs (Garcia-de-Madariago and Rodriguez-de-Reveira-Cermedes 2009). Thus, CSR is seen more as strategic (McWilliam and Segiel 2001; Bryan and Salazer 2006). The focus here is making an economically rational decision by weighing the costs and benefits. It does calls for a compromise between economic and ecological goals. CSR becomes an integral element of the firm's cost and differentiation strategies since it is regarded as a form of investment which is the case in most SMEs (Sampaio et al. 2012).

According to McWilliams et al (2005), CSR may enhance the reputation of the firm even when is not directly linked to a process or product and this reputation enhancement may improve performance. Therefore, CSR implementation is targeted at mainly for financial improvement. Burke and Logsdon (1996) opined that the focus of CSR should be on the economic benefits to the organisation. This makes CSR strategic since it results in substantial benefits to the business which contributes to the accomplishment of the organisation's mission. The social activity becomes acceptable only if it serves a strategic purpose which is consistent with profit maximisation objective of the firm (Garriga and Mele 2004). Tzschentke et al *(*2006) found that the prime motive for the introduction of environmental measures by both large and small firms is cost reduction by increasing operational efficiency which aligns with the neo-classical notion of CSR as strategic.

Another implication is that it fits CSR activities of the firm to the bottom domain (economic, and legal responsibilities), which is a fundamental level of the Carroll pyramid of CSR. A

fundamental responsibility accorded to business by society is economic. Society expects businesses to be profitable, reward owners and continue to have resources to sustain itself to continue to fulfil its role in society. In order to fulfil this economic responsibility, businesses employ various business strategies which help them to be financially sound such as cost-effectiveness, revenue flow, investment appraisal, strategic marketing to ensure the long-run financial success of the business (Carroll 2016). The firm has no moral or civic responsibility to aspire to the third and fourth levels of the pyramid which is seen by many as 'core essence' of social responsibility (McWilliams et al. 2005; Carroll and Shabana 2010). However, the neo-classical theorists argue that ethics result whenever business activity of profit-making nature is undertaken with public goods being a side-effect (Wagner-Tsukamoto 2015).

The theory of the firm has been criticised for its narrowness. From the stakeholder theory, it is clear that there are various parties (customers, owners, employees, government, regulators, environmentalist, suppliers, NGOs and communities) who are interested in the activities of the organisation because it affects them or they can affect it (Freeman 1984; Donaldson and Preston. 1995). For the organisation to survive and operate successfully there is the need to manage and resolve conflicts between these constituents and the organisation to ensure that its "social license" is not affected in any way to continue to pursue the profit maximisation objective but the theory of the firm fails to deal with this issue. Other theories such as agency theory (Jensen and Meckling 1976), agency-stakeholder theory have been very instrumental in proposing how such conflicts of interest should be resolved.

Another shortfall of the theory of the firm in relation to social and environmental responsibility is its profit maximisation position which makes it difficult to explain the situation when it comes to non-profit making organisations. Such situation limits the application of the theory in offering an explanation for environmental impact minimisation activities of the firm. Again, the assumption of economic gain underlying socio-environmental activities of the firm may not totally hold under instances where the firm feels a strong moral obligation to undertake such activities. Therefore, ethical considerations seem not to be within the purview of the theory of the firm which is more aligned with economic gain underlying the firm's environmental responsibilities.

From the above discussion, the theory of the firm may be applicable to SMEs. SMEs have been labelled as laggards with no concern to mitigate their environmental impact (Hillary 1995) and mainly interested in immediate minimisation of costs and maximisation of profit. Environmental management, it is argued is costly since it entails large initial outlay with low and longer period of recovery (Glover et al. 2014). Under such circumstances firms being rational and want to maximise profits will not invest in such venture. However, it has been noted that SMEs are cautious about environmental management investment and in most cases, the minimalistic approach to environmental management have been adopted. SMEs often engage in eco-efficient practices (reduction in waste, energy, water etc) since it mostly requires a low level of investment, expertise and effort (Baylis et al. 1998) but with immediate benefit. The main reasons for such approach to their environmental engagement are; the purpose of the business, limited resources and the nature of their industry where there is non-existence/low level of entry barriers creating high competition.

Most SMEs are owner-managed and like most investors are interested in maximising the return on their investment within the shortest possible period. The major purpose of the business for most owner-managers of SMEs is to ensure the profitability and survival of the business. In a study by Spence and Rutherfoord (2001) owner-managers of SMEs made it clear that their businesses must be profitable in order to survive for the long-term and make them have comfortable retirement or disposed of the business profitable. This in a way is a clear manifestation of the priority given to economic motives in the scheme of affairs of the owner-managers of SMEs. The ability to make profit enables the firm to continue operations, maintain its assets base and develop new products and business ideas (Parker et al. 2009). In this regard, SMEs' owners are willing to engage in activities which are likely to make immediate marginal or substantial contribution to their bottom line but require minimal investment. The livelihood and survival of the entire family of SME owner may be dependent on the business. This makes a short-term profit very important to owner-managers. This further influence the owners' decisions when it comes to environmental investment and hence, tilts the choice mostly towards eco-efficient activities popularly termed as" low- hanging fruits". These activities have visible and

predictable benefits in the short-term and require minimal investment, expertise and effort (Fernandez-Vine et al. 2010) compared to innovation prevention practices which involve complex changes to processes and products design. From the standpoint of profit maximisation, SMEs are less interested in any activity that will not result in financial (costs reduction, high growth) or non-financial (reputation, brand image) gains with a net economic benefit for the firm making their EMPs more strategic.

Another reason for SMEs' pursuit of profit and therefore, being strategic and concentrating on minimalistic environmental activities is due to their limited resources especially financing. SMEs' sources of finance are usually limited to personal savings, plough back profit, a loan from friends and family members and microfinance institutions. The amount is mostly small and the duration of any loan is also for short-term. These further increase the need for the business to be profitable in the short-run to be able to pay the loan and interest and survive at the same time. García-Teruel and Martínez-Solano (2007) opined that in a situation where the greater portion of SME's assets and liabilities used in financing business operations have maturity period under one year, short-term profitability is of priority to management. Hence to achieve the dual purpose of the business at any point in time the business tends to focus on profit maximising activities which are in line with the resources position of the business and immediate financial obligations which is necessary to ensure the going concern of the business is not at risk. According to Spence and Rutherfoord (2001) and Russo and Perrini (2010), SMEs are independent, multitasking, have limited cash flow which necessitates the need to deal with short-term issues which have a direct implication on profitability and survival.

Firms operating with limited resources are more willing to participate in environmental initiatives which have the immediate effect of minimising costs and maximising profit. SMEs' CSR practices are more practical, business-oriented and are associated with the businesses strategy. In this respect, environmental practices adopted are those that may lead to competitive advantage such as reduction in waste and pollution, an efficient material usage which may lead to lower cost or differentiated products (Porter 1980; Santos 2011). The challenge for most SMEs though is their inability to communicate effectively to customers about the environmental

characteristics of their products. This has been attributed to their managerial deficiencies, poor marketing and promotional skills. In view of these challenges, in a survey by Simpson et al (2004), most respondents were of the view that cost incurred in meeting environmental improvement were not transferable to consumers.

Related to the above is the lack of entry barriers in most SMEs' industries. This is basically due to low initial capital and other resources required for operation. This makes it easy to enter and therefore, profit margins are usually low. Low-profit margins mean that sales quantity and costs savings become very important for improving profits and survival. SMEs managers in such competitive industry/market focus more attention on price leadership (Parker et al. 2009). They adopt various short-term strategies which may include eco-efficiency practices aimed at reducing costs and increasing sales to improve the bottom line and sustain the firm.

SMEs due to the purpose of business by the owner, resources limitation and industry pressure are more likely to adopt a strategic and minimalistic approach to environmental management which they believe will have immediate positive impact on costs and profit maximisation. They will not, therefore, engage in any act perceived to yield low/no return in the short run. In a competitive environment, long-term survival depends on profits and SME owners will trade tomorrow's profit for today's profit. Therefore, environmental management activities viewed as an investment project with initial low returns but greater future profit due in part to market penetration is likely to be sacrificed for short-term profit maximisation (Foreman-Peck et al. 2006). This implies that environmental management activities undertaken by SMEs are expected to have a positive effect on their financial performance which is in harmony with the neo-classical notion for socio-environmental activities of the firm.

This section has presented the theory of the firm and its association with profit maximisation from socio-environmental perspective. The next section 3.3 presents an institutional theory which will aid analysis of nature and extent of EMPs and the barriers to EMPs relating to subsidiary objectives one and two of the study.

3.3 Institutional Theory

Institutional theory tries to examine and explain how social change in organisations is affected by institutionalised pressures and norms. This theory offers some explanation about organisation's behaviour towards social and environmental affairs. The theory is underpinned by the assumption that institutional environment exerts great influence on the development or adoption of formal structures deemed socially acceptable in the organisation than the market pressure in most instances (Hoffman 1999). The response of the organisation to the institutional pressures and expectations is necessary to ensure that the organisation's legitimacy is maintained (Meyer and Rowan 1977; Oliver 1991). In this regard, Meyer and Rowan (1977) suggested that these "institutional myths" are adopted or accepted ceremoniously for the sake of maintaining or gaining legitimacy in the institutional environment. The predominance of these socially acceptable norms may become highly legitimised within the institutional environment such that failure by an organisation to adopt may be seen as negligent and irrational (Meyer and Rowan 1991). When the institutional environment reaches this level/point all organisations (existing and new) will have a lesser choice than to adopt the procedures and structures even if it is at the expense of efficiency. Becoming part of the institutional environment through the adoption and display of institutionally acceptable norms, organisation's action is preserved on the basis of good faith.

DiMaggio and Powell (1983) reiterated that organisation's desire to respond to the institutional pressure is not born out of the need for more efficiency but desire to satisfy the status quo (conformance with expectations) in the operating field. The net effect of such behaviour in the institutional environment is a tendency towards organisational structural and procedural homogeneity (DiMaggio and Powell 1983). Therefore, due to institutional pressures organisations in the same industry may exhibit similar structures or practices over time. This similarity does not necessarily make firms more efficient. This is particularly true in the SMEs' environment where they exhibit similar hierarchical structure, financial management, succession plan and environmental management. This adoption of similar structures and procedures has resulted in SMEs having to face the same or similar challenges world over. The processes which lead to such similarities is termed as "institutional isomorphism" and organisations' adoption of

similar structures and procedures may be attributed to three different types of pressures – coercive, mimetic and normative (DiMaggio and Powell 1983).

3.3.1 Coercive

The sources of coercive isomorphism in organisational settings can be formal or informal and are usually exerted by regulatory agencies or other dependent organisations. The pressure is normally exerted by powerful constituent either internal or external to the organisation (supplier, competitor, customer, employees, certification body, government, regulatory agency, politically powerful referent groups, or a powerful stakeholder). Firms generally are not obligated to respond to the pressure from stakeholders, however, such group can institute actions such as fines, protests, letter writing, campaigns and a civil suit to back their demand for action by the firm. These actions may influence the firm to change its behaviour since non-response may be very costly to the firm. Stakeholders' actions if ignored can result in operational costs from legal fees, expenses on public relations and non- quantifiable managerial attention. Other consequences may include reputation damage, inability to appease regulators, attract customers and employees (Freeman 1984; Mitchell et al. 1997: Cespedes-Lorente et al. 2003; Eesley and Lenox 2006). The success of an organisation depends on how it manages the relationship with stakeholders because whiles stakeholders may not necessarily be adversarial, managerial discretion may be constrained by their actions. The organisation's desire to conform is mainly influenced by the power of the constituents and the need for legitimacy which ensures ultimate survival in the institutional environment (Suchman 1995). Campbell (2007) pointed to regulation as the key factor which helped curb the highly irresponsible behaviour of the US meatpacking industry in the early part of the twentieth century after the move by the Agriculture Department to ensure food safety. The author cautioned that regulation by itself is not enough to guarantee compliance without strict monitoring and enforcement both by the state and external actors (environmentalists, consumers, unions and other stakeholders). Dependent organisations are coerced by their dominant organisations to adopt their policies, beliefs and mandates. Delmas and Toffel (2004) asserted that greater diffusion of environmental management practices is expected where an industry is dominated by few big players who expect their suppliers to adopt laydown environmental management practices. This according to the authors is the main reason

for the adoption of similar quality and environmental management practices among automobile firms in the USA.

3.3.2 Mimetic

Mimetic pressure occurs when organisations in the same field have structures, procedures, processes and systems similar to each other due to copying the practices of one another during periods of high uncertainty. Where there is uncertainty or no clear policy guidelines on a course of action(s), organisations tend to copy the practices of their peers or competitors especially those of the same size who are seen as successful (Guler et al. 2002). Mimetic pressure results in benchmarking and identification of industry leaders and best practices. Hence copying becomes acceptable institutional wide and larger and successful firms become a role model.

3.3.3 Normative

Normative pressures to organisational homogeneity emerge from the similar approaches and attitudes of associations and professional groups brought into the organisation as a result of hiring practices, personnel transfer, and education and standardised training of workers. Industrial networks and professional groups tend to serve as the primary channel for persuading firms to peruse actions that are similar. Kollman and Prakash (2002) examining the adoption of environmental management systems (ISO14001and EMAS) among three developed countries found that industrial associations in the UK and Germany were very instrumental in the success of the programme by providing information, case studies, seminars and conferences, training courses and financial support. In the USA firms that are members of professional or trade associations and with intercorporate networks were more likely to support state's health care and job training programmes in the 1990s than their more isolated peers. This was due to the role played by the associations and networks in explaining any complication and outlining the long-term impact on productivity and corporate well-being (Campbell 2007)

Research has shown that the spread of practices among organisations tends to follow institutionalisation process driven by social comparison, resource dependence and network ties which link potential adopters in an organisational field. This demonstrates that even though one

force may be dominant at a point in time all three- coercive, mimetic and normative pressures co-exist and may come into play to ensure that organisations conform to social expectations in their pursuit of profit and shareholder value maximisation which has been described in some quarters as the only raison d'eter of business entities (Friedman 1970; Freeman 1984; Hoffman 1999; Guler et al. 2002; Campbell 2007). Thus, institutional theory concerns how through shared systems of rules, social and cultural practices and professional networks pressure is exerted on organisations to conform to generally accepted social practices to ensure legitimacy and survival (DiMaggio and Powell 1983; Meyer and Rowan 1991). Institutional analysis has shown that managers are important players in the adoption of environmental management practices by organisations. This has much significance in SMEs which are mostly owner-managed and decision-making is usually centralised. Managers' cognitive frame, mind-sets and worldviews are usually shaped by messages transmitted to them through educational system and publications from professional associations (Campbell 2007; Hoffman 1997). CEOs' educational levels have been shown to significantly influence organisational performance (Gottesman and Morey 2006; Murden 2012). This shows the role of normative institutions and the degree to which environmental management may be affected by these institutionalised norms.

The application of institutional theory to the study of environmental management practices by firms is not uncommon. It has been extensively used in exploratory studies involving environmental management practices of organisations (Hoffman 1999; Kollman and Prakash 2002; Delmas 2002; Zhu and Sarkis 2007; Hoffman and Jennings 2014) and has the ability to offer explanation as to why organisations will choose certain environmental management practices even though there is no obvious prospects of economic returns as well as the dominance of some practices in industries (DiMaggio and Powell 1983; Campbell 2007, Zhu et al. 2013). Glover et al. (2014) demonstrated the presence of all three forms of institutional theory in their study of sustainability practices among 70 large and small organisations in the dairy supply chain in the UK. Powerful supermarkets exerted on smaller producers in the form of buying contract and carbon audit to instigate new and acceptable sustainable practices. Mimetic pressure manifested in the attempt to replicate successful publicly available green information by the supermarkets and other larger firms in their environmental uptake. Normative on the other

hand reflected in the integration of legitimate practices and new rules rooted in social obligations in the firm to portray it as a sustainable organisation. Hoffman (1999) used institutional theory to study the evolution of environmentalism in the US chemical industry between the periods 1962 to 1993. The issue of environmental concerns in the industry went through an incremental change with regulatory and normative pressures (subject journal publications) playing early roles. Regulations by the EPA was the dominant factor during this period although other forces were active and by 1993 environmental concerns in the chemical industry received unprecedented attention with the Responsible Care Program improving normative pressure. Zhu and Sarkis (2007) found institutional pressure influencing green supply chain practices of Chinese manufacturing firms. Regulative (coercive) and market (normative) pressures resulted in environmental performance improvements in green purchasing and eco-design while (mimetic) pressure influenced several green supply chain management adoptions with significant improvements in economic benefits. Husted and Allen (2006) noted that institutional pressure guided the strategic CSR decisions in MNEs operating in Mexico rather than the expected strategic analysis of stakeholders and social issues. Stakeholder pressure is well noted to serve as a significant motivator for both reactive and proactive environmental engagement and protect investments of the organisation against environmental liabilities (Sarkis et al. 2010; Betts et al. 2015)

Like most theories, the institutional theory is not free from criticism and it has been criticised for being too focused on the isomorphism and structural conformity in the organisational-environmental relationship which has resulted in the relegation of the role played by active agency and resistance in such relationship which may lead to a variety of responses. As Oliver (1991, p. 151) asserted:

> *"It is suggested here that organisational responses will vary from conforming to resistant, from passive to active, from preconscious to controlling, from impotent to influential, and from habitual to opportunistic, depending on the institutional pressures toward conformity that are exerted on organizations."*

There is, therefore, the need to recognise the organisation's sense of rational choices when responding to institutional pressure. According to Tolbert and Zucker (1996), the key challenge is a specification of conditions under which rationality is likely to be more or less bounded.

DiMaggio (1988) suggested that organisations are not passive receivers of pressures and elements from their institutional environments and that they have creative ways of inculcating and reflecting the institutional environment (institutional entrepreneurship).

The theory has also been criticised for overstepping its mark. Suddaby (2010, p.16) asserted:

> ***"****Institutional theory now presents organisations as hypermuscular supermen, single-handed in their efforts to resist institutional pressure, transform organisational fields and alter institutional logics. Any change, however slight, is now "institutional" and any change agent is an "institutional entrepreneur."*

This obsession with trivial changes instead of profound change has caused the theory to at times lose focus on its central point of trying to understand how and why some elements in the institutional environment are accorded meaning and attended to by organisations whiles other elements are left unattended (Suddaby 2010).

Prior research has shown that institutional theory has been very instrumental in explaining the adoption or non-adoption and disclosure of environmental management practices by SMEs in both develop and developing countries. SMEs are known to possess similar characteristics illustrating the likelihood of an institutional effect. Institutional rules and norms in its various forms have ensured environmental management within organisational fields. By virtue of this, its absence (coercive, mimetic and normative) or lack of enforcement particularly regulative pressure may serve as a barrier to environmental uptake as it used to pertain in the US chemical industry (Hoffman 1999, Campbell 2007). Where there are no strong and effective market institutions, or institutional void or institutional distance it will constitute an impediment to environment uptake (Matten and Moon 2008; Amaeshi et al. 2016b). Amaeshi et al (2016b) suggested that institutional void in the form of weak legal environments; states and civil societies may undermine socio-environmental effort and hence constitute a barrier particularly in weak and challenging emerging economies.

The sheer numbers of SMEs in any economy make regulatory enforcement difficult and therefore normative institutions role become very important. Educational and supporting institutions by their programmes can help shape the mindset and views of SMEs' management

on environmental issues and socially responsible behaviour. Supporting institutions can also facilitate regulatory understanding among SMEs which is known to be a problem. In the developed economies, these institutions and stakeholders' pressure has been active in environmental uptake by SMEs. The same cannot be said about developing countries where stakeholder pressure, formal education, supporting services and publications on environmental issues are low. This thesis would like to investigate how such barriers faced by SMEs in their environmental uptake can be explained by institutional theory.

The next section 3.4 presents stakeholder theory which complements institutional theory for the analysis the of barriers of EMPs. Within institutional theory, 'stakeholder engagement' has been recognised as important in order for organisations to establish social legitimacy. The institutions themselves are part of the wider stakeholder group whose none active involvement/pressure on organisations affects EMP adoption (Sarkis et al. 2010) but some of these stakeholders particularly individuals like customers and employees' pressure are better covered under stakeholder theory.

3.4 Stakeholder Theory

Stakeholder theory indicates that there are various groups including shareholders whose expectation the business must meet. Stakeholder theory is widely used in the accounting and environmental management literature to provide justification for socio-environmental management practices and disclosures by corporate entities. Stakeholder theory even though not entirely new gained more interest among academics and professionals following Freeman's 1984 book on it (Strategic Management: A Stakeholder Approach). Freeman (1984 p.46) define stakeholder as any individual or group who can affect or is affected by the achievement of an entity's objective. From this perspective, it implies that the term stakeholder has a broad meaning which goes far beyond the boundaries of the organisation and those that the organisation has a formal contractual obligation with (Mitchell et al. 1997; Céspedes-Lorente et al. 2003; Buysse and Verbeke 2003; Elijido-Ten 2007; Horisch et al. 2014). Thus, there is the need to recognise and identify relationship(s) that may exist between a firm's behaviour and its impact on the stakeholders. Categorisation of stakeholders can take various forms such as primary and secondary; internal and external; owners and non-owners of the firm; as owners of capital or

owners of less tangible assets; as resource providers or dependents of the firm; as those existing in a voluntary or an involuntary relationship with the firm; contractors or moral claimants. However, the most common classification in the management and environmental accounting literature is based on primary and secondary.

Primary stakeholders are those with critical resources which are needed by the organisation to survive. Such stakeholders have the ability to influence the economic conditions of the firm (shareholders, customers, managers, creditors, employees, regulatory stakeholders, suppliers and community stakeholders) (Donaldson and Preston 1995; Sarkis et al. 2010). Secondary stakeholders, on the other hand, are those with the power to impact on an organisation's economic conditions through their influence on other stakeholders. Secondary stakeholders do not directly transact with the organisation and hence the organisation's survival does not depend on them (environmentalist groups, NGOs, media and consumer advocacy groups) (Mitchell et al. 1997). Firms generally are not obliged to meet the demands of outside stakeholders; however, such group can institute actions which may undesired consequences for the firm (Céspedes-Lorente et al. 2003; Eesley and Lenox 2006; Madueño et al. 2016).

The success of an organisation depends on how it manages the relationship with stakeholders because whiles stakeholders may not necessarily be adversarial, managerial discretion may be constrained by their actions. The operations of the firm may produce externalities which are likely to affect parties internal or external to the firm (Freeman 1984). Firms may be required by stakeholders to reduce negative externalities through the application of pressure (Sarkis et al. 2010). In this regard, Mitchell et al (1997) suggested that with such broad array of stakeholders, an organisation should deal with it the best way. According to them, it will be appropriate to use relationship attributes of power, legitimacy and urgency to identify salient stakeholders and attend to them to ensure the organisation's survival. This is because the continuous existence of the organisation requires the stakeholders' support and approval of the operational activities of the organisation. In other words, proper stakeholder engagement according to institutional theory ensures that the organisation's social legitimacy is established and entrenched (Campbell 2007). Eesley and Lenox (2006) however, extended the work of Mitchell et al (1997) by explaining that salience should be viewed in terms of how likely the stakeholder request will be dealt with by the

firm and that legitimacy, power and urgency are products of the stakeholder-request-firm triplets. They suggested that the power of the firm moderates the power of the stakeholder and that aside the legitimacy of stakeholders, legitimacy and urgency of the stakeholder request is equally important. The request urgency is even more important than the stakeholder group urgency. Using environmental protection action by secondary stakeholders in the USA, Eesley and Lenox (2006) demonstrated that request made by stakeholder groups with greater power relative to the target firm's power was likely to be met and also when the request is more legitimate.

Stakeholder strategies for dealing with the organisation are therefore required to develop strategies to manage the stakeholder relationship. Frooman (1999) using the resource dependency theory argued that four strategies (direct withholding, indirect withholding, direct usage and indirect usage) are available to stakeholders but as to which one will be used will be determined to a greater extent by resource relationship between the stakeholder(s) and the organisation. This is because the resource needs of a firm provide opportunities for others to exercise control over the firm. The flow of resources into the firm suggests that there are two ways by which the firm can be controlled by others. These are, determining the availability of the resources to the firm and determining whether the firm has the option to use the resources how it wants. Therefore, resource providers can manipulate/control the firm either by withholding or usage of resources. The manipulation of resources flow to the firm by the stakeholder can be by direct or indirect (withholding or usage) pathways. The direct is where the stakeholder itself is able to manipulate the flow of firm's resources either through withholding or usage. Indirect on the other hand, is where the stakeholder work through a third party to manipulate resources flow to the firm by withholding or restricting resource usage. The aim of the stakeholder in all instances is to get the firm to change its irresponsible socio-economic or environmental behaviour.

However, depending on the resource relationship, the stakeholder has a choice of four strategies when the two means of control of resources (withholding and usage) are combined with the two pathways (direct and indirect) as direct withholding, indirect withholding, direct usage and indirect usage (see Table 3.1). The stakeholder chooses direct withholding where there is marked stakeholder power in the relationship and here greater costs of any action are borne by

the firm. In a situation where there is low interdependence, the indirect withholding strategy is used by the stakeholder to influence the firm actions. The use of indirect usage strategy is applied by the stakeholder where the relationship is marked by firm power. On the other hand, where there is a high level of interdependence in the resources relationship, the direct usage strategy is applied characterised by negotiations since any action has a cost implication for both parties.

It is clear from this that powerful stakeholders can affect the extent of a firm's environmental management practices by directly withholding input resources from the firm. When firms find themselves under such situation the likelihood of meeting the environmental practices required by the stakeholder is high since it can affect the firm performance. Hammann et al (2009) argued that meeting the environmental aspirations of powerful stakeholders by the business generates value for the business. This is because meeting the legitimate, urgent and powerful stakeholders' request ensures that the profit maximisation objective of the firm is achieved since the interests of stakeholders are managed (Mitchell et al. 1997). Understanding stakeholder relationships from resources dependence perspective help business managers to strategically handle stakeholders in a way which helps the business achieve its objectives (Reed et al. 2009).

Table 3.1. Stakeholder Strategies

Typology of Influence Strategies			
Is the firm dependent on the stakeholder?	**Is the stakeholder dependent on the firm?**		
		NO	**YES**
	NO	Indirect/withholding (low interdependence)	Indirect/usage (firm power)
	YES	Direct/withholding (stakeholder power)	Direct/usage (high interdependence)

Adopted from Frooman (1999)

The stakeholder theory sets the agenda for business managers to determine the kind of relationship they want with their network of stakeholders knowing the possible consequences but

the overriding principle is that values are important and it is impossible in the business environment to separate ethics from economics (Freeman 1984; Donaldson and Preston 1995; Darnall et al. 2009). Anticipating how stakeholders influence might impact on the firm performance is a critical tool for all managers which help them to strategically plan the course of action their firms intend to embark on to manage the stakeholder relationship for the survival of the organisation (Frooman 1999).

Stakeholder theory presented and used in the literature is based on three forms as descriptive accuracy, instrumental power and normative validity. These aspects of the theory even though interrelated have different implications and are based on different arguments and evidence (Donaldson and Preston 1995).

Descriptive accuracy is used to describe and explain specific corporate characteristics and behaviours. For example, it has been used to describe the nature of the firm, firm evolution and stakeholder salience, levels of environmental commitment and management perception of stakeholder groups importance (Hoffman 1996; Jawahar and McLaughlin 2001; Buysse and Verbeke 2003). Instrumental power combines with descriptive whenever possible to establish any possible connection or lack of it between management of stakeholders and the economic objectives of the firm. Studies in this area have generally concluded that good management of stakeholders' result in better corporate performance compared to rivals (Davis 1973; Margolis and Walsh 2001; Jamali 2008). Under this theory, the firm is seen as wealth creation instrument with environmental management serving as a strategic economic tool which promotes the firm's profitability objective.

The promotion of the profitability objectives takes on board strongly the interest of all those with a stake in the organisation (Garriga and Mele 2004). Empirical evidence exists of studies correlating environmental management practices of organisations to financial performance indicating a positive association between the two variables (Ann et al. 2006; Ramanathan 2016). Normative validity guides the interpretation of corporate functions such as identification of moral or philosophical guidelines for the firm's operations. The ethical focus requirement of the normative validity theory cements the business and society relationship. There seems to be no set

principles for management to follow but must scan the operational environment and response to social demands which will help the firm achieve greater social acceptance, legitimacy and prestige. Hence, management responses may change with time and industry in order to achieve society's acceptance (Garriga and Mele 2004).

Donaldson and Preston (1995) proposed that stakeholder theory should be preferred to other rivalry theories since the modern and pluralistic form of property rights offers support for stakeholder theory and the others are morally untenable. Also, the theory is intended to serve a distinct purpose which is justified by the three approaches of descriptive, instrumental and normative. The descriptive approach attempts to justify the corresponding relationship between the theory's underlying concepts and observed reality. Instrumental justification lies in the available evidence linking management of stakeholders and corporate performance. Normative justification deals with underlying concepts relating to social contracts and individual or group rights. The recognition of obligations and moral values is the central core and forms the normative base which underpins the stakeholder theory.

In satisfying the demands of stakeholders there are two branches of the stakeholder theory which are ethical or normative (prescriptive) and managerial (descriptive) branches (Gray et al. 1996; Deegan 2006). These branches are important to our understanding of the stakeholder accountability process.

The ethical or normative category of the stakeholder theory argues that the firm has a responsibility to act in such a way that will protect or guarantee stakeholders their minimum rights. The theory prescribes the firm-stakeholder relationship which is anchored on the normative principle of fairness (Deegan and Samkin 2009). Under no circumstance should the firm violet the minimum rights of stakeholders and should always strive to meet this minimum right irrespective of the power position of the stakeholder(s). The theory advocates for the principle of equal treatment in the firm-stakeholder relationship and that the firm should not act in a way that boosts the interest of one stakeholder at others expense. In line with the social contract, the firm has a responsibility to undertake certain actions and provide stakeholder with information on such actions aimed at meeting at least the minimum rights (intrinsic values)

requirement of ethical branch of stakeholder theory (Gary et al. 1996). The theory suggests that environmental management and disclosure should be seen as the moral responsibility of the organisation and hence should not be survival or demand driven but rather responsibility-driven (Deegan 2009). Hendry (2001) asserted that in order to enhance managerial responsibility towards stakeholders, institutions of society and laws should be modified to ensure businesses take on board interest of all stakeholders in a just society. Stakeholders' consultation and participation in management decision making is the surest way for a business to display higher managerial responsibility in relation to stakeholders. The ethical theory seems to ignore stakeholder power and duels on managerial motivation as a key determinant of environmental management practices by organisations. Again, the theory places much emphasis on morality than business decision making. This aspect of morality is very subjective and affects resource allocation whenever there are competing wants (Humber 2002).

The managerial branch, on the other hand, posits that there is an interdependence relationship between the organisation and its stakeholders in the area of resources and management interest should be geared towards the survival of the organisation in this relationship. The main responsibility of management is the identification of stakeholder group, their salience and device strategies to respond to powerful stakeholders to ensure the survival of the organisation (Mitchell et al. 1997; Frooman 1999). The level of significance attached to stakeholder group by the firm will depend to a large extent how powerful management perceives the stakeholder(s) and this will influence their strategic response to their needs (Mitchell et al.1997; Frooman 1999; Eesley and Lenox 2006). Under the managerial branch of the stakeholder theory managers can ensure stakeholders support and approval of their organisations through socio-environmental management and disclosures. This is important because the theory suggests the need for the organisation to go beyond the traditional profit maximisation objective and tackle other stakeholders' concerns since shareholders cannot be satisfied without meeting the needs of other stakeholders to some extent (Jamali 2008). Studies have indicated that from the stakeholder theory perspective environmental management uptakes result in gaining of legitimacy, economic benefit, reduction of stakeholder pressure and help develop a response to environmental stakeholders' strategies of influencing firms' environmental activities (Céspedes-Lorente et al. 2003, Sen and Cowley 2013). Stakeholder pressure is well noted to serve as a significant

motivator for both reactive and proactive environmental engagement and protect investments of the organisation against environmental liabilities (Sarkis et al. 2010; Betts et al. 2015).

The theory has been criticised by some researchers. Jensen (2002) argued that even though the theory proposes that managers make decisions that consider the interest of wide range of stakeholders including shareholders, customers, suppliers, government officials, communities, financial claimants, terrorist, employees and blackmailers but the advocates of the theory refuse to clarify how the necessary trade-offs are to be made among the various competing interest. In the view of the author, this makes it impossible for managers to take purposeful decisions. The stakeholder theory has no means of keeping scores which makes it difficult to hold managers accountable for actions taken. Clearly, with such a vague base self-interest managers and directors are always attracted by the theory. The theory suffers from delimitation of a firm's boundaries with clearly defined levels. Stakeholders in the immediate environment of the business are somewhat confused with those in the firm's broader business environment. Thus the theory of stakeholder is seen as inadequate in addressing a firm's environmental surroundings (Key 1999; Fassin 2009). Key (1999) suggested that the theory failed to provide a greater understanding of the nature and complexity of internal and external stakeholders' linkages. The additional linkages such as an actor being an employee, stockholder (internal stakeholder) and the same actor belonging to the professional organisation, environmentalist or community group (external) may affect and impact on the firm. The placement of the firm at the centre of the model partly accounts for this failure and has also led to non-analysis of these linkages because the firm is not involved or is at the centre. The theory's focus on the firm and/or management is very helpful in terms of organisational technique and strategy but not realistic or adequate in explaining firms' societal behaviour. Key (1999, p. 324) concludes that:

"Most disappointing is its lack of complexity. It is essentially a narcissistic theory. That is, it places the organisation in the realm of the child in terms of development. It is at the centre of its universe, and while it is connected to others, its main role is to ensure that these others serve its needs with a minimum of conflict. However, conflict is a necessary part of a development that provides growth to individuals and can serve to do the same for corporations".

The assumption of the social contract between society and businesses (implicit) have also been criticised especially the morality argument that aside legality, businesses can be constrained

morally because businesses are society's creation. According to Weiss (1995) there already exist in contemporary society a social contract for organisations called minimalist morality of modern capitalism (moral obligations to obey the law, honour contracts and agreements and respect the rights (including property rights) of others). Stakeholder theory's attention to the interest of all stakeholders is not admissible in the social contract of modern capitalism which assumes production of value, voluntary transaction and the rights of individuals to take legal action where harm has been caused. The moral responsibility of business owners equal as any other individual in society.

The application of stakeholder theory in environmental management is widely acknowledged (Mensah 2014). According to Davis (1973), many institutions have failed in their handling of social problems and this has resulted in turning to businesses with the management talent, capital resources and functional expertise for a solution. This has resulted in part for corporate social responsibility (CSR). This has alerted businesses to the dangers associated with the environmental issues and pressures emanating from environmental stakeholders. According to the business case preposition, stakeholders are known to have implication on businesses' performance including SMEs. The social impact hypothesis proposes that the firm may enjoy financial benefit by satisfying the needs of its stakeholders both internal and external. Environmentally responsible firms do not only avoid fines, sanctions, penalties and disappointment of key stakeholders associated with irresponsibility but improve and enhances the firms' reputation and image and loyalty of key stakeholders such as customers, employees, environmentalist, community and government (Hart 1995; Shrivastava 1995). This implies that SMEs in their environmental management practices must consider the expectation of key stakeholders. According to Martín-de Castro et al (2015) firms which are able to protect the environment and reduce their negative impact are able to present good environmental reputation and image to their stakeholders. Such positive environmental outlook attracts skilled and committed employees, well-satisfied customers and local community which in turn may improve financial performance. Good environmental practices have the tendency to impact positively on employee turnover and absenteeism, increase productivity, improve employee commitment and effort which may affect the financial performance of the firm (Berman et al. 1999).

In SMEs, dominant stakeholders tend to influence the extent of socio-environmental responsibility because they have an economic stake in the business. As such their demands are prioritised since their actions may have economic implication for the firm. SMEs managing key stakeholders' relationship through environmental practices may generate value for the business (Hammann et al. 2009) and hence make stakeholder theory applicable to understanding environmental practices-finance link (Perrini et al. 2011). Therefore, the financial performance of SMEs is expected to be influenced by environmental management practices not only by its impact on costs reduction but also its effect on some key stakeholders such as customers, employees, suppliers and local community since they are key partners for sustainable and successful growth of the business (Sen and Cowley 2013).

The implementation of socio-environmental responsibility improves a firm's business performance due to its impact on the firm- stakeholder relationship (Madueño et al. 2016; Lannelongue et al. 2017). SMEs are mostly local firms which are more integrated into the community through their customer, employee and supplier base. Owner-managers must pay attention to the environmental needs of all key stakeholders if the business is to perform well. This is because being environmentally responsive may result in loyal and satisfied customers, suppliers, increase the morale of employees and facilitate community support which improves business performance, growth and reduce stakeholder pressure (Sen and Cowley 2013). Therefore, in seeking competitive advantage through environmental cost leadership, owner-manager must also factor the environmental interest of key stakeholders since it may also influence revenue, productivity and business growth (Cordeiro and Sarkis 1997). This means that stakeholders both internal and external may pressure firms for environmental uptake but might reward good environmental management practices.

The next section 3.5 presents the legitimacy theory which complements institutional theory and stakeholder theory for the analysis of the barriers of EMPs. The failure of institutions and stakeholders to revoke the social contracts of organisations may imply that legitimacy gap is not a threat to an organisation which impedes proactive EMPs (Lindblom 1983).

3.5 Legitimacy Theory

Legitimacy is a generalised perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs and definitions (Suchman 1995, p.574). Legitimacy affects how people act in relation to organisations and their understanding of the organisations. In situations where organisations' activities are deemed to lack legitimate acceptability, they become more vulnerable to the assertion of being irrational, unnecessary or negligent (Meyer and Rowan 1991). Suchman (1995) distinguished between three types of legitimacy based on differences in behavioural dynamics. These are pragmatic, moral and cognitive legitimacy.

Pragmatic legitimacy is about direct exchanges which take place between an organisation and its immediate audience whose well-being may be affected by activities of the organisation. The audiences due to their well-being scrutinise the behaviour and policies of the organisation for actions or activities with practical consequences for them. Policies and activities which are likely to meet the audiences expected value receive their support. Also, the organisation may gain pragmatic legitimacy once the audiences consider the activities or policies as portraying responsiveness of the organisation to the larger interest of the audiences. This may happen where the standards of performance set out by the audiences are adopted or the audiences are incorporated into the organisation's structures of policymaking. In such instances, an organisation may be seen as trustworthy, honest, wise, decent, shares audiences' values and best interest and therefore will be accorded legitimacy. These dispositional attributions may act to dampen the effects of isolated failures in times of adversity since the organisation is seen as a good corporate citizen or of good character.

Moral legitimacy, unlike pragmatic legitimacy, does not rest on the judgement of the evaluator(s) / audiences as to what benefits will accrue to them from the activities and policies of the organisation but on the judgement, as to whether the organisation's activities are right to be undertaken. Underpinning the judgment of the audience/evaluator is the beliefs of the socially constructed system which seeks to promote the effective well-being of the society. Thus, at the core of moral legitimacy is pro-social logic as opposed to narrow self-interest fundamentals of pragmatic legitimacy. Hence, moral concerns tend to be more resistant than pragmatic

considerations to self-interest manipulations. Evaluation of moral legitimacy may take anyone of four forms; outputs and consequences, techniques and procedures, categories and structures and leaders and representatives' evaluations. Cognitive legitimacy involves the organisation's mere acceptance base on it been seen as necessary or inevitable on the basis of some taken-for-granted cultural accounts. This taken-for-granted attribute may manifest as one is taken for granted the outcome of subjecting an organisation's policies and activities to positive, negative or no evaluation. This indicates that there is no interest or evaluation due to cognitive legitimacy.

Legitimacy from the organisation's point of view is very important in order to ensure both internal and external (stakeholders) support and commitment to the activities/policies of the organisation. Like any other resources, organisations strive well where their legitimacy is not threatened (Tilling and Tilt 2010) and as such firms should be ready to rectify any harm caused and brought to its attention (Campbell 2007). An organisation may seek legitimacy through exchanges (discourse) with its immediate or larger audiences. The main objective of the organisation in such discourse is to ensure congruence between the acceptable norms of the social system and associated implied or express social value(s) of their activities (Lindblom 1983). Therefore, organisation legitimacy is achieved when the value systems of the social system and that of the organisation are not at variance (there is an established congruence between the two value systems) (Tregidga et al. 2006).

In modern societies organisations have a wide range of stakeholders with conflicting views and expectations to whom they are accountable. This accountability demands become more evident particularly in the area of environmental concerns (Guerci et al. 2016). This makes environmental management a key part of the legitimacy process since communication or exchange of information to meet these varied environmental views and expectations (pragmatic and moral legitimacy) of stakeholders through environmental disclosure/reporting would be seen as "greenwash" where there is no environmental management taking place. This may become evident where there is a social audit and can have a delegitimising effect on the organisation (Suchman 1995) with serious implications including even the closure of operations (Deegan and Unerman 2011). Organisations are therefore seen as having a social contract with parties affected by its activities and policies and this contract is premised on the acceptable value systems

(norms, beliefs etc) of individual societies. The contract terms are implied or expressed and changes over time with the organisation required to adjust appropriately (Brown and Deegan 1998; Tilling and Tilt 2010). As part of this contract, the organisation is required to demonstrate that its services and rewards to any party have the approval of the society (Shocker and Sethi 1974).

Environmental management is seen as an integral part of the legitimising process since its result in better environmental performance and disclosure in order to avoid the revocation of the social contract by society. Through environmental management practices, organisations may also be able to avoid sanctions associated with heightening environmental concerns. This includes consumers' reduction or boycott of products/services, denial of factors of production by suppliers, lobbying government to increase fines, taxes or laws to prevent actions not in conformance with constituents' expectations (Deegan and Rankin 1996). Firms gain considerable approval of these activities and policies by their immediate societies through environmental uptake or disclosure of environmental information.

3.6 Reasons for choosing the above Theories

Theories which have been used to explain the environmental-financial relationship include agency theory, signalling theory and resources base view. However, these theories applicability in the current study's context is limited in one way or the other. Agency theory is very much applicable in organisations with separation of ownership from the control which is very common among publicly traded firm and other large firms. It is less applicable in most SMEs particularly in the Ghanaian settings since ownership and control are mostly intertwined and strategic decision including that of EMPs are mostly made or approved by the owner (Aragon-Correa et al., 2008; Amaeshi et al. 2016a) limiting the likelihood of the agent using socio-environmental responsibility to advance their own interest at the expense of the firm which is not in line with the profit maximisation agenda of the firm (Pereira-Molina et al. 2015). Signalling theory is mostly used in the context of environmental disclosure mostly to influence investors' decision particularly by large publicly trading firms relatively to small privately-owned firms (Klassen and McLauglin 1996; Al-Tuwaijiri et al. 2004). The RBV is more focus on the efficiency

generated as a result of resource differences (Ramanathan 2016). The theory of the firm takes into account this logic of RBV as well as the cost which is more practical organisational behaviour in resource allocation which is equally compatible with SMEs' decision making (McWilliam and Segiel 2005). These make the theory of the firm more appropriate in the current study's context.

Also, theories which have been used to examine environmental barrier phenomena in the literature include; institutional theory and stakeholder theory, legitimacy theory. It has been widely acknowledged in both practitioner and academic environmental literature that the elements with greater effect for adoption of EMPs by firms of all sizes are institutional conditions (Campbell 2007; Sarkis et al 2010; Amaeshi et al. 2016b; Hammann et al 2017), stakeholder pressure (Freeman 1984, Ramanathan 2016) and legitimation (Bansal and Roth 2000). The presence of strong and effective institutions coupled with stakeholder demand for environmental quality and the need for legitimacy in the operating environment are inevitable if any significant environmental management is to be achieved. These factors have been identified as accounting for the vast difference between environmental management levels in developed and developing economies (Ernhart and Lizal 2014; Amaeshi et al 2016b). The functioning of institutions, stakeholder activism/pressure and legitimacy requirement shifts attention to the rules, norms and beliefs that influence the environmental behaviour of organisations and its members. Therefore, the absence of these conditions may constitute a challenge for environmental management, making these three related theories important to understanding fully the barriers to EMPs in the current study.

3.7 Summary and Conclusion

The management and environmental accounting literature have witnessed environmental adoption, barriers and environmental-financial link being explained and analysed from different theoretical perspective. The theory of the firm rooted in economic justification of business existence has been used to analyse and justify business operations as being wealthy of undertaking if it enhances the value of the business or maximises shareholders' wealth (Friedman 1970; Jensen and Meckling 1976). In this regard, businesses are expected to engage in environmental management practices (EMPs) if it will result in increased profit, costs reduction,

increase public reputation or act as a source of competitive advantage else any investment in such activity would be deemed as diversion of funds which could have been invested in potentially positive net present value (NPV) operation or denying shareholders of potential dividend.

SMEs who are the main subject of interest in this study are well noted for having survival and profitability as their main priorities and with their limited resources are reluctant to venture into any activity which may not yield any return (Short or long-term). It has also been argued that EMPs result in “win-win” and the business case has been made for it. The theory of the firm is therefore considered very important in examining the environmental-financial relationship and could offer an explanation for the outcome. In addition, SMEs face barriers in their environmental uptake and where the institutions, stakeholder pressure and a threat to legitimacy are absent or low environmental improvement suffers. Therefore, the institutional theory, stakeholder theory and legitimacy theory are being applied to understand the barriers faced by SMEs in their environmental management practices. From the review, it is imperative that multi-theoretical perspective would offer useful insights to our understanding of barriers. These theories are not too distinct but rather complementary with overlapping perspective providing a useful theoretical framework (Gray et al. 1995).

CHAPTER FOUR

Review of Empirical Literature and Hypotheses Development

4.0 Introduction

The issue of environmental management and financial benefit associated with it has been debated for over thirty years (Horváthová 2010). This chapter aims to review the existing environmental management literature relating to the objectives of this study. The rationale of the literature review is to determine consistency in findings and identify gaps in the literature. Given the research objectives of the current study, the literature review will focus on studies on nature and extent of environmental management practices, the barriers to environmental management and the relationship between environmental management and financial performance. The chapter, base on the extant literature on environmental management and financial performance, develops hypotheses for the variables investigated in the current study. The review of existing literature focuses on all companies but with much emphasis on SMEs wherever possible. This holistic approach is to help put the study in perspective and demonstrate where SMEs lie in the various aspects of the environmental debate.

The rest of the chapter is organised as follows; section 4.1 and 4.2 focus on definition and EMPs limitation evolution respectively. Section 4.3 covers nature and extent of EMPs among SMEs. Barriers to EMPs and relationship between EMPs and FP are discussed in sections 4.4 and 4.5 respectively. Section 4.6 considers selected company attributes that have been discussed by previous studies to impact on firm financial performance. Sections 4.7 and 4.8 cover summary of previous research and the limitations of the existing studies respectively. Section 4.9 presents the summary and conclusion.

4.1 Definition, Strengths and Limitations of EMPs

The concept of environmental management even though surfaced in the 20th century gained much recognition after the Rio 1992 earth summit where environmental protection took centre stage and world leaders affirmed that development must be aligned with environmental protection (UN 1992). The essential element of this concept is taking steps to reduce any risk posed by one's activity to the natural environment and its constituents.

The early definitions of environmental management practices related to environmental initiatives rather than environmental outcome but it was restricted in scope. Abt and Associate (1972) cited by Katsolakos et al (2004) described environmental management practices as initiatives related to air and water pollution. This restricted scope may be the result of aligning environmental management to enacted environmental regulations at the time. For instance, the US passed the national environmental policy act in 1969. The high attention to compliance and due diligence coupled with much lower general public awareness restricted environmental management practices (Katsolakos et al. 2004). Environmental management practices were short-term framed and single focused rather than on the overall environmental health. Environmental management practices were implicitly seen as peripheral rather than an integral part of the core business of the firm.

The environmental management practices of the 1970s/1980s to the current period are referred to as the conventional environmental management and alternative environmental management characterised by gradual shift but with noticeably contrast over the decade (Muvihill and Ali 2016). The current or alternative era (after the 1980s) has seen much experiments and complicated picture of environmental management practices leading to the much wider definition for environmental management practices.

Klaasen and McLaughlin (1996) described environmental management practices to encompass all efforts to minimise the negative environmental impact of the firm's products throughout their life cycle. This description takes the much broader perspective of environmental management and incorporates stewardship aspects. It includes both mandatory and voluntary approaches to environmental management which may result in proactive environmental practices which go beyond that required by environmental legislation.

IIinitch et al (1998) described environmental management practices as part of the environmental performance. Using environmental performance framework of four dimensions the authors came out with process and outcome which are internal and external to the firm. The internal organisational systems refer to written policies, internal control mechanisms, communications,

public relations, training, incentives and all organisational processes designed to enhance environmental performance.

Table 4.1 Processes and outcomes for corporate environmental performance

	Internal	External
Process	Organizational systems	Stakeholder relations
Outcome	Regulatory compliance	Environmental Impacts

Source: Illinitch et al. (1998)

Henriques and Sadorsky (1999) defined environmental management practices as what a firm is doing or has done with reference to the natural environment. This may include any of the following six practices. First, is having an environmental plan the absence of which may suggest that environmental practices are not of priority. The second phase is represented by having a written document describing the environmental plan. The third is communicating the environmental plan to shareholders or stakeholders. Fourth the firm must communicate this plan to employees. The communication of the plan to shareholders and employees represent going public and it's a sign of seriousness and commitment. The fifth is having an environment, health, and safety (EHS) unit, and the six is having a board or management committee dedicated to dealing with environmental issues. The presence of each of these practices is an indication of commitment to the natural environment. The definition of Henrique and Sadorsky (1999) suggest a much more detail formal process of implementing environmental management practices in an organisation which seeks support from all internal stakeholders of the firm. The advantage of such approach is that it helps to sustain any environmental initiative, especially from the employee perspective since it provides an opportunity for their involvement and creates a sense of ownership.

Montabon et al (2007) provided the definition of environmental management practices to include the guidelines, techniques and ways used by a firm that is geared towards monitoring and controlling the effect of the firm's actions on the natural environment. The definition suggests

the full range of practices that the firm institutes to mitigate its environmental effect. It also implies the analysis of all areas where the firm has the opportunity to reduce its impact and continuous attention been paid to every measure put in place.

Trumpp et al (2015) on the other hand, sided with IIinitch et al (1999) when they described environmental management practices as part of the corporate environmental performance. Trumpp et al (2015) suggested that corporate environmental performance is made up of two dimensions as environmental management performance (EMP) and environmental operational performance (EOP). The EMP dimension is strategic and focuses on management principles and activities with regard to the natural environment. The EOP dimension explicitly focuses on the outcomes of a firm's management activities regarding the natural environment.

Whiles, there are definitions not incorporating EMPs as part of the environmental performance, they vary in the coverage of the EMPs from environmental plan to life cycle initiatives (Klaasen and McLaughlin 1996; Henriques and Sadorsky 1999). Thus, it includes all the norms, values and processes by which the firm can reduce its impacts on the environment. Environmental management practices may be seen as both institutional techniques and procedural mechanisms which a firm incorporate into its activities to reduce risk to the environment and help to demonstrate to its stakeholders that its operations are not harmful to the natural environment (Montabon et al. 2007). From all the above definitions, environmental management is rooted in the firm's concerns relating to initiatives to reduce its negative effect on the environment.

The current definitions of environmental management practices are much broader in scope and not restricted to any specific activity or sector. The definitions take cognisance of all activities with effect on the natural environment. The all-encompassing nature of the definitions of EMPs as a process allows different systems to operate together to achieve the ultimate goal of the process which is better environmental performance. With EMPs as a process focusing on protection of the natural environment, it becomes easier to translate the processes into action (Kessler et al. 2001).

The review of the literature provides varied definitions of the concept of environmental management practices. Whiles some authors use the concept in the context of environmental initiatives implemented by an organisation (Abt and Associate 1972; Klaassen and Mclaughlin 1996; Henriques and Sadorsky 1999; Montabon et al. 2007), others use it to encompass the outcome of the initiatives implemented (IIinitch et al. 1996; Trumpp et al. 2015). The lack of an explicit and common definition of environmental management practices and classification affect the understanding of its antecedents and consequences (Gilley et al. 2000). This according to McWilliams et al (2006) constitutes a serious challenge, because ‘‘as long as we use different definitions, we will get empirical results that cannot reliably be compared’’ (p. 10).

Another limitation also resulting from the definitions is measurement challenges of the construct. The differences in definition have also led to different operationalisation of the constructs in various empirical studies (Christmann 2000; Klassen and McLaughlin 1996; Claver et al. 2007). It is therefore not surprising due to this reason to discover that environmental management practices indicators have been used as part of environmental performance indicators. The reverse is also true where studies attempting to measure environmental management practices indicators include environmental performance indicators (IIinitch et al. 1998; Sharma and Vredenburg 1998; Trumpp et al. 2015). Such approaches affect the underlying dimensions of the construct which affects construct validity and theoretical justification. Under such circumstances, conclusions regarding the pertaining dimensions cannot be drawn (Trumpp et al. 2015). There is the need to make all efforts to separate environmental performance results from those of environmental management practices results through proper operationalisation of construct. This should result from a good definition which captures the vital properties and characteristics of the construct, avoids terminological tautology and circularity, and should be parsimonious (i.e., as concise as possible) (Suddaby 2010).

Clearly, from the EMPs’ definitions presented above, there are many aspects of EMPs in the literature. However, in the current study EMPs refers to the implementation of a set of cost-effective priority actions taken by the firm which helps reduce the environmental impact of its activities. These actions in most publicly traded firms emanate from the board of directors but in most privately-owned firms especially in SMEs, it is usually the owner-manager who initiates or

approve such environmental actions (Aragon-Correa et al. 2008). Therefore, these environmental management practices among SMEs in the study context are sourced from owner-managers.

4.2 Environmental Management Limitations and Evolution

The early application of environmental management was restricted to specific industries. Environmental management practices were not of any concern to businesses until after the Second World War. This was due to the realisation that industrialisation was causing harm to the environment and creating health-related challenges. Kirk (1995) indicated that concerns about the environment were focused on those industries which caused direct pollution of the environment through their effluents and discharges. Manufacturing firms became the target of early environmental management programmes. According to Goodman (2000), environmental management practices were mainly viewed as an operating framework that applies to manufacturing firms relative to firms operating in other industries. This the author attributed to the involvement of such firms in visibly dirty product, processes, emission and waste stream. This assumption affected the application of environmental management practices in firms operating in other industries deemed to be relatively clean such as service firms (Chan 2011; Mensah and Blanskson 2013). Ervin et al (2013) and Trumpp and Gunther (2015) alluded to this fact when they suggested that majority of prior studies have concentrated on manufacturing firms with very limited research looking at the environmental management practices of service firms. In this vein, both studies introduced service firms in their sample in an attempt to come out with policy recommendations which will improve the general application of EMPs in all industries. For instance, EMPs in the hotel industry gained much popularity and recognition world wider among hotels recently due to the launch of the International Hotel Environment Initiative (IHEI) in 1992. The restricted focus also affected knowledge development and attitude by less dirty and non-visible firms particularly SMEs who in most cases believe that their activities are not greatly harmful to the environment (Hilliary 2000; NetRegs 2002).

Historically industry has played a minor role in setting broad environmental goal due to the notion that the environment is public goods, therefore, its development and protection lies beyond the bounds of individual private business. This notion is well supported by industries

which traditionally hold a short-term and myopic view of environmental goal-setting. To them in a free market economy, the economic paradigm is antithetical to broad, long-term environmental goal-setting (Enrenfeld and Howard 1996). This view is based on the trade-off hypothesis that socially responsible acts such as those involving the environment will net few or no benefit for the business and resources used could have been invested in other economically profitable venture (Friedman, 1970; Waddock and Graves 1997). Environmental management is therefore viewed from the perspective of the slack resources hypothesis in that when firms have excess resources then they can afford to engage in environmental management practices (Waddock and Graves 1997) which in any case limits uptake of EMPs. Porter (1981) and Porter and van de Linde (1995) argued that environmental management represent a "win-win" situation as it improves firm performance as well as the environment. All these are an attempt to boost the involvement of firms in environmental management but the results from recent studies show that scepticisms still exist (Revell and Blackburn 2007)

The need to ensure that industries take steps to mitigate the effect of their activities on the environment has seen the government at the forefront of the action. Governments in both developed and developing countries have enacted several complex legislations underpinned by sanctions to force businesses to be environmentally responsible. This approach is termed command and control. With this approach, firms are told what is legal and permitted (McManus 2009). Limits are imposed for permitted pollution levels. The command and control have widely been criticised as being more focus on 'end-of-pipe' which is costly and inefficient; difficult to enforce, limit innovation and do not generate desire changes in organisational policy and strategy that lead to sustainable practices and may create adversarial relationships (Sinclair 1997). However, the command and control approach is seen as the very first and key step to environmental development in any country or industry (del Brío and Junquera 2003). It is only after this that government develops other types of environmental tools (Junquera et al. 2016). Other known approaches that have been developed to complement the command and control or help overcome some of the above challenges to ensure successful minimisation of environmental impact is voluntary or quasi-voluntary. According to Delmas and Terlaak (2001), voluntary approach is a collaborative arrangement between the firm and the regulator in which the firm without any influence commits to implement initiatives which will improve its environmental

management and the regulator only serves as supervisor. This cooperation may be used as a strategic tool by the firm to lessen its regulatory burden and develop new environmental competencies ahead of competitors. The authors indicated that there are two kinds of voluntary approaches which are negotiated agreements and public voluntary programmes. Under negotiated agreements targets are set by the two parties but not legally binding and performance rely on the moral responsibilities of the parties. On the other hand, under the public voluntary programme, the frame and basic requirements are set for participating firms by the regulator and the firm is required to set environmental improvement targets beyond the regulatory requirement. The regulator provides technical assistance (support services) but the existing regulations remain unchanged. In developed economies, voluntary approaches have existed since the 1990s and celebrated as been much better than command and control (Paton 2000) which is still being considered in most emerging economies.

Relating to the command and control, the EMPs support provided to businesses has basically been on education about how to ensure compliance with environmental legislation due to the complex nature of the laws. The first stage of environmental effort characterised by command and control approach with its sanctions and lack of environmental experts in most businesses required that support mostly in the form of technical assistance is made available to avoid businesses been reactive or vulnerable compliant (Lynch-Wood and Williams 2005). The scope of support services has assumed additional dimension in recent years which include the need for information/ support on mapping green opportunities and how to strategically incorporate EMPs into business plans and environmental technological support. Vickers (2010) advised that alternative technologies which include renewable energy, organic food production and distribution and small infrastructures for water which facilitate the radical transition from industrial society towards a more economically steady state society which is in line with ecological principles should be the way forward. (Jabbour and Puppim-de-Oliveira (2012) investigating the constraints to environmental management practices of business clusters in both Brazil and Japan found that businesses operating there expected supporting institutions to provide information on how to integrate environmental management with business opportunities. Again, technological support for decontamination was also noted by the respondents as their product waste is exposed to chromium. Alperstedt and Bulgacov (2015) in a study of Brazilian

industries found environmental administration support system as being vital to strategic environmental practices of sample firms.

Another obstacle has been the incorporation of environmental education into schools' curricula over the years. From institutional theory analysis perspective, Campbell (2007) indicated that cognitive frames, mind-sets or worldviews of business managers are key determinants of how their firms are managed. The mental constructs of managers are shaped by messages they receive through their business schools and from publications close to their professional field. According to Vogel (1992), ethical education was not much of interest at all in the United States until the 1970s and spread to Europe in the 1980s when business schools in the United States and Europe incorporated corporate social responsibility and ethical courses into their curriculum. Also, the stream of publications and conferences on business ethics has increased disproportionately since 1990 with the majority from Europe. These improve the knowledge of professionals on the subject matter and hence the implementation of EMPs may increase. The same cannot be said about other parts of the world. The integration of corporate social responsibility into the curricula of most business schools around the globe have just started (Wu et al. 2010). A study by GTZ (2013) indicated that only a few higher education institutions in Africa are formally teaching CSR and publication on social and environmental issues on the continent is low (Visser et al. 2006).

Environmental stakeholders include different groups who influence environmental management practices of firms through various strategies (Frooman 1999). The mere existence of stakeholders with legitimate interest does not imply that they may influence the environmental practices of the firm. In this respect, in its attempt to have much impact, in the last thirty years, most stakeholders have adopted formal legal status especially in the US (Perez et al. 2015) as environmental justice groups to make themselves relevant and dominant. The dominant stakeholder influence over time has been linked to a specific context (Alberton et al., 2009) or firm size (Sen and Cowley 2013). Studies from industrialised economies suggest that consumers and environmental groups have become much enlightened, sophisticated and demanding when it comes to the environmental issues applying strategies such as boycotts and protests especially to

large firms (Arora and Cason 1995; Henriques and Sadorsky 1999; Frooman 1999; Christmann 2004). However, the level of stakeholder involvement and influence in developing countries and small firms are not at the same level (Sumapaet 2005; Alberton et al. 2009; Sen and Cowley 2013).

4.3 Nature and Extent of Environmental Management of SMEs

The specific nature and extent of environmental management practices may vary among firms and are also influenced by various factors. However, the effect(s) of the environmental management activities may not vary since it will minimise the organisation's environmental impact (Hoogendoorn 2014). These environmental management practices undertaken by firms may achieve dual purpose according to the business case proponents. It has the effect of minimising a firm's environmental impact and at the same time attracting "green customers" and /or saving costs from the reduction of natural resources consumption which improves business performance (Porter and van der Linde 1995; Aiyub et al. 2009). There is, therefore, the need to shed some light on the nature and extent of environmental management practices among firms: Energy efficiency, water management, waste management, material management, pollution management and biodiversity management.

4.3.1 Energy Efficiency

The continuous growth of industries coupled with the pursuit of economic growth agenda of emerging economies has increased energy demand, consumption and cost remarkably. This increased demand and consumption have also drawn attention to the contribution of energy to climate change through emission of greenhouse gases (GHG). Businesses and governments have, therefore, begun to initiate programmes aimed at cutting down energy consumption and reducing its negative impact on the environment. These include technologies and incentives for energy savings investment to increase energy efficiency and reduce carbon emission (Martin et al. 2010).

Martin et al (2010) using a sample of UK manufacturing firms found a strong association between energy efficiency and management practices (energy target, energy consumption target and monitoring). Firms can achieve a lot in energy conservation by educating their staff about

energy conversation measures. Simple no cost or low-cost measures such as stickers and posters at the workplace about turning off electrical equipment and lights not in use are an effective way of encouraging staff to conserve and use energy efficiently (Raj and Seetharaman 2013).

Simple energy efficiency measures like turning off the lights, using energy efficient bulbs, proper maintenance of machines and replacement of old equipment with new ones are enough to save companies money on the energy bill. Instituting these energy efficient measures made SMEs saved 23% to 50% on their energy bill (Federation of Small Businesses in Scotland 2003). Williams and Schaefer (2013) using in-depth interview of 9 managers found that SMEs in the UK practised energy efficiency to a great extent. The limited geographical and small sample size was acknowledged by the researchers that it limits the empirical generalisability of the findings to SMEs in general. They recommended the use of a larger sample which may increase certainty that the variety of views and responses on energy efficiency may be captured fully.

Thollander and Ottosson (2010) examining the energy efficiency management practices of energy-intensive Swedish pulp and paper mills and foundry firms found that energy management was not an issue of high priority among a higher proportion of respondents. Justifying this finding, the researchers explained that businesses were allocating their scarce resources to their core activity since that constitute the focus of the organisation where all strategic efforts should be channelled.

Galvez-Martos et al (2013) investigated major European retailers and found that they have been engaging in energy efficient practices to a greater extent. These included the installation of various efficient devices in all sections of their activities that help reduce energy consumption and carbon emission. Also introduced were systematic monitoring of energy consumption, improving building envelop to reduce heating, covering refrigeration with glass lids, solar energy and use of natural light whenever possible to reduce energy consumption and carbon emission.

Ates and Durakbasa (2012) found that energy efficiency management was being practised by only 22% of sample firms in their study. Using data collected through a survey, they analysed the energy efficiency practices of 120 top ranked firms in the energy-intensive industry in Turkey. The identified practices were; written energy policy, energy manager, energy saving target,

energy efficiency projects, energy efficiency and conservation awareness programme for staff as well as energy efficient procurement (Hamann et al. 2017). The researchers suggested that with such a low level of energy efficiency management practices among intensive energy industries then they expect the level of energy efficiency practices among non-energy intensive firms to be far below 20% since it may not be a major cost item to warrant utmost attention.

Baylis et al (1998) observed that opportunities exist for both large firms and SMEs to realise cost savings from energy use since it requires little cost, effort and expertise. Battisti and Perry (2011), reported energy efficiency practices ranging from lighting bulbs to wind and solar generated energy among 50 SME respondents in New Zealand even with respondents who perceived environmental cost as a burden on the business. This indicates the importance of cost savings in a business decision. One limitation of the study was the purposive sampling strategy which the authors claimed has implication for generalisation of the results.

4.3.2 Water Management

Water efficiency in businesses can be achieved by both technical (water savings activities) and organisational (staff training in water management, environmental cost and savings quantification) practices (Álvarez Gil et al. 2001). Water efficiency can be achieved by simple less costly good house-keeping measures. Water usage and disposal of wastewater apart from costing the firm money also affect the environment (Kasim 2009). Water quality and conservation have become an important issue in recent years since water shortage and contamination has serious implication in all aspects of human life and economic activities. It is about time that the market's failure to internalise the cost of water is addressed to prevent the associated risk.

Mensah (2006) investigating the environmental management practices of hotels in Ghana, found that 67.3% of respondents were conserving water and protecting the environment by sink aerators and low flow showerheads. Another 28.8% of respondents were using the dual flush toilet in their water conservation effort. The researcher was of the view that the low usage of the dual flush toilet among hotels was because the technology was less popular in Ghana (p. 425) indicating that technological awareness may affect the extent of practices among firms.

Molina-Azorín et al (2009, p.521) argued that the service industry is a "silent destroyer" of the environment and hence undertook a study to investigate individual Spanish hotel's environmental behaviour by looking at the various environmental practices implemented by each of them. The authors identified water efficiency practices among all respondents in Spanish hotel industry. There were, however, differences in the extent of implementation of good house-keeping measures among two classification groups. Similarly, Teles et al (2015) investigating Brazilian large firms' EMPs found that water management was high among the respondents.

Denney and Evans (2009) in a study of environmental management practices among top retailers in the USA found a reduction of water consumption in the premises to be common practice. Retailers use low flow toilets, sprayer installation and replacement of old fixtures with new water-conserving ones. Metering and auditing readings allowed prevention of leakage and wastage. H-E-B as part of water conservation practice captures manufacturing steam from its process as water for reuse. Also, Alliance Boots' investment in ice removing ramps in its fresh fish section has resulted in 35% reduction in water consumption. These findings are contrary to those found by Massoud et al (2015) among Lebanese pharmaceutical respondents where there were low levels of such practices even though consumption and generation of waste and pollution were high.

Puma published its 2010 environmental profit and loss accounts in which it indicated its immediate and future commitment to water efficiency. The company quantified its environmental impact in terms of water which was €47.4 million making it the second most significant environmental issue after greenhouse gases. This constitutes the amount for the entire value chain with direct consumption by PUMA accounting for less than 1%. The company has, however, set a target of 25% reduction for it direct and indirect water consumption and has asked all strategic suppliers to adhere to this set target (PUMA 2012). A similar initiative was reported by Coca-Cola which seeks to be water neutral by 2020. The company's current practices include efficient technologies which use less water and wastewater recycling (Coca-Cola 2012).

4.3.3 Waste Management

Businesses cannot run away from waste management which also in a way represent an opportunity for them to prolong their going concern status by ensuring availability of material inputs, cost reduction and be seen as being socially responsible (Cespedes-Lorente et al. 2003) which can further enhance the firm's reputation and performance. Raw material input substitution through recycled waste has been identified as one of the key pollution reduction measures which must be addressed by businesses (Ashford 1993).

Recycling and zero tolerance for waste due to rising costs of materials were practices initiated by firms which also have a lesser impact on the environment (Montabon et al. 2007; Battisti and Perry 2011; Hamann et al. 2017). Efficient material usage results in less waste and hence saves the cost of disposal. Recycling is a good management strategy for waste but is not enough and firms should aspire to zero tolerance for waste by designing systems that eliminate waste at source and reuse waste that cannot be stopped at source by the designed system. However, avoid creating waste to save money (Rooney 1993). Firms can use already recycled or raw materials which can easily be recycled, reused or recovered to reduce their negative effect on the natural environment. Also, the minimal material should be used for packing but ensure that safety, hygiene and customer interest is not compromised (NetRegs 2002).

Epstein and Marie-Josée (2001) investigating the reasons for high sustainability practice at Nike corporation revealed that the company as part of its environmental impact minimisation has reduced shoe design toxins below the regulated level. They also stated that the company nowadays uses considered index which allows the products' environmental impact to be detected during the entire design process. This helps to minimise waste after usage.

Large USA companies- Du Pont, Dow, Offal and Monsanto made great savings by reducing waste in their production systems. Offal saved $1.1 million and Du Pont $1million in a year through waste reduction (Rooney 1993). Rooney (1993) argued further that, waste is a huge cost to businesses since it involves four cost components; raw material loss, labour loss, cost of disposal and handling charges but not inevitable cost that businesses should incur.

Walter (1975) using case study approach suggested that effective material usage at Marks and Spencer's clothing business can save the company money and increase resource efficiency. He argued that savings of 1% in material usage will result in nearly £2 million savings. Measures that can be adopted by the company to achieve this included elimination of waste (over-design and defects) and create awareness among employees to control material usage and prevent waste. Thus, employees have a pivotal role to play in material conservation and hence cost savings. Nath and Ramanathan (2016) also found similar waste reduction approach and employee involvement among UK manufacturing firms.

Baylis et al (1998, p.289) argued that the annual savings from waste minimisation range between 0.27% and 1% of turnover and therefore for SMEs' who are generally known to have low turnover, lack human resources and expertise and struggle for survival, it is not a fruitful venture to embark on even if resource requirement is minimal.

Sroufe (2003) investigating environmental practices among USA manufacturing firms engage in environmental management systems found that the two practices that were very important to the firms were waste reduction (marketing and returnable packing) and design practices (New Product Development) with very little attention given to recycling. The researchers explained that with resources scarcity, regulation stringency and public attention on pollution, the firms concentrated on lowering output of waste than dealing with it afterwards. To a greater extent, the path of waste reduction is influenced by resource availability and opportunity for savings. Where resources are scarce and opportunity for savings from waste and pollution reductions have been exhausted, then firms must embark on capital investment in advance technology for cleaner production to make any net savings (Baylis et al. 1998).

Webster (2012) examining the offshore waste management of six oil and gas international companies (Shell, Apache, Chevron, BP, BG and TNK-BP) through face to face interviews found some practices that induce emission of GHGs. Majority of the sample (88%) do not collect and treat the toxic gases or emission from incinerators and landfill sites. Such practices contribute greatly to climate change.

4.3.4 Material Management

The increasing demand for materials worldwide coupled with other factors means that firms are more likely than ever to face the risk of price volatility, potential supply interruption and competition for material resources (Department for Environment, Food and Rural Affairs (DEFRA) 2013). Proper use of raw materials includes ensuring that all containers and bags are well emptied to avoid throwing away money and creating waste in the environment (Worrell et al. 1997). To minimise waste there is the need to buy quality materials and always check for damages or dents before goods are received into the store. Businesses should regularly check for expiring dates on all stored materials and set possible quality benchmarks for all suppliers (EPA Victoria 2008).

Material efficiency can be improved in industries by decreasing the quantity of material used for production (light weighing). In the USA material quantity reduction, has been achieved in various products over the years. Glass bottles reduced by 25% compared to 1984, soft drink plastic bottles by 28.4% (67g to 48g) between 1960s to 2000, aluminium cans have decrease by 24% since 1972 (20.8g to 15.6g) and grocery plastic bags thickness reduced to 18 microns down from 30 microns (Rathje and Murphy 2001). These light weighing achieved from these products have a profound effect on natural raw material extraction and corporate social-environmental performance.

Worrell et al (1995) investigated the potential for material efficiency in plastic packaging in Netherlands using case study, statistical data and literature reviews. During interviews, it was revealed that in the area of shopping bags good house-keeping (reduction in consumption) has resulted in 25% decrease in consumption. The replacement of PET-bottles with returnable PET-bottles reduced the demand of PET by ⅓ which was equivalent to 5% of 1988 Netherlands' total plastic bottle demand. The use of lightweight bottles reduced total plastic demand by 1%. The analysis showed that material efficiency improvement of 34% can be achieved and save 20% plastic waste in the plastic packing industry in Netherlands.

Côté et al (2006) studied the eco-efficiency levels of SMEs operating in Nova Scotia, Canada. In all 25 SMEs, which have received environmental management assistance were involved in the

study. Eco-efficiency practices investigated were 35 but on average each SME was found to be mainly involved in only 9 of the practices and these were generally in the "reduce consumption of resources" category which comprises of energy reduction, water reduction and material reduction. Under the material reduction category, the key actions undertaken by respondents were minimal material usage, use of high-quality material, reduction in weight, reduction in volume and alternate uses for outdated/aged/unused products. Overall the level of eco-efficiency practices among respondents was low and mainly entails actions which required limited financial and technical resources termed as "low hanging fruits" in pollution prevention circles. The authors suggested that SMEs must be convinced that there is the need to incorporate eco-efficiency as a top priority in daily operations since it will enhance economic and environmental performance and help avoid regulatory sanctions at the same time.

García et al (2008) explored optimisation of resource usage among 15 major Finnish chemical manufacturers in northern Ostrobothnia region of Finland. The researchers used survey data to analyse the measures adopted by the sample firms to optimise resource usage in their operational activities. Resource efficiency measures relating to raw material among the respondents included reduction of losses of raw material, reduction of office paper use, monitoring quantity of products in storage and their expiring date (sell-by date). Majority of respondents (85%) identified a reduction of losses of raw material in their process as the measure which is of utmost importance in the organisation which also improved the economic performance.

Lilja (2009) noted that the concept of material efficiency within industries in Finland take into accounts the input-output relations without considering the environmental effects of the usage of natural resources. Industries were interested in producing more output from minimal material input. Using stakeholder approach, the industrial and commercial respondents were of the view that investing in cleaner and new technologies facilitate production profitability and that the invisible hand of the market mechanism will automatically force firms to adopt material efficiency measures without a need for regulation. The study concluded that material efficiency serves as a better way to prevent waste.

Fernandez-Vine et al (2010) using survey questionnaire and face-to-face interview for data collection from SMEs and environmental experts respectively in Venezuela found eco-design practices among the respondents. SMEs' practised light weighing in their operations and tend to select materials with low environmental impact. The authors argued that the choice of eco-design practices was not based on analysis of the product lifecycle or assessment of environmental impact. The SMEs' affirming these practices were 44% but the environmental experts put the figure at 10%. The differences in the practice rate were attributed to the fact that the experts might have a better understanding of the survey items and their opinion is not influenced by managerial policies and strategies. The low eco-efficiency practices found was linked to a poor regulatory enforcement mechanism.

4.3.5 Pollution Management

Sources of pollution of air, land and water include vehicular emissions, biomass burning and industrial discharge all of which have an adverse environmental impact. Pollutions such as oxides of nitrogen, particulate matter (PM), sulphur oxides, acid and organic chemicals, nutrients and organic pollutants, volatile organic compounds (VOCs) and metal emissions may result from business activities. Generation of pollution seems to be associated with product lifecycle, therefore creating products which are durable, adaptable and with components which can be reused can help extend product lifespan resulting in lesser required virgin materials, lesser waste and reduction of pollutions (USA Environmental Protection Agency 2009). Also, employees should be discouraged from one person one car to share a car, join public transport or use bicycles to work to cut down congestion and pollution (Alshuwaikhat and Abubakar 2008). Again, businesses should centralise and coordinate distribution and delivery of goods and services as well as minimise raw material consumption and waste generation to reduce the need for transportation and hence reduce pollution (Future Energy Solutions and Enviros Aspinwall 2002).

Evangelista (2014) studying green practices among 13 SMEs in third-party transport and logistics category in Italy identified avoidance of running vehicles empty, controlling loading, material recycling, training employees on eco-driving, emission reduction programmes, use of renewable energy, transport planning, reducing packaging, setting GHGs target and energy

efficient mode of transport as being practised. They argued that except for few sampled businesses who are more concerned about the reduction of their environmental footprint the majority undertake these actions with the main aim of reducing business costs.

Koleva (2014) used case study approach to investigate the environmental practices of three large transport companies in France. They found two of the companies practising environmental management ranging from fuel efficiency, tactical driving, reduce emission to recycling of used parts. The third company, however, was not interested in the environmental aspect of the transport citing economic resource constraint. The worrying issue from the study was that high emission vehicles deemed to be old and generating pollutions are sold to emerging economies (p.33)

Walmart plc in an attempt to reduce it GHGs emission has improved its fuel efficiency average in its logistics operations by 25% thereby making savings of $75million annually and reducing GHGs emission (CO_2) by 400,000 tons with relatively small investment. This was achieved through best energy practices and by the use of energy efficient technologies (Plambeck 2012).

4.3.6 Biodiversity Management

In recent years much effort is being made by businesses across the globe to reduce their impact on the environment, however, not much has been focused on the critical services provided by ecosystem on which businesses rely to function (Winn and Pogutz 2013). Most often biodiversity and ecosystem services are not given due consideration at all in the decision-making processes due to lack of clear ownership and pricing. This is clearly evident as only 27% of 1,200 CEOs expressed some level of concern about the risk of biodiversity loss to their business (PricewaterhouseCoopers 2010). Businesses through their activities impact a lot on biodiversity (The Economics of Ecosystem and Biodiversity Report 2010). Irresponsible extraction of natural resources by businesses affects the biodiversity negatively. Biological resources and ecosystem services (moderation of weather and climate, pests and diseases control, atmospheric gases regulation and purification, genetic resources maintenance, plant pollination, provision of fuel, fibre and food) that are provided by living organisms are all sustainable if the biodiversity is sustained. For instance, wastewater may be treated before being released to avoid the impact of

effluents on wetlands, aquatic biodiversity and species composition changes. There is the need to also reduce material sourcing from the ecosystem and land clearance for development since it destroys habitats, where possible improve technologies should be used to reduce habitats disturbances (International Council on Mining and Metals 2006). Biodiversity improvement by businesses in their areas of operation may have the potential of providing valuable habitats for several species to supply important ecosystem services (e.g. carbon sequestration and recreation) better in most cases than before operations (Armsworth et al. 2010).

Winn and Pogutz (2013) preliminary study of four top Fortune 500 companies' activities relating to biodiversity revealed that, the companies were engaged in ecosystem activities like soil and forest protection to biodiversity conservation including fisheries and freshwater, contaminated areas restoration and helping farmers and suppliers who are part of their supply chain to practice sustainability in all their activities. Some of these biodiversity activities were undertaken in partnership with an international organisation with expertise in the area. The protection of the ecosystem by businesses may be strategic since it will ensure a continuous supply of goods and services in the required quantity and quality by the ecosystem and reduce both reputational and regulatory risks for the business (International Council on Mining and Metals 2006).

Overbeek et al. (2013) noted that the biodiversity concept is relatively new and not easy to grasp for businesses due to its intangibility and lack of single indicator. Examining 12 national and international firms' biodiversity protection activities they found sponsorship for nature organisations, development of a code of conduct and networking with stakeholders to protect biodiversity. Fewer firms were actually involved in these activities and were more of reactive than proactive. The respondents found it difficult to incorporate biodiversity issues into their business plans partly due to the limited knowledge on the extent of the business dependence on biodiversity. The commonly cited relationship was a source of raw materials and public opinion of stakeholders.

Delloitte (2012) using companies' public biodiversity communications found that top 50 fortune global 500 companies are using conservation group among other practices (habitat protection and ecosystem restoration) to help maintain biodiversity in their operational areas around the world. It also reported that 80% of the respondents to a greater extent report on their biodiversity

4.4 Barriers to Environmental Management

The various factors which limit the effective implementation of environmental improvement activities by small and medium firms not only harm the natural environment but also prevent these firms from enjoying the associated benefits of such activities like cost savings, improved reputation and attraction of "green employees" and "green customers" (Simpson et al. 2004; Battisti and Perry 2011; Winn and Pogutz 2013; Jo et al. 2014). In some instances, due to failure or inability to meet set standards, the firm may incur liabilities in the form of fines and penalties (Christmann 2000).

Barriers to environmental practices have not received considerable attention. Moreover, most studies are based on a small sample, limited in terms of industrial activity and focused on firms in developed economies where there are mostly support services for SMEs. Such limitations of these studies affect insight and understanding of barrier peculiarities across industries and other jurisdictions. These make it a rich area for further research, especially in Ghana where there is a dearth of studies on SME barriers. The environmental literature has identified the following as some of the barriers to environmental management among businesses.

4.4.1 Knowledge and Ownership Attitude

An identified barrier to environmental management practices of SMEs is lack of knowledge about their environmental impact (Hillary 1995; NetRegs 2002; Roy and Thérin 2008; Daddi et al. 2010). Jabbour and Puppim-de-Oliveira (2012) pointed to decline in knowledge of environmentally friendly practices as the main issue hampering environmental practices among Japanese small businesses. It has been found that small number of SMEs are managing the impact of their activities on the natural environment, the vast majority still believe that their impact is insignificant and overstated (McKeiver and Gadenne 2005; Mir and Feitelson 2007). This self-denial has in most cases resulted in lack of commitment on the part of SMEs to tackle their environmental impact (The European Network of Ecodesign Centres (ENEC) 2013; Marin et al. 2014). SMEs perceive environmental management to be costly without the significant benefit (Thornton et al. 2009). Contributing to the lack of knowledge and failure to engage in environmental management is lack of time and attitude of owner-managers. SMEs most often are concerned about competition and survival and therefore tend to concentrate their effort and time

on surviving and becoming profitable than on the environment (Revell 2003; Stevens et al. 2012).

Post and Altman (1994) identified a gap between leadership commitment and actual environmental programme. This factor hampers environmental improvement in a large USA electricity company. The show of leadership commitment resulted in the display of positive initiatives and active involvement in regional and national level leadership role on environmental issues but does not translate to effective workable action on the ground even with the presence of capable personnel. The authors, therefore, concluded that the company is not walking the talk of environmental uptake because whiles external environmental programmes are more advanced, internal ones are less sophisticated (p.75). The focus of this study on large firm makes the applicability of it results to SMEs difficult since SMEs' characteristics such as ownership and decision making differ markedly from those of large firms.

Moors et al (2005) identified what they termed knowledge infrastructure as a key barrier to radical cleaner production in the base metal industry (p.664). The study used the semi-structured interview to investigate the barriers as well as cleaner production strategies among six European base metal producers in three countries. In the comparative analysis, it was found that the companies have small research and development department mainly for troubleshooting rather than for the extension of knowledge networks both within and outside (intro and inter-firm) the firm which can aids development. This can facilitate the exchange of technical and scientific know-how about environmentally efficient production. It also facilitates co-operation with other relevant knowledge base partners such as technical institutes and universities. Relating to this, the researchers also found lack of top management advocacy, lack of clear strategic long-term technological plan and absence capacities for environmental management as organisational and cultural factors which inhibit radical innovations in base metal industry's radical cleaner production. This study was limited to only mining firms thereby affecting the breath of the result.

Battisti and Perry (2011) investigating 50 SMEs in New Zealand using survey methodology found a group of respondents (with some environmental awareness) among the sample identified as "cost burden" who stated that their activities are not harmful or cause insignificant harm to the environment. This does not warrant their attention and aside from that their concentration is to

make their business more profitable. They are only prepared to implement environmental measures where there is no or a minor financial investment but with cost savings (p. 177). The small sample size of the study serves as a caution in any attempt to generalise the research outcome beyond the context of the study.

It has also been noted that ownership and management in SMEs are intertwined in most cases and so getting owners to change their attitude towards the environment will go a long way to improve environmental management in SMEs. This was rational when Dulipovici (2001) stated that regulations seem not to be the answer in SMEs since the root cause of environmental uptake is environmental behavioural change and not regulation. Kasim and Ismail (2012) added to this when they stated that management attitude towards investment and implementation of environmental practices did not much their claimed level of concern and knowledge about the environment. The inverse relationship between environmental knowledge level and environmental action has been confirmed by Mir and Feitelson (2007). The owner-managers' attitude is further influenced by the fact that in most instances they do not have clear internal mechanism to help them evaluate properly the benefit of environmental management to the business and do not feel the footprint of their firm's activities warrant committing resources to clean up since they have limited and short-term capital (del Pino and Perera 2013).

4.4.2 Regulatory Constraints

Also, the knowledge gap is aided by complex and fragmented regulations on the environment. SMEs' management is often not familiar with regulations that are applicable in their area of operations and this often results in being reactive or "vulnerable compliant" (Wilson et al. 2011). Federation of Small Businesses (2004) pointed out that the 80,000-page environmental document for SMEs in the European Union (EU) is too complex and burdensome for SMEs.

Lynch-Wood and Williamson (2005) in a survey of 66 SMEs in four EU states found that respondents were not able to read and understand the environmental legislation relating to them due to its complexity and unclear nature. This according to respondents makes it difficult for them to know whether or not they are complying. To this end, Palmer (2000) stated that any SMEs' environmental information must be practical, easily accessible with quick application and

have a direct impact on the firm's natural environment. This is not to say regulations are not important in managing the environment (Petts 2000; de Oliveira and Jabbour 2017). In the advanced countries (UK and USA), in order to reduce the burden and barrier created by regulations, state institutions are working hand in hand with SMEs (Brammer et al. 2012).

Walker et al (2008) exploring barriers of green environmental practices in the supply chain of seven large UK public and private organisations identified regulations as an external barrier which respondents claimed affect their green supply chain practices. European Union's legal requirement of advertising purchases above a certain threshold in the European Union's official journal by public sector institutions was seen as a threat since it requires considerable time and effort to search and understand the relevant sections of the legislation. In additions, most small suppliers do not even access this European Union journal; hence an alternative means is always needed to bring the opportunities in the public sector to these actors in the supply chain.

Again there is a low level of awareness of environmental regulations among SMEs (del Brío and Junquera 2003). Regulation no matter how stringent it is cannot have the level of impact on the EMPs of SMEs than a clear understanding of environmental issues by business owners. Hence the concentration should be on information and education (Dulipovici 2001; Schaper 2002). Walker et al (2008) in a review of the literature on environmental management practices of SMEs concluded that education rather than legislation seem to be the key facilitator of change. A similar call has been made by (Ezeah and Roberts 2012).

4.4.3 Support Services

Lack of external support is also known to mitigate SMEs' environmental improvement (Biondi et al. 1998). External supporting institutions are supposed to help bridge the knowledge gap of business management by proving them with relevant and up to date environmental information (Tilley 2000). Supporting institutions are supposed to have in-depth knowledge on environmental issues to drive the uptake of environmental management in their clients by providing explicit sector information.

Schaper (2002) reported that business owner's level of information on the environment correlates significantly with the environmental performance of their firm among sampled Australian SMEs.

The provision of information which is timely and likely to increase owner's relevant knowledge on the environment is central to the green idea in small businesses. The author, therefore, recommended that the government of Australia should use the various states, federal and local support agencies of small businesses to provide these services. However, the quality of the human capital in the external supporting institution is more important than the number of such institutions in existence at a place.

A case study of three pulp and paper firms in Thailand by Setthasakko (2010) revealed that lack of guidance on environmental accounting practices and systems by the government is affecting environmental practices and performance evaluation of the firms especially in the areas of pollution prevention and management of solid waste. This underscores the significance attached to support systems in achieving set objectives even in the large firms since environmental accounting guidelines will ensure the correct allocation or assessment of environmental cost, revenue, assets and liabilities to help prevent sub-optimisation risk.

The lack of relevant knowledge by external supporting institutions has been identified as hampering environmental improvement efforts of small businesses in the footwear sector in both Brazil and Japan (Jabbour and Puppim-de-Oliveira 2012). Also, Seroka-stolka and Jelonek (2013) reported that 75% of respondents felt the state was not encouraging environmental management system implementation.

4.4.4 Resource Limitation

Resource limitation has been identified as a source of barrier in SMEs' environmental management (NetRegs 2003; Hillary and Burr 2011). SMEs have limited resources in terms of both finance and human resources such that it results in lack of training and expertise in environmental management (Hillary 2004).

Zilahy (2004) investigated energy efficiency management among 8 large leading energy intensive Hungarian firms with significant export base. Using face to face interview, the researcher documented among other barriers the high cost/ slow returns, limited financial resources and lack of human resources by respondents. According to the respondents, these factors coupled with the daily challenges of operating the company effectively in most instances,

have disadvantageously affected the implementation of improved energy efficiency since attention is mainly focused in areas with short-term benefits to the detriment of energy efficiency improvements which is costly but with a slow rate of return (long-term).

Vikhanskiy et al (2012), analysing the challenges faced by three large Russian companies in their environmental effort identified resource constraint as one of the main barriers. To implement and manage proper environmental policies require financial, qualified environmentalist and time to achieve a better result. The respondents complained of limited financial resources making it difficult for the companies to integrate environmental policies of the state with those of the companies' due to the massive investment required. This is very important if environmental management is to achieve any meaningful impact and avoid companies meeting only the minimum legal requirement or being reactive. They found that the quest of public demand for environmentally friendly business activities put a lot of strain on the business in terms of the expected time frame from these stakeholders which at times affect performance when they are not met.

Lynch-Wood and Williamson (2014) investigated responses of SMEs to environmental regulation in the UK. They confirmed that resources in its various forms are seen as critical to environmental improvement by SMEs. In the study, 89% of the sampled firms pointed to limited financial and human resources as a key issue limiting their ability to develop their environmental knowledge through training. Respondents were of the view that they have insufficient resources hence must concentrate only on their primary objective and not spend beyond necessities. Included in the resources constraint list were people, time and expertise. The result suggested that respondents considered training and education as costly in terms of time, people and finance. This may also explain why SMEs are found to be reactive or none compliant to regulation (Tilley 1999). Lack of training on environmental sustainability is seen as the most serious challenge to the green movement among businesses in Nigeria (Ikediashi et al. 2012).

4.4.5 Stakeholders Pressure

Revell and Blackburn (2004) found the lack of stakeholder pressure as a barrier to environmental improvement by SMEs in restaurant and construction business. Using face to face interview approach with 12 informants and 40 SMEs it was noted that stakeholder pressure which is

recognised as one of the key drivers of environmental management and wherever it prevails, it leads to improvements in businesses' environmental behaviour was absent. Customers are driven by service quality and economic consideration than environmental issues giving service providers no incentive to deal with their environmental footprints.

Schot (1992) found that pressure mounted by the general public on the credibility of multinational firms in the Dutch chemical industry has resulted in new strategic environmental efforts by these firms to regain the trust and confidence of the general public. The respondents mostly top managers stated that the position of the companies on public environmental views have now changed entirely from the past where the company held the position that environmental impacts must be undeniably proven scientifically (p.36). However, such attitude is now considered as technocratic and the public environmental perception about the company is taken seriously. Strategic policies are now developed to ensure that the company's image does not suffer since been regarded by the general public as a trustworthy and skilled partner is very important in all aspects of today's corporate success.

Rothenberg et al (1992) also arrived at a similar conclusion when they use case study approach to investigate the environmental proactiveness of Swedish automotive maker Volvo. The company has been tackling its environmental effects through a comprehensive and proactive management programmes and environmental strategy. The authors explained that the organisational context (social, political and competitive) presents the organisation with both opportunities and constraints. They, therefore, argued that the company being more environmentally proactive was keenly fueled by demand for more action by government regulations, local communities and environmental interest groups (Ervin et al. 2013).

Kasim and Ismail (2012) examined the environmental practices of 26 Malaysian restaurants operating in Penang using purposive sampling. The result suggested that environmentally friendly activities were weak among the operators and that there is neither demand from customers nor the surrounding community for such services from the restaurants even though the community is environmentally conscious. Laws and regulations on the environment were weakly enforced by responsible state institutions.

He et al (2014) had a different result when they investigated an SME in the chemical industry in rural China. Respondents were not passive recipients of the environmental pollution as well as the risk associated with the activities of the industry. The study found that about 78% of the respondents have taken part or complained officially about pollution from the firms. The study also found an increasing pressure on the firms from governments, civil society, local communities and international value chain stakeholders to be environmentally responsible but not much has changed. However, Mir and Feitelson (2007) found that sampled businesses did undertake significant environmental activities even without any meaningful pressure from stakeholders.

4.4.6 Formal Environmental Education

Another barrier to environmental management among SMEs is low level of formal education. Formal education on environmental management in schools and colleges also increase the level of awareness of the need to incorporate environmental issues into business operations. This is important because tomorrow's business managers are today's students. Also, it has been identified that the level of formal education in the area of corporate social responsibility (CSR) in Africa is relatively low with most formal institutions of higher learning just introducing CSR courses in an effort to raise the awareness level among students (GIZ 2013).

Mckiever and Gadenne (2005) found owner education and formal environmental management system (EMS) implementation to be more correlated in that sampled owner-managers with high education were more likely than their counterparts with lesser education to implement formal EMS. In a study of 1000 SMEs' owner-managers, the authors argued that this outcome reflects purported high level of awareness of the benefits associated with formal EMS among the educated class. However, Schaper (2002) did not find any significant relationship between owner-manager education and environmental management practices.

Hossain et al (2012) explored the drivers and barriers of corporate social and environmental responsibility (CSER) in Bangladesh using an in-depth interview approach with a sample of 100 senior managers of 100 top firms listed on Dhaka Stock Exchange, Bangladesh. The respondents reiterated the need to incorporate environmental and social issues into the educational system

since these are relatively new concepts in the country. The respondents also suggested the need for internal corporate sustainability education policy to create the needed understanding and the importance of the issue. The respondents further asked for company Board of Directors to be well educated on the CSER for it to have the necessary impact since all decisions come from them.

4.5 Environmental Management and Financial Performance

Studies on the environmental–financial performance have often focused on either how investments made to improve environmental impact promote organisation's reputation and performance in total or provision of environmental uptake efforts and information needs of shareholders affect performance (Alberton et al. 2009). This section, therefore, focuses on identifiable and measurable environmental management practices and other variables which according to prior literature explain the association between environmental management and financial performance. Based on this, the section develops testable hypotheses for the study. Underlying the development of the hypotheses is the theoretical and empirical evidence from the environmental management literature. The variables used to guide the formulation of the hypotheses are drawn from the literature discussed.

4.5.1 Environmental Management Practices (EMPs)

Business institutions are under political and social pressure to reduce the footprint of their economic activities on the natural environment (Cassells and Lewis 2011; Ortas et al. 2015). This has brought the issue of environmental management to the forefront of today's business management and may have an effect on the economic performance of organisations. It is believed that firms which incorporate environmental management practices as part of their organisational culture can reduce their impact on the environmental. Environmental impact mitigation can be achieved by waste minimisation, products and processes redesign, reducing packaging, using recycling materials and elimination of toxic discharge (Sarkis 2001; Williams and Schaefer 2013).

It is also believed that any extra fixed investment made as a result of implementing environmentally friendly processes and products is likely to be offset by variable costs components of environmental cost (internal and external) (Watson et al. 2004). Proponents of the 'win-win' hypothesis have suggested that organisations need to take environmental management practices as a strategic issue as it may enhance the competitive advantage of the firm and reduce environmental effect (Porter and Van der Linde 1995; Pereira-Moliner et al. 2015). Environmental proactivity enables firms to lower cost and differentiate products to improve their competitiveness (Hart 1995). Proactive environmental management practices help firms to save, control costs, minimise waste and waste disposal costs, energy and input consumption and re-usage of materials through recycling (Rooney 1993; Lucas and Wilson 2008). From this perspective and in line with the theory of the firm, environmental management makes economic sense since it minimises cost and results in improved performance which will aid profit and shareholder wealth maximisation (Friedman 1970; McWilliams and Segiel 2001). Product differentiation through ecological characteristics has the ability to attract environmentally sensitive customers (Molina-Azorín et al. 2009). According to the stakeholder theory, environmentally sensitive customers are attracted by products with ecological characteristics and this increases market share in this segment of the market (Clemens 2006; Claver et al. 2007; Campbell 2007). Cost and differentiation advantages eventually impact the bottom line of the firm.

The management of the environmental impact of the firm may impact on the financial performance of the firm from the instrumental stakeholder theory and signalling/discretionary theories perspective. Better environmental management and disclosure of such information may serve as decision-making input for investors in general and ethical investors in particular and reduce information asymmetry (Clarkson et al. 2008). Improvement in the environmental practices of a firm increases its reputation and pollution reduction credibility among stakeholders which according to the reputational theory increases the firm's intangible assets/resources value and may have a positive influence on the public including policymakers thereby serving as a source of competitive advantage (Russo and Fouts 1997). The resource base view of the firm has been used to offer an explanation as to why firms' proactive EMPs may impact on financial performance. Environmental management develops skills and expertise needed to manage it and

this will improve internal methods of waste reduction, fuel and operational efficiency which may be a source of competitive advantage (Russo and Fouts 1997). Firms which are serious with their EMPs according to the Porter hypothesis can operate at a win-win level where both the firm and the environment do not suffer from the environmental mitigation costs and economic resource extraction respectively (Porter 1991; Konar and Cohen 2001).

On the other hand, it has been argued that environmental management is costly and the so-called competitive advantage is theoretically attractive but not realistic (Walley and Whitehead 1994). This theoretically has been explained from the theory of the firm, agency theory and stakeholder theory point of view. From the theory of the firm position where environmental management is not undertaken as a form of investment but mere social responsibility, then it will affect firm performance in that from the trade-off hypothesis resources invested in such a socially desired environmental activity deprive the firm of undertaking potential net investment project. From the agency theory, which also falls under the classical view of the firm, managers as agents without effective and efficient monitoring mechanisms in place may invest firm resources in environmental activities which do not serve the interest of the principal by way of increasing profit but help boost the manager's owner career ambitions (Letza et al. 2004; Pereira-Moliner et al. 2015). The stakeholder theory explaining the negative effect of EMPs on financial performance suggests that where stakeholders in the capital market do not see the relevance of the firm investing in environmental programmes, they are likely to react negatively to any such information which has potential to affect firm performance badly (Qian 2012). It has also been claimed that the environmental management literature adopts an evangelistic and rhetoric position which ideas remains questionable since it is much difficult empirically to prove the arguments backing the benefits associated with environmental management practices (Newton and Harte 1997).

Environmental management practices and financial performance among SMEs is one of the under-researched areas in the environmental management literature (Clemens 2006). Also, the limited extant literature mainly focuses on firms in developed economies (e.g., Clemens 2006; Aragon-Correa et al. 2008; Qian and Zing 2016). This makes it a fertile area for further research, especially in Ghana, a developing country where there is a dearth of environmental studies in

general and environmental management characteristics differs significantly from the west but much align with most developing nations. Such analysis in this study may provide new valuable insights into the environmental management practices and financial performance relationship literature.

Using event study methodology, Klassen and Mclaughlin (1996) demonstrated that shareholders reacted significantly to both positive and negative environmental event announcements in the USA. The market rewarded institutions which were noted to have improved their activities in such a way that their continuous development and growth also ensures that lesser harm is done to the natural environment. The study noted abnormal positive stock return among firms with the positive environmental news. Also, empirical work of Gilley et al (2000) on firm environmental initiatives and stock market reaction from reputational perspective offers some support for the reputational capital investment. Product-driven environmental initiative announcements were found to be positively related to stock returns. The visibility of environmentally friendly product seems to account for investors' reaction and this may enhance the reputation of the firm. They further suggested that the firm may increase the sale of other products or services on the backdrop of the enhanced reputation of the new environmentally improved product. The use of event methodology has been subjected to criticisms in relation to difficulties associated with it such as differences in the length of the event window, difficulties of identifying event date correctly, defining event differences, uncommon methods of controlling for confounding events and industry effects in the analysis (McWilliams et al. 1999) which impacts on the results and contribute to mix findings and limit generalisability. Konar and Cohen (2001) also criticised event studies including that of Klassen and Mclaughlin (1996) that these studies cannot analysis long-term trends and objective measures of environmental performance which are not tied to a specific date.

Russo and Fouts (1997) analysed the effect of environmental performance on financial performance (ROA) of 243 listed firms in the USA from the resource base view perspective. They found that environmental performance positively affects the economic performance of the firm. This relationship strengthens due to resources (physical assets and technology, organisational capabilities, intangible resources) associated with industry growth. The

researchers concluded that it pays for organisations to embark on the greening journey since consumers are more likely in future to penalise environmentally laggards due to the increasing availability of information on the environment. This may be because environmentally proactive firms are also more efficient in material usage, reduction of waste and productivity improvement (Hart 1995; Klassen and Whybark 1999). This backs the argument that waste is a sign of inefficiency and cost to the firm which affects the bottom line directly (Porter and Van der Linde 1995; Shrivastava 1995). Also being environmentally aggressive helps firms improve internal efficiency (Moneva and Ortas 2010) and become more entrepreneurial in several dimensions which contribute to the overall positive outcome.

A similar conclusion has also been arrived by King and Lenox (2001) with slight variation, arguing differently from Russo and Fouts (1997). They posed a similar question with an extra emphasis; "does it really pay to be green?" The study sample was 652 US manufacturing firms which were publicly traded from 1987 to 1996 and environmental data were obtained from Toxic Release Inventory (TRI) facility data from Dun and Bradstreet with corporate data from Standard and Poor's Compustat database. Controlling for six variables (firm size, capital intensity, growth, research and development, leverage and stringency of the regulatory environment) the study found a linear relationship between pollution levels and financial performance. King and Lenox (2001) suggested that this link might have been influenced by the firm's strategic position and characteristics. Hence the question of "when does it pay to be green?" is more appropriate than "does it pay to be green?

Konar and Cohen (2001) also arrived at the similar result when they examined the environmental performance and market value of intangible assets of a non-random sample of 321 publicly traded manufacturing firms in the USA. They found significant negative effect of poor environmental performance on the value of intangible assets. This effect was economically significant as well, translating to an average liability of nearly $380 million in terms of market value. The associated loss in the value of intangible assets varies across the sampled industries with it being high in high polluting industries. They suggested that good environmental reputation is associated with higher intangible assets and this may explain why large firms invest in environmental reputational capital by mostly over complying with environmental regulations.

The use of environmental performance as a measure has been criticised as not being able to explain the fuller environmental patterns and its influence on firm performance. It has been suggested that environmental proactivity or practices rather shares many of the qualities of management system frameworks (Pereira- Molina et al. 2015). The current study uses environmental management practices variables.

Of direct importance to this study context, Wingard and Vorster (2001) investigated the financial performance of listed South African firms which were deemed to be responsible environmentally. This was done on the backdrop of the fact that integration of environmental management decision by South African businesses was not an everyday affair. Using correlation analysis, the study concluded that, there is a positive association between environmental responsibility and financial performance and that better financial performance is derived from stronger environmental responsibility (Molina-Azorín et al. 2009). Thus firms which actively invest to enhance and improve their environmental impact, also positively improve their economic performance (Klassen and Whybark 1999). This evidence is supported by Montabon et al (2007) who found that both pollution control and pollution prevention environmental management practices of the firm are positively related to the financial performance of the firm. However, the focus of Wingard and Vorster's (2001) study on listed firms implies that its results may not generally be applicable to unlisted SMEs operating in similar environment due to differences in management structure, access to resources and regulatory requirements (Afrifa and Tauringana 2015).

Al-Tuwaijri et al (2004) using simultaneous equation approach and annual stock returns found a strong positive link between environmental and firm market performance. They emphasised that the finding is in line with the theory of discretionary disclosure which posits that firms with good environmental performance believe that disclosing environmental information represents good news to the participants of the market. They also stated that the lack of significance in the results of previous studies might be due to the negative association between the variables studied that might have downplayed probable positive association found by previous studies. Al-Tuwaijiri et al (2004) made a case for the "win-win" scenario by concluding that good environmental performance is associated with good economic performance as well. Thus, the investors in the

capital market will reward firms with good environmental performance. Nakao et al (2007) studied 300 Japanese listed firms between 2002 and 2003 using multiple linear regression analysis. They found that environmental and financial performance are positively related leading the authors to suggest that the failure of the market to internalised environmental cost may be changing and the market is likely to overcome this challenge by the promotion of both public and private interest mutually. The focus of environmental management studies on large firms has been criticised as creating the impression that size is key criteria for proactive environmental management activities and as such SMEs due to their size lacks resources to undertake any meaningful environmental activities (Aragon-Correa et al. 2008).

Clemens (2006) demonstrated empirically that there is a relationship between green (aggregated variable) and financial performance among small firms in the steel industry in the USA by posing the question "does it pay to be green?" He was interested in whether it makes sense for small firms to undertake green investment. The study compared the respondents firms' aggregated environmental performance against financial performance. The conclusion was that there is a positive relationship between green and financial performance. This finding aligns with the proponents of the "Win-Win" and business case view (Theory of the firm) (Porter 1991; WBCSD 2001; Melnyk et al. 2003; Song et al. 2017). Based on the result of the study, Clemens (2006) recommended that even though the study did not attempt to address causality, the positive effect of the green performance on financial performance suggest that small firms may be able to look for competitive advantage from their environmental improvement(s). The use of single or aggregated environmental performance indicator has been criticised as not representing environment performance which is a multi-dimensional variable and therefore the use of such single or aggregated variable present only a limited picture and serve as measurement limitation (Trumpp et al. 2015).

Aragon-Correa et al (2008) investigated the relationship between SMEs' environmental proactiveness and financial performance. The respondents in the study were general managers of 108 non-listed SMEs in automotive repair in Southern Spain. The measurement for environmental proactiveness and financial performance were all subjective measurement. Environmental proactiveness measured by innovative prevention and limited eco-efficient

practices by SMEs were found to relate to financial performance positively. In addition, this result is consistent with studies examining environmental proactiveness with larger firms. This shows that environmental proactiveness strategy in the context of both small and large firm may be appropriate. These practices according to Aragon-Correa et al (2008) have the simultaneous benefit of reducing a firm's footprint on the environment and its costs. They, therefore, recommended that policymakers and practitioners should encourage eco-efficient practices among small firms since it has been identified as the first step towards environmental change. As a limitation of the study, Aragon-Correa et al (2008, p.99) stated that "we caution that our results may have limited generalisability due to the business and geographical peculiarities of our sample".

Breaking away from the dominance of studies in the manufacturing context, Lucas and Wilson (2008) investigated the relationship between environmental management and financial performance in the service industry. The service sector represents one of the largest sectors in most economies and contributes their bit to the environmental impact. The research, using accounting-based financial indicator concluded that environmental improvements in the service industry were beneficial to 1228 publicly traded sampled firms. Environmental leaders enjoyed significant financial performance compared to environmental laggards. Based on the findings Lucas and Wilson (2008) called for studies to understand how differences in characteristics, sectors and environmental context impact on the environmental management-financial performance relationship.

Alberton et al (2009) however, expressed slightly different opinion from sampled firms listed on the Brazilian Stock Exchange. The study investigated the economic and financial impact of environmental management system certification through event study methodology. Financial performance indicators (Abnormal Return to the Market) increased after the date of certification announcement. However, not all the profitability indicators displayed statistical significance leading to the authors' remarks that, compared to developed countries, issues relating to health, housing, education etc. are of paramount importance to less developed countries than issues of the environment and hence may not feature much in their investment decision making compared to profitability. This suggests that contextual factors including culture and economic

development seem to matter in this debate and must not be ignored since developed countries which seem to be the focal of majority of the prior studies possess and present different economic and social environment from developing country like Ghana which is the focus of the current study (Jamali et al. 2015).

In another study focusing on the influence of environment and environmental variables on the financial performance of oil companies, Hassan (2011) examined the correlation between environmental remediation and pollution control, environmental laws compliance and penalty and donations and charitable contributions and ROA. The study reported a positive relationship between all the three-dimensional variables and ROA as well as the positive association between the overall environmental and financial performance. Studies focusing on single industry tend to have the extension of their results to other industries limited due to lack of external validity of the findings (Griffin and Mahon 1997). The current study involves more than one industry and hopes to shed more insight on the environmental practices and its effect in other industries.

Pereira-Moliner et al (2015) in a study of 350 three to five-star Spanish hotels, concluded that proactive environmental management practices have a significant and positive influence on business performance, cost and differentiation competitive advantages. The implication of the findings for hotel managers is that proactive EMPs will better relationship with stakeholders and help in the achievement of the mission and vision of the business. The authors noted that one of the main limitations of the study is that it does not go beyond the tourism industry specifically hotels which affect the external validity of the results. They, therefore, called for studies in other geographical contexts and sectors other than tourism to help validate the current finding. Lucas and Noodewier (2016) also found that the USA publicly traded manufacturing firms operating in dirtier and non-proactive industry benefited financially (ROA) from implanting EMPs.

Song et al (2017) analysed the effect of environmental management on firm financial performance among A-shares listed in China between 2007 and 2011 among a sample of 2827. In their sensitivity analysis, it showed that environmental management has a positive and significant effect on earnings per share (EPS) of the sample firms. They concluded that increasing environmental investment is rewarded by investors in the years that follow. Gonenc

and Scholtens (2017) supported the positive link between environmental management and financial performance when they examined international firms in the fossil fuel industry. de Villiers et al (2011) have criticised studies focusing solely on polluting industries since such approach is too specific and limited and does not promote strong environmental initiatives.

Contrary position to the above has been expressed by other studies. Hart and Ahuja (1996) sought to determine the impact of pollution reduction on a firm's financial performance (Return on sales (ROS), Return on assets (ROA) and Return on equity (ROE). The results indicated that emission reduction does not impact on financial performance in the year of reduction. The stockholder view of the stakeholder theory was used to explain the effect of the emission reduction on ROE as shown by the study. From the point of the materiality of the expenditure, it has been argued that pollution control usually entails much initial expenditure (especially innovative-prevention) which may impact negatively on the bottom line in the early period especially if it creates assets with associated depreciation (Hart 1995). However, due to the non-capital intensity of most SMEs' processes of production (Labonne 2006) one wonders if this effect of expenditure materiality will also prevail.

Sarkis and Cordeiro (2001) provide support for the short-term analysis. The study investigated the impact of environmental efficiencies on financial performance (Return on sales (ROS) by breaking environmental efficiencies into pollution prevention and end of pipe practices. They found that both environmental efficiency variables are negatively related to ROS and even pollution prevention efficiencies displayed higher significance. They stated that the result looks discouraging for the proactive environmental firm in the short-term (Horváthová 2012) but cautioned against the long-term since the study did not consider long-term. They also attributed the strong negative significance of the pollution prevention efficiencies to the high cost associated with such activities in the organisation in the short-term. This is in line with the idea that there are a lot of low-cost technologies for end-of-pipe treatment which may result in a lot of improvement relative to the cost of prevention technologies which may entail a lot of initial capital outlay as well as redesigning the entire production process (Hart and Ahuja 1996).

Hassel et al (2005) investigated 71 listed Swedish firms between 1998 and 2000 using panel data regression analysis. They tested the value relevance of environmental performance information

to investors. This was on the basis that, current investors use both environmental and financial performance for making their decision and therefore, financial performance on its own is not enough to explain a firm's market value. They found a negative link between environmental performance and market value of the firms indicating that environmental performance affects future earnings and hence market value. The negative link strengthened over the period which indicated the increased attention paid to environmental information by investors and their continuous penalisation of high environmental performing firms. This means that current and future earnings potential of a firm features prominently in investment decision of market participants. The use of stock market performance measures has been noted to have a limitation because it suffers from information asymmetry between managers and share investors. Also, market-based measures are only available for firms listed on the stock mark (Cordeiro and Sarkis 1997) and give the indication that valuation by investors is the appropriate measure of performance (Tsoutsoura 2004).

Sarumpaet (2005) also failed to document any significant association among 87 listed and non-listed companies. Interpreting the result from the stakeholder angle, Sarumpaet (2005) pointed out that such outcome from the study was not shocking because environmentally friendly products and services are not favoured by most consumers in Indonesia hence, likely to affect the net income of the firms. This is an indication that, consumer choices are affected mostly by price levels than environmental considerations indicating the low level of importance of the environment in the scheme of consumers in low-income countries.

Ennis et al (2012) on the other hand, found emission performance does not affect stock return among 50 firms from FTSE350 over a period of one year and that the stock market does not seem to react to emission information or not much emission information is available for informed decision by both existing and potential shareholders on firm's performance. Nollet et al (2016) also arrived at a similar conclusion when they examined the effect of CSR on excess stock market return among listed firms on Standard and Poor 500 market index. The study aggregated environmental measure which limited the analysis of the effect of the environmental sub-components as outlined by DEFRA (2013) which is used in the current study. Low level of awareness may account for some of these outcomes. Awareness creation is equally important for

firms to reap the financial benefit(s) of being environmentally responsible since it will help shape stakeholders' decision making and for that matter, the environmental management must not be an on-off activity (Brammer and Millington 2008).

Exploring the financial effects of environmental management decisions made by manufacturing firms listed on the Dar Es Salaam stock exchange in Tanzania, Naila (2013) argued that, abating environmental impact of the firms' activities has no significant effect on the bottom line. This may be due to the fact that the environmental activity did not impact on the cost of operations (Christmann 2000) or revenue generation (Vijfvinkel et al. 2011). Naila (2013) therefore, advised management to be careful when making cost decisions on environmental improvement.

Rajput et al (2013) examined the effect of green banking on the financial performance of Indian banks. They reported that there is no significant association between green banking implementation and financial performance (Income margin). The authors suggested that the result may be due to the infancy nature of green banking implementation as well as the huge initial outlay involve which the banks fear will affect their profitability. The setting up of climate change fund with the help of international partners was recommended by the study. Rajput et al (2013) used objective accounting measure as the dependent variable in their analysis which prior studies indicate that is presented with challenges including managerial manipulation, differences in industry, regulatory standards and accounting procedures choices which limit comparability across country and product markets (Miller and Cardinal 1994; Cordeiro and Sarkis 1997).

The results from the above studies raise issues about the argument that environmental improvement may lead to attraction of environmentally sensitive customers, improved efficiency and future savings from compliance cost (Porter and Van der Linde 1995). The results of the existing studies are conflicting resulting in three strands of empirical evidence which include: significant positive; significant negative; and no significant relationship. Based on the above findings it is clear that there are reasonable arguments supporting the conclusions arrived. It, therefore, stands to reason that positive, negative and neutral relationships are expected to result from a study of the environmental-financial link. Hence, it is hypothesised that:

H1: There is a significant relationship between environmental management and financial performance

4.5.2 Energy Efficiency

Prior literature has documented evidence of a relationship between energy efficiency and financial performance of the firm. The basis of such studies has been that energy consumption is a key cost element in most business establishments which have a significant impact on the performance of the firm. Energy prices have risen to unprecedented levels in the last decade due to the pursuit of economic growth agenda and increased consumption. From the theory of the firm perspective, SMEs' energy efficiency practices benefit the firm by improving the bottom line and increasing their competitiveness in the marketplace since it will help them avoid rising energy prices and emission taxes. From the perspective of stakeholder theory also energy efficiency help avoid future external pressure from stakeholders which would distract management and affect performance (Cagno and Trianni 2013). Energy efficiency like any other input variable is of keen interest to management because every cost saved goes to add to the bottom line. Hence, management practices are noted to influence strongly the energy efficiency measures at the firm level than national climate change policies (Martin et al. 2010). This is because gains resulting from energy efficiency will effectively reduce the per unit price of energy consumption (Greening et al. 2000). Rising cost of energy hampers businesses' ability to invest and grow since there is resource constraint that businesses must have to deal with (Apostolos et al. 2013).

Energy efficiency from this perspective makes a good business case which supports the theory of the firm position since it may enhance performance and reduces carbon emission. In the UK, it is estimated that £1.1 billion representing a third of expenditure by SMEs nationally per annum on energy is wasted simply through inefficient energy practices (Vickers et al. 2009). Energy input cost in recent times has forced firms to decrease energy input and where possible expensive energy is substituted with cheaper inputs in the production process. In this regard, energy efficiency measures are expected to curb this waste of firm resources and reduce environmental impact. The influence of energy efficiency on firm profitability has also been documented in the literature. According to Cagno and Trianni (2013), Italian SMEs see energy efficiency management as a strategic factor which can provide them with long-term benefits as well as improve their competitiveness. On the other hand, Thollander and Ottosson (2010) suggested

that allocating scarce resources to core activities of the business is more strategic since that is where efforts should be channelled but not areas like energy management. This makes the topic of energy efficiency more urgent now and in future.

Consistent with the conflicting results associated with the aggregated environmental variable results above, the empirical results on energy efficiency-financial performance is also mixed. Significantly positive, significantly negative and no significant association have been documented by prior studies in this area.

Fernandez-Vine et al (2010) investigating eco-efficiency practices of SMEs in Venezuela found cost reduction as a motivator for energy consumption reduction. They, however, observed that due to low prices of energy coupled with energy resources abundance, energy efficiency practices are less noticeable. Sahu (2014) found a significantly positive association between energy efficiency and profitability among manufacturing firms in India thereby arguing that firms may become more profitable through increased energy efficiency. Sahu (2014) even though in the context of developing country solely focused on manufacturing firms including large ones which may affect the interpretation of the result when it comes to SMEs.

Nyirenda et al (2013), on the other hand, found no association between energy efficiency and financial performance of a mining firm in South Africa. Nyirenda et al (2013) used case study approach to investigate energy efficiency practices of a listed South African company. Environmental management practices relating to efficiency in energy were found not to have a significant association with financial performance (ROE). The result was justified from the theory of moral sentiment perspective, in that the management of the firm feel that they have a moral obligation in relation to the environment which should not be related to financial reward.

Pham (2015) using event study methodology and a sample of 120 listed firms, the authors anticipated an improved financial performance for sampled firms who adopted energy management system ISO 50001. However, the outcome of the study revealed that energy management affects a firm's market value negatively. He, therefore, concluded that the inflated financial benefit is unfounded. The use of event study methodology and using only firms with

environmental certification are limitations in this study. Pham (2015) was of the view that the event study methodology restricted the study to only listed firms.

From the above discussions, firms are expected to realise cost savings and improve their performance from energy efficiency practices. However, given the mixed outcome it is hypothesised that:

> **H2**: There is a significant relationship between energy efficiency practices and financial performance

4.5.3 Water Management

Water usage and disposal of wastewater apart from costing the firm money also affect the environment. Water quality and conservation have become an important issue in recent years since water shortage and contamination has serious implication in all aspects of human life and economic activities (Kamande 2011). Studies examining environmental management practices among hotel industry where water usage is usually very high and is included as one of the environmental variables have found positive association between environmental management practices and financial performance (Álvarez Gil et al. 2001; González-Benito and González-Benito 2005; Molina-Azorín et al. 2009; López-Gamero et al. 2009). Managing water usage within the business environment has the tendency of improving the environmental image and brand of businesses among key stakeholders. It also impacts on the cash flow, lowers operating costs and increases revenue by meeting the "green customers" demand for products and services (Strandberg and Robinson 2009). General Electric's estimate has shown that annual savings of $230,000 could be made from 52% water reduction at Texan site (CDP and Deloitte 2013).

It is suggested that water is seen as the next carbon even though the immediate risk is more localised than the impact of carbon which has no boundaries. This may imply that local attention by stakeholders on water usage, management and quality may be very high and firms need to manage water to avoid any threat to their legitimacy from the stakeholders (Suchman 1995; Dulipovici 2001). Thus, from the managerial stakeholder and legitimacy theories, a failure to involve and manage effect and expectation of stakeholders may affect the firm negatively. Failure to manage water resources can badly affect business investment and economic growth. In

Peru, copper and gold mining investment of $4.8 billion had to be suspended due to violent protest over water supply /shortage fear by communities (CDP and Deloitte 2013).

Studies examining the relationship between water and financial performance are limited and the available evidence is also conflicting. This presents an opportunity to undertake further research in this field to increase the knowledge level and contribute to the ongoing debate on the impact of water on the firm's bottom line.

Fernández-Vine et al (2010) focusing on environmental management practices of SMEs found water management to be one of the most common environmental management practices basically due to the associated cost benefit. Garay and Font (2012) analysing the CSR-CFP relationship among 394 SMEs in Spain found that eco-savings including water reduction were positively related to firm financial performance and managers' financial expectations. answers. The authors noted that water management is in the early operational stage and mainly driven by cost-savings aligning the practice more with the neo-classical view of the firm when it comes to environmental management and firm resources. In the mining industry, analysis of 36 international firms by CDP and Eurizon Capital (2013) revealed that businesses with water management strategy performed financially better. The result was partially attributed to high investment in water which impacted on water pricing and disruption in production. The better financial performance was further related to both external and internal factors. These are the effect of investors and customers' reaction to the firm's shares and products as well as cost reduction.

Kamande (2011), on the other hand, reports that water efficiency has no significant relationship with firm profitability for 283 Kenyan manufacturing firms using a panel regression analysis for periods between 2001 and 2002. The author argued that among other factors (capital and labour) water is not an important variable that affects profitability but is important to ensure its effective use since it may have serious economic and environmental impact in the long-term. Nyirenda et al (2013), also, found no association between water usage and financial performance of a mining firm in South Africa. They argued that the lack of statistical significance supports the moral proposition that the business owes society moral duties. Hence management is not driven by financial motive in their quest to mitigate the firm's footprint on the natural environment.

Management, therefore, sees it as more of meeting increasing regulations and moral obligation to reduce the firm's environmental impact.

Water has a significant cost in business due to the important role it plays in daily operations from office to the production line and beyond. Besides its impact on firm financial performance, it also has no substitute and can affect the very survival of the firm. SMEs unlike their bigger counterparts are financially constraint and turn to rely mostly on short-term financing for operations. Under such circumstances, cash flow is usually a challenge and profit margins also low due in part to the pressure of meeting interest payments on the funding. Cost savings from frequently use input like water is expected to increase net income and therefore profitability. However, the results of the empirical studies are mixed. It is therefore hypothesised that:

> **H3**: There is a significant relationship between water management and financial performance

4.5.4 Waste Management

Businesses are being encouraged to make effective use of every material input that gets to them including those considered as waste at the end of a production process. Therefore, the need to increase recycling of waste and use it as input resources is important than ever (Mohanty 2011). Waste represents a valuable resource which is being disposed of due to inefficiencies in the usage system such as poor organisation, poor communication or errors (Srivastava and Srivastava 2006). Waste reduction strategies are therefore necessary to ensure that overall production and distribution cost is minimised (Hart and Ahuja 1996). Scarcity and high cost of raw materials imply that profit margins will be low and interruption of production may also be inevitable (Sroufe et al. 2003). The dwindling sources of raw material make waste management very eminent among businesses. It has been suggested that waste reduction, recycling and resale of waste and returns are some of the strategies by which firms' performance could be improved and ensure sustainability of material exploitation.

Waste management is very relevant in modern competitive business settings since it has strategic benefits for the business. These include a reduction in storage space, labour cost and energy usage (Banar et al. 2009). Similarly, Ellram (2006) noted the following as reasons to manage

waste; natural resources conservation saves energy, reduces landfill waste and reduces the emission of greenhouse gases with the end result being cost savings which improve profitability (Lysons 2006).

The association between waste management and financial performance is one of the under-researched areas in the environmental management literature. This calls for more research to further the environmental agenda especially in a weak environment like Ghana where waste management is much of a concern but with dearth of studies.

Montabon et al (2007) examined the effect of waste management on the financial performance of 45 large USA listed firms using content analysis and financial reports. The results indicate that there is a significant positive association between waste management (Proactive waste reduction and recycling) and financial performance. This suggests that firms managing waste results in 'win-win' since it benefits the firm and the environment at the same time. Montabon et al (2007) stated that the sample size was small which could affect the statistical analysis which may obscure some relationships among the variables. Also, content analysis may not be as efficient as survey approach in data gathering. The study was limited to only large firms.

Waste management decreasing disposal cost has also been supported by Kamande (2011) who found that eco-efficient practices among firms in Kenya have reduced waste generation implying a decrease in disposal cost. Resource Efficient Scotland (2014) using case study approach found that a company was able to reduce its overhead cost through simple office waste management. It was able to save potentially £5, 400 from paper reduction and £2,450 from waste disposal cost as well as improving its environmental performance.

For 189 publishing firms in Kenya, Ochiri et al (2015) found that waste reduction has a significant positive relationship with firm performance (costs reduction). The authors suggested that firms should view investment in waste management as a strategy to improve performance and ensure sustainable growth. Improvement in firm performance through waste management has been documented in above average investment return, greater marketing performance, high level of effectiveness and efficiency and better financial performance than competitors.

There is, however, the suggestion in some quarters particularly by managers who are critics of environmental management that the use of recycled materials and components reutilisation can harm a firm's performance since it has a detrimental effect on product quality and reliability (González-Benito and González-Benito 2005). According to King and Lenox (2002) apart from waste prevention firms do not profit from other means of waste reduction. Base on the contradictory positions of prior studies on the effect of waste management on performance, it is therefore hypothesised that:

> **H4**: There is a significant relationship between waste management and financial performance

4.5.5 Material Management

Efficient material usage results in less waste, less harm to the environment; save the cost of disposal and improve environmental performance. Firms becoming efficient in the quantity of material used in a product saves a lot of money and this was realised by large company executives in the 1980s (Berry and Rondinelli 1998). Efficient and effective utilisation of material ensures avoidance of over-extraction, overstocking and ordering too much for bespoke or one-off jobs. Overstocking in most instances lead to waste since materials may become obsolete and poor storage conditions increase deterioration rate (Akindipe 2014). The scarcity of material resources has become a concern for businesses as their performance is at risk due to growing imbalance between demand and supply in the long-term. Firms without concrete strategies to deal with the material scarcity face enormous challenges with their growth, financial performance and competitive advantage in the long-term. These challenges and its impact on businesses were confirmed by 96% of respondents in a survey who expect moderate to significant effect on their business performance (KPMG 2012). Efficiency in material usage does not only affect the purchasing cost but also the operational performance of the firm through product quality, production/service cost and environmental performance (Unam 2012; Florén et al. 2013). Material management ensures that employees become conscious/effective in their use of materials which reduce costs per unit due to increase in output, decreases waste and product defects (Kaynak 2003; Keitany et al. 2014).

Empirical results on material management and financial performance are conflicting and more USA focus. Large firms dominate the studies limiting SMEs research. This makes SMEs' material management and financial effect a fertile area for further research since SMEs' material practices may differ from that of large firms particularly in the context of developing country.

Using historical data on 52 Japanese automotive manufacturing firms between the late 1960s and early 1980s, Lieberman and Demeester (1999) reported that the firms recorded 1% gain in productivity with 10% inventory reduction. Capkun et al (2009) in an analysis of US-based manufacturing firms over 26-year period from 1980 to 2005 found that improving material efficiency is positively correlated with better financial performance. The researchers, therefore, advised that management should focus their effort on managing material inventory to achieve strong financial performance. Avoiding overstocking or reduction of material inventory is likely to stimulate gains in financial performance.

In a study of 885, USA manufacturing firms between 2003 and 2008, Eroglu and Hofer (2011) decomposed inventory management into raw material, work in progress and finished goods and examined the effect of each on financial performance. Their analysis revealed that raw material inventory management has strong positive impact on firm performance among manufacturing firms in the USA than the other two inventory components. They argued that sourcing raw materials and positioning it in the supply chain defines production feasibility and replenishment schedules which make work in progress and finished goods inventories a function of raw material availability. Shortage of raw material inventory affects finished goods inventory but not vice versa. This implies that raw material has a direct effect on performance and indirect impact on performance through finished goods inventory. This dual effect makes raw material management very important. Munyao (2015) in a descriptive study of 45 manufacturing firms in Kenya found that material requirement planning had strong positive impact on firm performance and that ineffective material requirement planning leads to underproduction or overproduction.

Bernard and Noel (1991) demonstrated that the leading positive indicator of future sales is unexpected changes in inventories of materials and work in progress. However, the effect of these inventories on future earnings is neutral. Roumiantsev and Netessine (2007) examined

whether inventory management has a positive impact on financial performance in a sample of USA public manufacturing and retail companies for the period 1992 to 2002. The study documented a negative correlation between inventory and financial performance among the retail sample. This suggests that inventory management if not efficiently perused may affect product availability and hence performance in retail business. Similar results have been documented by Cannon (2008) among a manufacturing sample of USA firms for a 10-year period from 1991 to 2000. Inventory management is not significantly related to financial performance (Market value added and Tobin's Q).

Material management and its impact on financial performance from prior studies from international context are mixed. Therefore, the following hypothesis is offered:

> **H5**: There is a significant relationship between material management and financial performance

4.5.6 Pollution Management

Intentional or accidental emission from operations of the firm to air, land or water should be controlled to minimise any negative impact on the environment and the business. This may also pose risk in terms of reputational, litigation and regulatory to an organisation which fails to monitor and control pollution (Vichit-Vadakan and Vajanapoom 2011; DEFRA 2013). Firms may save cost and reduce the emission (carbon) impact on the environment by using natural gas or liquefied petroleum gas, emission reduction technologies on existing vehicles and regular servicing (Federation of Small Businesses in Scotland 2003). Businesses with actors within its supply chain located at various distances are advised to consider not only the cost but also the impact of the transportation type since the type of fuel and fuel efficiency of the transportation mode chosen plays a significant role in the environmental impact (Duflou et al. 2012). Businesses as part of the green movement are being encouraged to purchase and use local materials as a way of reducing transportation cost, promote the growth of local economies and reduce pollution.

The issue of reducing pollution from the firm's activities have been debated over the years in the environmental management literature. One school of thought is that these externalities represent public cost and does not add anything to firm performance so engaging in its reduction amounts to philanthropy (Friedman 1970). On the other hand, are those who believe that reducing pollution benefits the firm, the environment and the general public. Pollution reduction, they argue, could increase demand by "green consumers", production efficiency, attract quality labour force and reduce stakeholder pressure (Davies 1973; Porter and van der Linde 1995; Hart 1995; Russo and Fouts 1997; Lopez- Gamero et al. 2009; Sakis et al. 2010). The contention in the pollution debate is whether or not firms are missing business opportunities that can boost their performance (King and Lenox 2002). Pollution from the various activities of the firm including that from its supply chain has a negative effect on the air, land and water. This has led to the call on firms to reduce the impact of their activities on nature. In the view of McWilliams and Siegel (2001), businesses should pursue this impact mitigation but should consider and balance the cost and benefit.

The documented evidence on the effect of pollution on firms' financial performance is also mixed (Jaggi and Freedman 1992; Smale et al. 2006; Qian and Xing 2016). Smale et al (2006) studying the impact of EU Emission Trading Scheme (EU ETS) on firms in five energy-intensive sectors in the UK found that emission reduction has a positive effect on firm profit because a firm would be able to recover the marginal cost incurred as a result of combating emission from price increases. Earnhart and Lizal (2010) demonstrated empirically with data from the Czech Republic that management of air pollutants emitted have a positive effect on both cost and revenue of 429 large sampled firms using pollution emission data for 1996 to 1998. They argued that investment in efficient processes of production reduces pollution, regulatory scrutiny and help attract "green" customers. Qian and Xing (2016) supported positive and significant influence of environmental management on financial performance. Examining the effect of carbon management of 138 privately owned Australian SMEs the authors stated that emitting less carbon has the higher financial benefit and so government policies should help small firms manage the carbon emission.

On the other hand, Jaggi and Freedman (1992) examining the relationship between pollution and market performance (Beta, Price – earnings ratio) of 13 USA firms, found a negative association. Arguing from the neo-classical point of view, they stated that in the short-run, heavy expenditure on pollution reduction will take away resources from productive investment sources which are likely to have a negative effect on the firm cash flow and net income. However, the negative impact may depend on the materiality of the expenditure and the type of pollution reduction activity undertaken. They interpreted the result to mean that in the short-term the market does not reward firms for pollution management due to the negative effect of pollution abatement expenditure on the profitability of the firm. This shows that the issue of materiality (Busch and Hoffmann 2011) may play an important role especially in the short-term determination of the sign of the relationship between environmental and financial performance. This outcome has also been justified by later studies which also found a negative relationship between environmental and financial performance (Worrell et al. 1995; Hart and Ahuja 1996; Cordeiro and Sarkis 1997; Filbeck and Gorman 2004). However, due to the non-capital intensity of most SMEs' processes of production (Labonne 2006) one wonders if this effect of expenditure materiality will also prevail. The study by Jaggi and Freedman (1992) has been criticised for using a small sample which may not be representative of the population and the fact that the data used in the study as at 2001 was nearly 30 years old (Konar and Cohen 2001). With the passage of time, the reliability and relevance of the findings become questionable and therefore there is a need for current studies.

A similar position has been expressed by Qian (2012) among Australian public and private companies. He found a significantly negative relationship between carbon performance and financial performance in public firms and no significant association in private firms. This indicates that polluters in the public firms enjoy the better financial performance. Implications of the findings according to Qian (2012) is that public pressure and stakeholder rewards seem not to be connected with carbon management in the public firms and the private firms with more focus on cost savings than rewards from stakeholders for their environmental performance do not perceive value creation in the management of carbon.

Earnhart and Lizal (2007) using an unbalanced panel of 436 studied the effect of air pollution control among Czech Republic large enterprises. They also concluded that pollution prevention does not improve ROA, ROS and ROE. Nyirenda et al (2013) have also found that carbon reduction has no significant relationship with the financial performance of a large mining firm in South Africa. A finding supported by Pintea et al (2014) when they also analysed the effect of air pollution control on 14 Romanian firms' ROE and ROA between 2005 and 2010 using quantile regression analysis.

Based on the divergent views on the relationship in the literature, the following hypothesis is proposed:

H6: There is a significant relationship between pollution and financial performance

4.5.7 Biodiversity Management

Businesses can protect biodiversity by minimising their activities with impact on biodiversity. The loss of biodiversity according to business leaders around the world is associated with business loss (Adachi 2013). Biodiversity and ecosystem which are part of the natural capital are relied on mostly by businesses of all types and sizes to execute their objectives. There is an increasing decline in the stock of biodiversity and ecosystem resources due to business and population demands. This situation poses both risks and opportunities for businesses. Countries have now enacted laws to deal with businesses and their impact on biodiversity (Blum 2003). Shortage of water, for instance, has serious consequences for businesses and may force businesses to make an extra investment or increase operational cost in order to operate at the same level. The challenges facing businesses seem to have moved beyond the effect on intangible firm resources and reputational risks to operational, marketing, financial risks and competitive advantage which affect shareholder value greatly (Miles and Covin 2000). In a survey of business executives globally it was identified that 60% of the respondents view the natural world as being very essential to their businesses success (ACCA 2012). Biodiversity and ecosystems, it is argued has links with business performance since they can affect business inputs, customer demand, regulation and operating license conditions, market access, financing and insurance (Cambridge Institute for Sustainability Leadership 2015). Firms being proactive in

reducing their impact on biodiversity and ecosystem may enhance their performance since they will avoid the associated risk but enjoy the opportunities (Ponzi 2014).

Empirical evidence regarding the effect of biodiversity management and financial performance is scant. This has been attributed to the concept been new and businesses struggling to familiarise with it. According to PricewaterhouseCoopers (2010), it is hoped that biodiversity as a term will be used more frequently which will ensure it builds momentum for serious and sustained private sector engagement in the biodiversity agenda. Therefore, a study in this area which is at its embryonic stage especially among SMEs which constitute the bulk of the world's business population will provide new insight.

Vedanta Resources plc a UK listed company had challenges with reputation and financing due to issues related to biodiversity and ecological management. Some institutional investors (Church of England and the Rowntree Trust, PGGM Investments) withdrew their investments and the share price of the company suffered. This was due to the refusal of operational permit on Orissa project in India owing to biodiversity impact and the perceived unacceptable environmental behaviour which investors thought of representing reputational and financial risk (Narain 2011). SMEs through their operational activities may impact the ecological settings which may rise regulatory or stakeholder concerns. SMEs especially those connected to large companies requiring them to satisfy environmental impact requirement may suffer revenue and customer losses by violating biodiversity management condition. Biodiversity conservation is thus good business case since it will help generate sales and improve the image. Therefore, the following hypothesis is proposed:

> **H7**: There is a significant relationship between biodiversity management and financial performance

4.6 Other Variables

The following owner-manager and firm characteristics deemed by previous studies to affect the financial performance of a firm and relevant in determining the environmental-financial relationship debate have been controlled for in the study.

4.6.1 Owner-Manager Characteristics

4.6.1.1 Owner-Manager Age

There are many reasons assigned for the relationship which has been identified in prior studies as being responsible for the impact of manager age on firm performance. Age has been associated with risk tolerance levels which are recognised to impact on return due to the risk-reward relationship. As managers advance in age, it is claimed they become more sensitive to their job and income security which affects their desire to undertake investment /projects whose outcome may be uncertain. Matta and Beamish (2008) noted that older managers especially those nearing retirements are mostly concern about their legacy and reputation that they become risk averse and do not want to engage in any long-term strategic risky decision that may affect the financial performance of the firm in the short-term. Manager age is very critical in investment decision since it can lead to myopic investment consideration. Older managers may have attained or reached their aspiration level which makes them very conservative and less aggressive in their decisions on long-term risky investments resulting in underinvestment (Serfling 2014). Younger managers, on the other hand, are more aggressive in their investment style and willing to take risky investment. According to Prendergast and Stole (1996), young managers are bolder in their investment decisions than older managers. Younger managers are noted for their risk-seeking behaviour, ability to integrate information into their decision-making process and being innovative with their spending on research and development for firm growth (Hambrick and Mason 1984). These capabilities of young managers relate to the long period of time they have at their disposal to develop their business careers as well as their financial security (Barker and Mueller 2002). It has also been argued that younger managers are more energetic, willing to share ideas, have higher desire/aspirations and very much committed to working long hours which are ingredients for successful business performance (Storey 1994; Blackburn et al. 2013; Isaga 2015). However, Woldie et al (2008) found that firms managed by older owner-managers grew faster than that of younger owner-mangers. This may be due to considerable experience gained over the years as a result of many challenges faced, which make them confident and stronger (Isaga 2015). It is therefore hypothesised that:

H8: There is a positive and significant relationship between owner-manager age and financial performance

4.6.1.2 Owner-Manager Gender

Research outcomes indicate that one variable which affects firm performance is owner-manager gender. The difference in gender is suggested to have an impact on the performance of a firm due to various reasons/factors associated with gender differences such as access to debt finance, time devoted to business, risk appetite and management style. Abor and Biekpe (2006b) found that gender was a significant determinant of access to debt financing among SMEs which partly affect firm owners' growth strategy. Male owner-managers are most likely to take much higher risky investment compared to their female counterparts which often result in significant differences in firm performance. A Higher level of optimism among men is responsible for this risk attitude which often accounts for the better performance of their firms (Quan 2012). Female owner-managers due to other non-business responsibilities such as childcare and house chores may not commit the same amount of time and effort into their business like their male counterparts which also decrease the performance of their businesses. On the other hand, female-led firms it is argued have better marketing orientation which often improves the firm's profitability and growth (Davis et al. 2010). Also, females are better at risk management since they take their time committing to any risky venture and this risk management behaviour reduces mistakes and impacts positively on performance (Hays et al. 2012; Khan and Vieito 2013). Others, however, have discounted the influence of gender on firm performance. Dezso and Ross (2008) are of the view that any benefit associated with female management style may be neutralised due to the resistant of males to work for female superiors. Watson (2002) and Johnsen and Mcmahon (2005) all supported non-significant relationship between gender and firm performance but Radipere and Dhliwayo (2014) found that gender was very significant in business performance. It is therefore hypothesised that:

H9: There is a significant relationship between owner-manager gender and financial performance

4.6.1.3 Owner-Manager Education

The educational level of managers is seen as an important variable in their knowledge level, skills development and self-confidence. Individuals in possession of these factors because of their educational level are expected to perform better on the job than their counterparts with lower level of education. Owner-managers with higher educational level are better at managing their firms as compared to those with a lower level of education (Afrifa 2013). Through education, business owners are able to search and use information which impacts positively on their businesses. Also, higher level of education helps in sharpening of the analytical skills of managers which becomes very valuable in the business environment when they encounter complex situations.

Takahashi (2009) suggested that one of the important elements in the survival of small businesses is the educational level of the owner-manager since it aid complex situational analysis in the business field which also improves profitability. A significantly positive association between education level and SMEs' management of working capital which improve their performance was found by Afrifa (2013). He argued that managers with high education are confident in managing all aspects of their firm's working capital which reduces the magnitude of constraints that affect effective working capital management and hence performance. Others have also suggested that the impact of education on firm growth and profitability may be low or non-significant especially in areas of business (non-technical) where not much analytical skills are required (Johnson et al. 1999). From the above discussion, it is clear that the effect of education as human capital on business performance is conflicting. It is, therefore, hypothesised that:

> **H10**: There is a significant relationship between owner-manager education and financial performance

4.6.1.4 Owner-Manager Experience

The owner-manager experience serves as a valuable human capital in the operation of the business (Isaga 2015). It has been argued that managers may face considerable challenges and new learning curve and hence may need few years to gain the needed experience sufficient for

the new role since on job experience help one to learn new skills (Harris and Helfat 1997; Walters et al. 2007). This suggests that time is very important to the success of managers. Experience gained over time in an industry helps managers to have a better understanding of demand conditions, business networks and develop better use of market information which may lead to business growth (Littunen and Virtanen 2006; Dobbs and Hamilton 2007). In this respect, experience helps managers develop firm and industry-specific knowledge. According to Toohey (2009), an important factor which may drive a firm's performance is manager's experience which may take many guises. The length of time spent on business which in a way equates actual participation in business discloses to the owner whether or not he/she has the necessary skills to engage in such activity. The length of time enhances entrepreneurial learning which impacts positively on business growth (Johnson et al. 1999). The positive impact of experience on firm performance has also been found by Kasseeah (2012), Chiliya and Roberts-Lombard (2012), Fatoki and Oni (2015) and Isaga (2015). However, Storey (1994) did not find any effect of experience on firm performance. In conclusion, it can be said that experience of owner-manager is deemed vital in the success of a business venture. This leads to the following hypothesis:

H11: There is a positive and significant relationship between owner-manager experience and financial performance.

4.6.2 Firm Characteristics

4.6.2.1 Ownership Type

The financial performance of a firm is to some extent influenced by the form of ownership of the business. One of the factors which are debated as impacting on the firm's performance due to ownership is the agency effect (Steijvers et al. 2006). It has been suggested that where ownership and control are intertwined especially as it is in most SMEs, the effect of the agency problem is limited which has a positive effect on firm profitability. SMEs, where ownership is a small number, is known to have a positive effect on profitability than growth due to the interest of the owners in dividend which affect their risk-taking behaviour (Lappalainen and Niskanen 2012). This indicates that SMEs with closely held or concentrated ownership such as sole proprietorship tend to be very rigid in strategic decision making and very resistant to change which affects their growth as compared to SMEs with widespread ownership such as partnership and companies

(Brunninge et al. 2007). Per Abor and Biekpe (2006b), Ghanaian SMEs with legal sole proprietorship status due to relatively small asset base find it difficult to access debt finance which affects their performance. However, incorporated or registered businesses with legal partnership and company status have relatively easy access to debt finance which contributes to their overall performance and profitability. The effect of legal ownership on performance has been attributed to the relative complexities, monitoring and resources requirement that exist between a sole proprietorship, partnership, and companies (Greenwood et al. 2006). However, Arosa et al (2010) reported that there is no link between ownership concentration and firm performance. In short, it can be determined that firm ownership has an influence on performance. Therefore, the following hypothesis is offered:

H12: There is a significant relationship between ownership type and financial performance

4.6.2.2 Firm Age

Firm age is normally associated with experience and knowledge in the operational environment. As firms age, their routines and capabilities benefit immensely from the learning effects which help to improve their overall performance. Therefore, older firms are supposed to have the adaptive skills in challenging business environment which will aid their survival and eventual performance. The operational environment of businesses is not static but ever changing which implies that previous experiences and knowledge acquired over the years are very valuable for survival under such circumstance. This to some extent plays to the advantage of older firms because, with the passage of time, they are able to accumulate managerial capabilities and knowledge which enhances how they handle uncertain situations/conditions.

Young firms without much experience and knowledge of the operational field face a high level of uncertainty in all aspects of their operations which impact adversely on performance (Coad et al. 2016). Older firms with these qualities at their disposal may be able to establish and grow faster at the marketplace with higher returns on their investment than young ones. Shergill and Sarkaria (1999) posited that older firms are expected to outperform young ones at the marketplace since they have enormous experiences and core skills. Older firms have networks, performance records and credit history which make it relatively easy for creditworthiness assessment by lenders. According to Coad et al (2016), as firms grow old, they usually gain

reputation and solidify their market position which in effect facilitates their networks and relationships with suppliers, customers and other stakeholders. These facilitate easy access to resources including funding compared to young firms which lack such credentials (Musamali and Tarus 2013). The implication of this for younger firms is that resource accessibility may be limited which can affect their growth and profitability. Even if they are to get funding from lenders, it is likely to come at a relatively higher cost due to lack of track record as compared to older firms. Islam et al (2011) examining the effect of firm-specific characteristics on business success in Bangladesh found a positive association between older SMEs and business success.

On the other hand, age is directly linked to inflexibility to change and red tape (Tarziján and Ramirez 2010a). Organisational inertia and rigidity are mostly associated with old age. These may affect a firm's ability to identify new and viable business opportunities. This is because firms in such state refuse to accept the need for innovation being called for by the market. As a result, cost increases as margins and growth drop. Young firms most often use modern technological equipment and are quite flexible and radical in their marketing strategies compared to their older counterparts constrained by their existing resources and customer base (Segarra and Teruel 2014). It has been suggested that old firms are inclined to the use of outdated marketing strategies, poor management style and old equipment which negatively affect their performance (Shergill and Sarkaria 1999). The entrenchment in routines by old firms affect the growth of profit, sales and productivity since they are less able to convert growth in employment into productivity, sales and profit growth (Coad et al. 2010). However, young firms in the early years invest more in non-current assets, product developments and market penetration which increases the fixed cost element of total cost and hence impacts adversely on profit. At the start of operations, due to inexperience (learning curve effect), young firms are bound to make mistakes which may affect effective and efficient utilisation of available resources which may increase costs. We, therefore, argue on this basis that firm age will have a significant impact on profit and offer this hypothesis:

H13: There is a significant relationship between firm age and financial performance.

4.6.2.3 Firm Size

The size of a firm is noted to have a significant influence on its profitability (Tarziján and Ramirez 2010). It has been suggested that the size of the firm is related in many ways to its resources capabilities and this tends to give larger firms competitive advantage in their organisational field (Barney 1991; Barney et al. 2001). Majumdar (1997) found larger firms in India to be less productive but more profitable than their smaller counterparts. Firm size has been very instrumental in explaining firm profitability. Larger firms have the strategic capital to assist them to manage and reduce financial and failure risks through product and geographical diversification (Yang and Chen 2009). Larger firms it is argued due to resources capabilities are able to formalise their procedures and processes which result in increased level of effectiveness and efficiency (Penrose 1959). Larger firms with their large production capacity coupled with organisational and financial resources enjoy both economies of scale and scope in their operations which impact significantly on the production cost, thereby enhancing the firm's bottom line (Hardwick 1997; Stierwald 2010). It has also been argued that firm size and market power are correlated. Larger firms are deemed to have bargaining power over suppliers which help them to dictate prices, payment terms, and supplier type and product quality most often to their advantage (Shepherd 1986). The power of large firms is not only limited to suppliers but to customers as well. On the side of the customers, the larger firms dictate the terms of payment and all trading terms in line with their preferences to improve cash flow and profitability. This market power may also be the result of superior research, marketing skills and experience (Yazdanfar 2013).

Large firms due to public visibility, reputational risk and resource availability will improve their operations to reduce their environmental impact. This has the ability to reduce waste and increase production efficiency and innovation with effect on the profitability of the firm (Schmidheiny 1992). Cost of borrowing which is charged against income is often relatively lower for larger firms compared to smaller firms simply because larger firms enjoy better terms of borrowing due to the ability to satisfy collateral conditions, perceived lower rate of default and less likelihood to fail. These conditions grant larger firms easy access to financing and better terms which lower their financing cost in relation to smaller firms (Stierwald 2010). The positive

relationship between company size and profitability has been demonstrated in finance, accounting and economics literature (Majumdar 1997; Tarziján and Ramirez 2010).

On the other hand, there are those who have found a negative relationship between company size and profitability (Ramasamy et al. 2005; Bhuta and Hasan 2013). Large firms it is argued that due to the separation of ownership from control encounter agency problems with its associated costs. Management of larger firms in most instances pursues their self-interest goals which often affects profitability and shareholder value (Pi and Timme 1993; Goddard et al. 2005). This problem is very limited in smaller firms where there is that element of closeness between the owner(s) and management or is owner-managed. In such instances, the monitoring costs associated with checking the agency problem and funds misappropriation is minimised or eliminated. Another advantage of smallness is ease of communication and flexibility due to a less hierarchical structure which facilitates quick changes and modification to production (Downs 1964). The dynamics of the modern marketplace requires a quick, effective and efficient response to changes which help improve profit through the ability to adapt to new process, products and get to customers using new channels of marketing. Small firms are well placed in this regard due to the less hierarchical structure (Ahuja and Majumdar 1998).

From the theoretical and empirical perspectives, the results are mixed. We argue that there is a significant relationship between firm size and financial performance. Therefore, the following hypothesis is postulated:

H14: There is a significant relationship between firm size and financial performance

4.6.2.4 Industry

Industrial factors are deemed to play a significant role in the performance difference among businesses. Industrial organisation theorists argue that the primary determinant of performance are industry factors, whiles proponents of RBV hold the view that firm-specific internal factors account for performance differences among firms (Hawawini et al. 2003). Firms' profitability may differ across industries because different industries experience different levels of competitive intensity and risk. Schmalensee (1985) found that industrial effect was responsible for 75% of the industrial return variation rate on assets and that industry membership account for

20% of profits enjoyed by US manufacturing firms. The author, therefore, concluded that the role of the industry effect is central in profit determination than firm-specific internal factors. Other researchers have also suggested that the industrial effect on firm performance ranges between 5 and 18 percent (Hirsch et al. 2014). The authors found the industry to be significant in the profit performance (ROA) of food processing firms in Europe. Wernerfelt et al (1988) also arrived at a similar conclusion when they found that industry effect explained 19% of the performance variation of firms in their model. One reason offered for these findings is that established firms within an industry are able to prevent or restrict intra-rivalry and also entry barriers afford them protection which generally enhances industrial level profitability (Schmalensee 1985). Where these conditions prevail it is expected that firms operating in economic markets which are more similar will display similarities in profit rates, sales and stock price changes (Koralun-Bereznicka 2015).

Opponents have also suggested that industry effect has lesser or no impact on profit but rather firm-specific internal factors drive profitability (Rumelt 1991). Galbreath and Galvin (2008) demonstrated that industry effect was not a significant factor in explaining firm performance variations across firms. The firm effect has a far higher impact (3 to 6 times) than industry effect in explaining firm profit variances (Roquebert et al. 1996; McGahan and Porter 1997; Mauri and Michaels 1998; Claver et al. 2002). Also, Qian and Xing (2016) found no significant association between industry and ROA. The poor resemblance between industrial classification and financial ratio groupings was the outcome of an investigation into the industrial classification and corporate performance among European firms (Koralun-Bereznicka 2015). Judging from the conflicting result, it is hypothesised that:

> **H15**: There is a significant relationship between industry classification and financial performance

4.7 Summary of Previous Research

Table 4.1 below summaries the outcome of studies on environmental management and financial performance by previous researchers. Next, the limitations of previous research reviewed and the need for the study are discussed.

Table 4.2. Summary of studies on environmental management and financial performance relationship

Researcher(s)/ Year	Country	Main Method	Sample Size	Sample Type	Variables confirmed as significant	Variables not confirmed as significant
Alberton et al (2009)	Brazil	OLS regression analysis CAR CAPM	63	Listed firms	N/A	ISO 14001 certification
Al-Tuwaijiri et al (2004)	USA	Simultaneous equations approach and OLS regression analysis	198	Listed firms	Environmental performance Unexpected earning/Book value of common equity Growth opportunities Profit margin Industry effect	Environmental exposure Pre-disclosure environment Operating income
Aragon-Correa et al (2008)	Spain	structural equation, Cluster analysis and ANOVA	108	SMEs	Eco-Efficient practices Innovative prevention practices	N/A
Busch and Hoffmann (2011)	Various	OLS regression and ANOVA	821	Listed public firms	Carbon intensity Carbon management Firm size Financial risk	N/A
Cordeiro and Sarkis (1997)	USA	Regression analysis	523	Listed firms	Environmental proactivism Firm size Leverage	N/A
Clemens (2006)	USA	Regression analysis	-	SMEs	Green performance Green economic incentives	Firm size Effectiveness of existing standards

Table 4.2. (continued ...)

Researcher(s)/ Year	Country	Main Method	Sample Size	Sample Type	Variables confirmed as significant	Variables not confirmed as significant
Earnhart and Lizzal (2007)	Czech Republic	Fixed effect Random effect and pooled OLS regression	436	Listed firms	Total Liability Asset turnover Total assets Physical capital Year indicators	Air pollution prevention
Ennis et al (2012)	UK	OLS Panel data regression analysis	50	Listed firms	N/A	Carbon emission
Filbeck and Gorman (2004)	USA	Regression analysis	24	Listed firms	Proactive enviro. performance	Environmental performance Firm size Average regulatory climate
Gilley et al (2000)	USA	Regression analysis	71	Listed firms	Product-driven initiatives Process-driven initiatives Firm Size	Environmental initiatives Firm Reputation
Hart and Ahuja (1996)	USA	Multiple regressions	127	Listed firms	Emission reduction R&D intensity Capital intensity Advertising intensity Industry Leverage	N/A
Hassel et al (2005)	Sweden	Panel data regression analysis	71	Listed firms	Environmental performance Firm size	Industry
Horvathova (2012)	Czech Republic	Regression analysis	136	-	Pollutant emissions Company size	Environmental managerial systems (EMAS and ISO

					Industry	14001) Indebtedness

Table 4.2. (continued ...)

Researcher(s)/ Year	Country	Main Method	Sample Size	Sample Type	Variables confirmed as significant	Variables not confirmed as significant
Jaggi and Freedman (1992)	USA	Pearson Correlation	13	Listed firms	Pollution (Abatement data)	N/A
King and Lenox (2001)	USA	Least squares regression, Fixed effect and Random effect	652	Listed firms	Total emission Relative emissions Industry emissions Firm size Capital intensity Growth Leverage R&D intensity Regulatory Stringency.	N/A
Klassen and McLaughlin (1996)	USA	OLS regression and ANCOVA	96	Listed firms	Environmental performance awards Environmental crises Industry	Firm size
Klassen and Whybark, (1999)	USA	Hierarchical regression	83	Various	Environmental technologies Pollution prevention technologies Pollution control technologies Advanced manuf. Projects	Capital investment rate Equipment age in years Number of employees
Konar and Cohen (2001)	USA	Correlation and regression analysis	321	Listed firms	Toxic emission Environmental litigation	Firm size Import intensity

					Market share Advertising Growth in revenue Research and development Firm size	Capital expenditure/depreciation Age of assets

Table 4.2. (continued ...)

Researcher(s)/ Year	Country	Main Method	Sample Size	Sample Type	Variables confirmed as significant	Variables not confirmed as significant
Lucas and Wilson (2008)	USA	Correlations and regression analysis	1228	Listed firms	Global environmental index Concern index Firm size Total asset Leverage Industry risk Growth Market risk Regulation	Strength index
Molina-Azorín et al (2009)	Spain	Regression analysis	301	-	Advanced commitment Firm size	Basic commitment
Moneva and Ortas (2010)	Europe	Partial least squares model (PLS)	230	-	Environmental initiatives (Social audits)	
Montabon et al (2007)	USA	Canonical correlation analysis	45	Various	Recycling Proactive waste reduction, Remanufacturing Environmental design Specific design target Surveillance of market	Reactive waste reduction, consume internally, Market for waste, Money spent on environment, Early supplier involvement, Environmental standards for suppliers,

						Environmental audits for suppliers, Environmental awards, Life cycle analysis, Environmental risk analysis, Corporate policy, Environmental mission statement, Environmental department, Strategic alliance

Table 4.2. (continued ...)

Researcher(s)/ Year	Country	Main Method	Sample Size	Sample Type	Variables confirmed as significant	Variables not confirmed as significant
Nakao et al (2007)	Japan	Multiple linear regression analysis	300	Listed firms	Environmental performance (Nikkei Environmental Management scores) Rate of increase in revenue R&D expenses/sales ratio Sales/total assets ratio	Financial leverage
Nyiranda et al (2013)	South Africa	Regression analysis	1	Listed firm	Net income Shareholders' equity	Carbon reduction Energy efficiency Water usage
Pereira-Moliner et al (2015)	Spain	ANOVA/T-Test	350	-	Operative system Informative system Strategic system Technical system Environmental performance Size Chain affiliation Category	N/A

Qian (2012)	Australia	Regression analysis	295	Listed public (P) and non-listed private (PT) firms	Total emissions (P) Relative emissions (P) Total energy (P) Relative energy (P) Firm size (P, PT)	Emission intensity (P, PT) Total emissions (PT) Relative emissions (PT) Total energy (PT) Relative energy (PT)
Researcher(s)/ Year	**Country**	**Main Method**	**Sample Size**	**Sample Type**	**Variables confirmed as significant**	**Variables not confirmed as significant**
Qian and Xing (2016	Australia	Regression analysis	138	Private SMEs	Total emission Scope 1 emission Energy consumption Leverage Sales growth Asset newness	Financial slack Capital intensity Firm size Industry sensitivity
Rajput et al (2013)	India	Panel data regression analysis	32	-	Green strategies	N/A
Russo and Fouts (1997)	USA	Regression analysis	243	Listed firms	Environmental ratings Industry concentration Firm growth rate Firm size Capital intensity R&D intensity Advertising intensity Market share	N/A
Sarkis and Codeiro	USA	DEA and OLS regression	482	Listed firms	Pollution prevention End of pipe efficiencies	Leverage

(1996)					Firm size	
Song et al (2017)	China	Regression analysis	2827	A-Share listed firms	Environmental index Size Leverage	Industry

4.8 Limitation of Existing Research and Need for Further Research

The above literature review suggests that there are a number of limitations which warrants further research.

Firstly, in respect of the nature and extent of environmental management, it is clear that most existing research is limited to large companies from developed countries (Rooney 1993; Epstein and Marie-Josée 2001; García et al. 2008; Denney and Evans 2009; Galvez-Martos et al. 2013; Winn and Pogutz 2013; Koleva 2014). Such research may not be applicable to SMEs because SMEs are not "smaller larger firms" and therefore findings from larger firms cannot be scaled down to fit them (Tilly 1999). The dominance of large firm studies is not a new phenomenon. Chrisman (1983) found only six SME study out of 700 studies on social and environmental responsibility of businesses. This gap in the literature has developed from the notion that social and environmental management is predominantly undertaken by large firms. It is well noted that vast differences exist between SMEs and their larger counterparts in the areas of organisational structure, management style, knowledge level and owner-manager characteristics which are known to influence environmental behaviour to a greater extent (Williamson et al. 2006).

Again, SMEs in relation to large firms face resources constraints (Hillary 2000). This equally affect the nature and extent of environmental impact activities SMEs manage. For instance, owner-managers' access to information, personal values and understanding of environmental responsibilities have a bearing on the practices the firm pursues (Schaper 2002; Battisti and Perry 2011; Williams and Schaefer 2013). SMEs it is argued will direct their efforts to areas of their activity which they consider will make them more competitive than environmental management (Molina-Azorín et al. 2009). A similar view is held by some proponents of the resource-based school of thought of the firm. They argued that engagement in environmental management by large firms are more likely because they have stable resources (manpower and finance) (Lepoutre and Heene 2006; Fernandez-Vine et al. 2010).

Supporting this is the argument that larger firms might be exposed to reputational risk and even survival risk if the irresponsible behaviour is brought to public attention (Lynch-Wood et al. 2009). Hence size, visibility and resources are deemed very important in environmental compliance and environmental management practice (Lynch-Wood and Williamson 2010,

2011). This, therefore, calls for the study of the nature and extent of environmental management practices in SMEs' context in order to help managers, researchers and policymakers to understand and develop policies suitable and applicable to this unique group than to scale down environmental management practices of larger firms for them.

Secondly, in respect of barriers, it is also important to note that majority of existing SMEs' studies on environmental management limited their scope to selected industries (Mensah 2006; Mir and Feitelson 2007; Aragon-Correa et al. 2008; Revell et al. 2010). SMEs have been identified as being heterogeneous in nature with complex environmental behaviour as compared to large companies (Brammer et al. 2012). The industry in which SMEs' operate is also known to affect their environmental impact and extent of their response to mitigate their impact (Hoogendoorn et al. 2014). This limitation of the scope of existing studies hinders insight and deeper understanding of barrier peculiarities resulting from industry and does not allow for cross-comparison for policy design and implementation. Also, SMEs are most often perceived as one group due to similarities in characteristics across the group and this has resulted in the assumption they are less complex and relatively easy to implement environmental policies (Tilley 1999). Again, Stevens et al (2012) suggested that SMEs' studies relating to barriers are based on small-scale case studies and anecdotal evidence (Williamson et al. 2006). The implication is that; it is difficult to generalise the result of such studies over the population (Steven et al. 2012). These indicate that widening the scope of SMEs' studies to include more industries will enrich and increase the level of analysis relating to barriers of SMEs' environmental management. The current study's focus on SMEs with a wide range of activities cutting across various industries will increase the depth of knowledge on the topic (McKeiver and Gadenne 2005; López-Gamero et al. 2009).

Thirdly, a number of studies (e.g. Klassen and McLaughlin 1996; Hart and Ahuja 1996; King and Lenox 2001; Nollet et al. 2016) have made both theoretical and empirical contribution to the debate between environmental management and financial performance but most of the existing studies have examined the effect of environmental management on financial performance using environmental performance variable, aggregated or single measure (Jaggi and Freedman 1992; Konar and Cohen 2001; Al-Tuwaijiri et al. 2004; Hassel et al 2005; Clemens 2006; Lucas and Noodewier 2016). The use of environmental performance assumes that optimum environmental management leads to a better environmental performance (Claver et al. 2007). However, there is a clear distinction between environmental

management practices and environmental performance (Trumpp et al. 2015) and that better environmental performance may be achieved through different types of environmental practices which may not have the same effect on firm financial performance (Gonzales-Benito and Gonzales-Benito 2006).

Focusing on environmental performance or aggregated variable implies that differential efforts initiated at the firm level and their overall and individual effect on financial performance is ignored. To that end, there is the need to separate the results obtained (environmental performance) from the policies and measures applied to achieve them (environmental management practices) (Claver et al 2007; Trump et al. 2015). This approach is very limited in the literature with Montabon et al (2007), Aragon-Correa et al (2008) and Molina-Azorín et al (2009) noted to have studied the effect of limited individual environmental management practices on financial performance. This study hopes to enrich these previous studies by using the full complement of environmental management practices as recommended by DEFRA (2013). It decomposes the various environmental management practices and using survey data from SMEs, analysis the overall and differential effect of each of the different types of environmental practices variables (Gilley et al. 2000; González-Benito and González-Benito 2005). Using such a fine-grained analytical approach will help draw a more accurate conclusion on the effect of each environmental management practice variable on financial performance (Klassen and Whybark 1999). Also, focusing on both the overall and individual variables' effect in the same study and context, which is limited in the existing literature offers a unique opportunity to provide comparative evidence on the respective empirical strengths which may also guide theoretical interpretation.

Also, there is no consensus among researchers when it comes to the issue of environmental management and financial performance of enterprises. Some studies indicate that being proactive with environmental management may increase financial performance by cost savings (Pereira-Molina et 2015), attracting green customers (Clemens 2006), increase efficiency and productivity through improving employee morale (Ochiri et al. 2015) and preventing fines and penalties (Christmann 2000). Others maintain that being environmentally proactive decrease financial performance by increasing expenditure without commensurate return (Jaggi and Freedman 1992; Sarkis and Cordeiro 2001). The third batch of researchers suggests that environmental management has no effect on financial performance. Studies on the subject matter have failed to yield conclusive result necessitating

the need for further studies. The inconclusive nature of the result has also been linked to small sample size, lack of control variables, lack of theory, differences in years, differences in socio-economic and political conditions, the difference in variable measurement, different accounting standards and organizational structures (McWilliams and Segiel 1999; Alberton et al. 2009). The differences in results and the varying explanation offered by existing studies for the environmental financial performance relationship suggest the existence of optimum environmental investment or practices for which firms may maximise returns (McWilliams and Segiel 2001) which warrant further studies.

Again, the above research shows that only limited studies have examined the relationship between environmental management and financial performance among SMEs (See table 4.1). However, there seems to be no study that has examined how environmental management practices affect the financial performance of SMEs from developing country perspective. The socio-economic and political realities in most developing countries including Ghana are different from that of the developed economies of the west which present an interesting context to examine this phenomenon. Most of these countries are currently pursuing economic growth agenda and this comes with its own social and environmental challenges. It is difficult for most of these countries to balance the growth and the associated challenges due to weak environmental regulations, poor institutional governance structure, poverty, corruption and lack of green pressure groups. These in most instances have led to poor environmental behaviour by businesses in developing countries (Ngwakwe 2008; Alberton 2009; Hossain et al. 2012; Earnhart et al. 2014). In the mix of all these issues, it is unclear how environmental management practices undertaken by SMEs affect their financial performance.

Furthermore, it is well noted that SMEs face barriers in their environmental uptake journey. Low level of research on environmental management and performance of SMEs has been identified as a barrier to environmental improvement among SMEs (del Brío and Junquera 2003; Torugsa et al. 2012; Creech et al. 2014). Compared to larger firms less attention has been paid to SMEs' environmental management activities in the research circles (Rasi et al. 2010). The extant literature has pointed out the significant contribution of SMEs to all aspects of national economic development as well as their likely impact on the environment (Gadenne et al. 2009) but less scholarly research has focused on this all-important group in terms of their environmental uptake. This is often attributed to the lack of data, non-visibility

and limited resources to undertake environmental management (Lefebvre et al. 2003). The lack of attention on SMEs' environmental impact has resulted in non-availability of exact data about their contribution to pollution. Hillary (1995) puts the estimated pollution by SMEs in the UK at 70%. The UK environmental Agency estimates SMEs' pollution is about 60% (Environmental Agency 2003 cited Revel and Blackburn 2004). These figures have been described as guesswork by Iraldo et al (2010). This has resulted in information deficit for policymakers and implementers to formulate appropriate environmental policies to help monitor environmental impact of SMEs (Labonne 2006).

Lastly, the low level of research on environmental related issues is even greater in developing countries and particularly in Africa where it has been identified that only 5% of journal articles from 1995 to 2005 was on environmental related issues (Visser et al. 2006). This is further buttressed by the 2014 Yale University country environmental health rating of 178 countries around the world. Only one African country (South Africa) was among the top 50 with majority occupying the bottom third including the last position (Yale University 2014). This makes the information deficit very serious for policy formulation and awareness creation among businesses hence; there is the need for more environmental management research.

4.9 Summary and Conclusion

The chapter has focused on environmental management. It also reviewed the existing studies and their contribution to the nature and extent of environmental management as well as barriers firms face in their environmental uptake journey. This was done to put the study in perspective. The relationship between environmental management and financial performance was also reviewed leading to the development of testable hypotheses. The review has shown that whiles there are a lot of studies relating to large firms, the literature on SMEs is limited. From developing countries' perspective, there is lack of literature on the relationship between environmental management and financial performance of SMEs. It has also been revealed that SMEs are involved in managing their environment in various forms but face obstacles which have not been the focus of academic research particularly in developing countries. The chapter also reviewed control variables since it may impact on the relationship between environmental management and financial performance. The chapter concluded with gap identification.

CHAPTER FIVE

Research Methodology

5.0 Introduction

The objectives of this study are to determine the relationship between environmental management and financial performance, the nature and extent of environmental management and obstacles of environmental management among SMEs. To achieve these objectives there is the need to select research methodology which will guide the conduct of the study. This chapter, therefore, serves this purpose.

The chapter is organised into four sections. Section 5.1 covers the research philosophy/ paradigm. Section 5.6 deals with population and sample selection as well as the methods of data collection and analysis techniques. The pilot study undertaken to confirm data availability on SMEs' environmental management practices in Ghana is also detailed in this section. Ethical consideration is covered in section 5.15. Section 5.16 ends the chapter with a summary.

5.1 General Research Philosophies

Research methodology involves the processes and procedures followed by the researcher to seek answers to solve the research problem. Methodology refers to the planned procedures and schemes which are followed systematically to gather new and relevant information to investigate and find a solution to research problem (Bogdan and Taylor 1975). Research involves several processes which are in the form of layers commonly referred to as research onion. This research onion is made up of six layers; research philosophies, approaches, choices, strategies, time horizon, techniques and procedures (Saunders et al. 2007). A properly conducted research is expected to be underpinned by choices made from each of the six onion layers to put it in context.

The first of the research onion layers which is the outer layer is the research philosophy. This term refers to the development of knowledge and the nature of the knowledge (Saunders et al. 2007). One of the vital steps required to be able to plan and carry out a research is to understand and choose a research philosophy (Saunders et al. 2009). The philosophical assumptions which commonly relate to social science research are ontology (realism v nominalism), epistemology (positivism v anti- positivism), human nature (determinism v

voluntarism) and Methodological (nomothetic v ideographic) (Burrell and Morgan 1979). These four philosophical assumptions are linked to the nature of social science and are also the basis of the objective-subjective dimension of methodological choices (Burrell and Morgan 1979).

Ontology deals with the assumptions relating to what constitutes social reality (Blaikie 1993). It is a description of human view about the nature of reality (Flowers 2009). There are two sets of contrasting views within ontology which have been identified as realism and nominalism (Burrell and Morgan 1979). Realism is the view that the social world is as concrete as the natural world and exist independent of human cognition or appreciation. Thus, it is real and made up of immutable tangible structures. Nominalism, however, does not consider the social world as real but rather made up of concepts, names and labels which are used to represent social world reality. These artificially created "names" are description tools of convenience in the external world of humans which helps structure reality. The non-existence of structural reality in nominalism position requires clearly stated research objectives to give structural reality (Holden and Lynch 2004).

Another philosophical assumption is epistemology which concerns the nature of knowledge in the social world. It is concerned with whether knowledge can be acquired or is something that one personally experiences in the social world (Karami et al. 2006). It also addresses facts by using acceptable knowledge. Acceptable knowledge relates to one's research field and the facts are information that has been tested rigorously and known to be true rather than opinions (Saunders et al. 2009). This implies that what constitutes acceptable knowledge in a particular field may not be acceptable in another field. In the area of epistemology, Burrell and Morgan (1979) identified positivism and anti-positivism which contrast each other. Positivism is the view that what is happening in the social world can be studied as facts by searching for regularities and relationships. It involves the development and testing of hypotheses. Through these processes new insight is gained and stock of knowledge grows. The testing of hypotheses may result in the development of a theory which is a key role of research. Under positivism, the researcher embarks on a mission of uncovering the truth and develops prediction tools. The researcher maintains his independence from the object being studied and mostly the result can be generalised (Scotland 2012). Anti-positivism strives on the belief that objective knowledge cannot be obtained in the social world. The researcher should not be independent of the study object in order to gain valuable understanding of

human activities. One can only understand the social world from individual viewpoint by being part of the frame of reference and that understanding social science is more of subjective than objective enterprise. Generalisation of research result is not much of importance to the anti-positivist.

Human nature assumption is concerned about the human being and the environment. The key variable of interest in social science studies is the human life. The relationship between humans and their environment may either be deterministic or voluntarism. It is deterministic where man is controlled by the environment and his actions are seen as a product of his external environment. Human is more mechanistic in relation to the influence of the external environment. However, the opposite holds in the case of voluntarism. Man controls the environment and is the master of his external environment. Thus, man is autonomous and plays a creative role in his external environment than envisaged in the case of a man being deterministic (Burrell and Morgan 1979).

The fourth assumption is the methodology, which is seen as the toolkit of the researcher. This represents the available means for investigating phenomenon by a social scientist (Holden and Lynch 2004). Thus, methodology helps to understand the social world by providing the social scientist with methods (tools) or action plan for investigation of the study object. Under methodology, nomothetic and ideographic are two contrasting positions. Nomothetic advocates natural science methods and approaches for studying social science (Cohen et al. 2007). It emphasises the use of quantitative techniques and rigorous testing of hypotheses in social research. The central theme of the nomothetic methodology is a scientific approach to social research (Guba and Lincoln 1994). This implies basing the research on sound systematic rules and techniques to facilitate understanding of the social world. The ideographic approach stresses that to understand the social world the researcher should acquire first-hand knowledge of the study subject by getting involved with the life of the study subject. The subjective generated data when analysed will help provide detailed insight into the social world of the subject.

Burrell and Morgan (1979) also proposed two assumptions about the nature of society which is radical change and regulations. Radical change seeks to depart from the customary ways of doing things in the social world and introduces assumptions that bring dramatic improvements in modern society's ways of doing things. It is visionary and focuses on

ensuring man realises his development potentials without structural limits of the social world. Regulation, on the other hand, is inward looking and tries to offer assumptions which help to explain the existing ways of doing things (status quo) in the social world. It is concerned with explaining the unity and cohesiveness of society and the importance of regulation in human activities. Any assumption made concerning improvements is usually within the limits of existing social structures.

5.2 Research Paradigm

Researchers' different views and beliefs affect the way in which researches are conducted. However, researchers are guided by general research standards and rules in their fields of endeavours. These standards and rules relating to beliefs and actions are regarded as a research paradigm. According to Weaver and Olson (2006, p.460) "paradigms are patterns of beliefs and practices that regulate inquiry within a discipline by providing lenses, frames and processes through which investigation is accomplished". The various research paradigms in the social and management literature are usually set apart by their position on the objectivity-subjectivity continuum. However, differences in ontological, epistemological, and methodological approaches to social research contribute to knowledge development (Weaver and Olson 2006). Paradigms help researchers to clarify the structure of enquiry and the choice of methodology. Paradigm nomination is the first in research without which there is no basis for choices relating to research design, methodology and methods (Mackenzie and Knipe 2006). Among the various paradigms discussed in the management literature are positivism, Interpretivism/constructivism, Realist and Pragmatism (Saunders et al. 2003; Holden and Lynch 2004; Kulatunga et al. 2007).

5.2.1 Positivism

Positivism believes that there is only one truth about how things work in the social world and that reality is external and objective. Research should, therefore, be based on objective rather than subjective methods (Kulantunga et al. 2007). Positivism aims at finding causal relationships and offering an explanation for any irregularities by using fundamental laws. The positivist aims at generalising the outcome of the study by using ample sample and quantitative methods. The approach aligns with the natural sciences (physics, mathematics etc.) making it more structured and replicable. The positivist engages in what Holden and Lynch (2004, p.10) termed as 'hypothetico-deductive process'. This process involves

reduction of the study problem into its smallest components which is hypotheses formulation and using quantitative methods to test these hypotheses. The researcher is independent of the entire process throughout the study and this enhances the objectivity of the result (Saunders et al. 2003). From the positivist perspective, systems and human behaviour in organisations can be categorised and scientifically measured to understand true happenings in the organisation (Hatch and Cunliffe 2006). Therefore, social science studies are objective.

5.2.2 Interpretivism/Constructivism

In the view of the interpretivist, the reality is socially constructed and that the researcher cannot distance him/herself from the study objects or the methods of the study (Saunders et al. 2003). The entire research process is value-laden reflecting the beliefs, interest, the background of the researcher, resources, skills and values (Hunt 1993). This approach results in qualitative data gathering with no focus on result generalisation and is more of theory building or inductive (Hatch and Cunlife 2006). Scientific objectivity is impossible due to the researcher's involvement in the process. However, researcher's biases can be minimised through self-reflection (Flowers, 2009). The interpretivist aims at understanding and explaining problems in the contextual settings and not bothered about measurement (judgment about validity) but making meaning of the social events. To the interpretivist, social phenomena are not static and hence cause-effect relationship investigation is pointless (Holden and Lynch 2004). This is because multiple realities exist and at any time a human sense of situation or social world is affected by their expectations, memories and experiences (Denzin and Lincoln 2003). Again, problems are better understood in entirety than reducing it to smaller components (Holden and Lynch 2004).

5.2.3 Realism

Realism picks its position from both positivism and interpretivism. The realist believes that social reality exists independent of the researcher which will eliminate bias but it is also base on the principle that there is no perfection when it comes to scientific methods. In the view of the realist, the researcher must have an open mind and continue to use new and different methods to search and revise existing theories to improve his/her certainty of social reality (Saunders et al. 2009). The recognition of lack of perfection of scientific methods shows that to the realist, interpretation of people's socially created environment is important. From this, it is clear that the realist recognises the claimed social reality validity whether proven or not

(Blaikie 1993). In realist view, social events are fragile in nature such that there is no fixed causal impact because any such impact is dependent on the environment. Therefore importance must be attached to the contextual settings of observed social events (Sobh and Perry 2006). In this regard, realist researcher develops several answers for several unpredictable contexts with different reflective actors (Pawson and Tilley 1997). In effect whiles positivism claims universal causal relations exist whose underlying mechanism can be explained by observation, realism, on the other hand, hold the view that there are moderating factors affecting the influence of the underlying mechanism in the relationship, depending on circumstances which realism is more interested in understanding and explaining than prediction (Flowers 2009).

5.2.4 Pragmatism

Pragmatism does not tilt toward one particular philosophical assumption but beliefs that both constructivism and positivism are valid approaches of doing research. Researchers may use one or both approaches to view the role and influence of social participants and use practical research approach created to solve research problems (Saunders et al. 2009). To the pragmatist, humans make all real decisions in the face of uncertainty and practical human needs in the real world may justify their beliefs and practices which cannot be proven to be true or not (Pfeiffer 2003). The meaning of concepts, ideas, statements, beliefs and words must be interpreted with reference to their consequences both empirically and practically. Pragmatist is interested in investigating practical consequences in order to understand philosophical positions and what actions need to be taken next in relation to real-world events for better understanding (Johnson and Onwuegbuzie 2004). Pragmatism is seen as been associated with mixed research method and the aim is to look for the best opportunity to answer research question(s) (Johnson and Onwuegbuzie 2004).

5.3 Research Approach

Saunders et al (2007) indicated that the second research layer is made up of two research approaches, which are deductive and inductive. The deductive approach is also referred to as top-bottom approach. This is because it usually starts with the formulation of testable hypotheses and with confirmation or rejection of a research question. The process involves the collection of quantitative data to test the formulated hypotheses. This approach apart from testing the stated hypotheses is not able to help the researcher capture unanticipated factors

that may exist for example new constructs or contingent variables (Ali and Birley 1998). The deductivist aims at testing existing theory that informed the formulated hypotheses. The inductive approach, on the other hand, is referred to as bottom-up approach. Thus, it uses research participants' views to build themes and come out with theory relating to these themes (Creswell and Plano Clark 2007). In effect, inductive approach proceeds from data collection to data analysis and then theory formulation (Saunders et al. 2009). The deductive approach aligns more with quantitative technique and relates to the objectivism philosophical assumptions of ontological realism as well as epistemological positivism. Inductive is rooted in qualitative technique and subjectivity assumptions of ontological nominalism and epistemological anti-positivism (Bryman and Bell 2007).

5.4 Research Methods

A researcher needs to approach his/her research work by various systematic procedures, schemes and tools for data collection to solve the research problem. The choice of methods (systematic procedures, schemes and tools) designed and used by the researcher is seen very often as a reflection of his/her ontological and epistemological perspective (Bryman and Bell 2011). Methodological debate in research literature has basically centred on quantitative and qualitative methods which have been described in some quarters as deductive/inductive approach (Kulatunga et al. 2007). The two methods even though are underpinned by different set of philosophical assumptions there are shared properties among them which gives indication of their possible combination (Bryman and Bell 2011).

According to Soiferman (2010, p. 3) even though researchers have some disagreements when it comes to which of the two methods is the best for research work and data collection, these methods are not mutually exclusive and the same question can be addressed by each of them. It is argued that quantitative and qualitative methods' parity in management and social research is potentially impossible. Hence these two methods should rather be seen as complementary methods whose combination enrich research since it allows the researcher to integrate at different levels the quantitative and qualitative data (Mackenzie and Knipe 2006). In the view of Gorard (2004) the use of both methods ensures minimisation of a waste of useful potential information. He further suggested that the combined impact of the two methods on policymakers is great since the figures are more persuasive and the stories are easily remembered for illustration. Mackenzie and Knipe (2006) stated that researchers may

favour one method over the other basically due to their paradigm inclination. They also suggested that no paradigm actually prescribes or prevents the use of any methodological approach and that when both approaches are applied in one paradigm it ensures the full effectiveness of the research.

5.4.1 Quantitative Approach

Quantitative methods are normally deductive in nature since it is preceded by theory or hypothesis which is tested for confirmation or rejection (Holden and Lynch 2004). The main objective of the researcher is to test hypothesis developed from the research problem. Standardised measures are created for data collection and these measures can be followed systematically and replicated when necessary (Bryman and Bell 2003). The result from the quantitative analysis may be generalised especially where sample selection is randomised and the size is sufficient (Johnson and Onwuegbuzie 2004). This approach is usually used in the hard or natural sciences to determine cause-effect relationships since there is the assumption of a single reality which is measurable. However, it is widely adopted in the social sciences. The measuring process is deemed independent of the researcher and his values hence emphasising objectivity. The formal, deductive and objective approach of a quantitative method to solving the problem makes it aligns more to the positivist paradigm and the nomothetic methodology (Sale et al. 2002). One of the key advantages of this method is its high predictive ability over other methods in a formal enquiry. However, it is often criticised for the production of abstract knowledge which is too general making it difficult for direct application to individual contextual situations (Johnson and Onwuegbuzie 2004)

5.4.2 Qualitative Approach

In the past, qualitative research has been misinterpreted as being the lesser of the two in terms of rigorousness, however, it has gained credibility in recent years due to its ability to explain and describe individuals' roles, behaviours, interactions, experiences and social settings (Razafsha et al. 2011). The process may involve an in-depth interview, observation or focus group discussion with research subjects in their natural environment (Sale et al. 2002). Data analysis is done through narration. According to Tewksbury (2009, p.39) qualitative methods emphasis more on interpretation than measurement of variables thereby providing a complete view of social phenomena by looking at environmental immersion, context and concepts

understanding. The main objective of the qualitative method is to provide broader understanding coupled with thorough reasoning underlying social events (Razafsha et al. 2011).

Qualitative method is often characterised as value-laden since the researcher is more involved in the process and the result interpretation is more or less subject to his/her values. Qualitative unlike quantitative approach does not lead to testing of hypotheses but rather hypotheses or theory building since it is more inductive in its approach. The concepts and theories proposed through qualitative research methods become the basis for tests initiation and development of predictive models (Tewksbury 2009, p. 41). The entire process is informal, inductive and subjective in its problem-solving approach. These characteristics/features align qualitative method more with interpretivism/constructivism paradigm and the ideographic methodology (Creswell 2003). The subjectivity nature of data gathering and analysis has been identified as affecting the reliability and validity of its approach to the enquiry (Key 1997).

5.5 The Current Study's Approach

The research tries to investigate the relationship between environmental management practices and financial performance of SMEs as reviewed in the literature and the real-world practices. The ontological perspective is realism which involves examination of real-world environmental management practices that are carried out by the respondents in their daily operational activities and correlate it with their financial performance. These two internal reality variables can be objectively measured independent of the researcher (Myers 1997). The SMEs which are the subjects of the study are entities which have been clearly formed with identifiable properties/features (Gray 2014) and the researcher remains detached from the process since his active participation is not necessary as variables can be measured devoid of his personal intervention/ experience and feelings. In this respect, the study believes that out there in the social world exist objective reality independent of human cognition or appreciation and ready to be explored and discovered (Tuli 2010).

The epistemological foundation of the current research is positivism in that valid knowledge can be acquired in the social world (Karami et al. 2006). Such knowledge is observable and measurable (Hussey and Hussey 1997). This means that what is happening in the social world can be studied as facts by searching for laws, regularities and causal relationships. From the

discussions in the literature on environmental management practices (EMPs) and financial performance information (facts) that has been tested rigorously and known to be true rather than opinions constitutes acceptable knowledge (Crotty 1998; Neuman 2003; Saunders et al. 2009). Survey questionnaire is used together scaled data on the current environmental behaviour of respondents with the financial performance to gain knowledge on the nature and extent of EMPs, barriers and its effect on their finances.

The relationship between humans and their environment is deterministic where man is controlled by the environment and his actions are seen as a product of his external environment. Environmental issues have gained increase stakeholders attention (Russo and Fouts 1997; Horváthová 2010) but its effect on business is known to be influenced by the environment in which the business is located (Zeng et al. 2011). Limitation of natural resources coupled with environmental problems has pushed the need for action by humans and the research seeks to measure these observable actions objectively from the perspective of SMEs. This involves steps taken and being taken by the respondents following the pressure being exerted by the environment on their continuous existence and survival.

The study's methodology requires the adoption of the objective ontology of nomothetic and empiricist epistemology. Thus, basing the research on sound systematic rules and techniques to facilitate understanding of the social world. The focus of the data gathering technique is quantitative which enables evidence to be presented in the form of numbers (Neuman 2003). Describing the nature and extent of EMPs, barriers of EMPs and association between environmental management practices and financial performance, the research places emphasis on numbers to present its outcome/evidence.

Researchers' observation, concept measurement and interpretation of phenomenon are often constrained by paradigms. Social phenomenon is complex in nature and looking at it through different "social lens" paradigms; each may partially give the true outcome. To understand the phenomenon fully may require application and understanding of multiple paradigms (Bhattacherjee 2012). The social and organisational phenomenon is generally a mixture of both radical change and regulations. Therefore, to understand social issues holistically and completely requires application and appreciation of multiple paradigm approaches. Multi-paradigm approaches with its different ontological and epistemological assumptions, when

linked together, may offer a more comprehensive view of the organisational phenomenon (environmental management) being considered (Gioia and Pitre 1990).

The research approach adopted in the study is informed by the key objective being investigated. The study set out to investigate and provide knowledge on environmental management among SMEs. The main objective of the study is to establish a relationship between environmental management and financial performance. To achieve this objective, the study uses survey (questionnaire) approach involving large sample to gather the required data (cross-sectional). The data is measurable or quantifiable since it basically involves the use of scales, implying the use of the quantitative method. The study develops testable hypotheses from the research problem and uses deductive reasoning to establish the truth or otherwise of these stated hypotheses (Hypotheco-deduction approach). Whatever outcome is arrived at through this process, the study offers detail explanation to better enhance our understanding of the underlying fundamental laws. Using measurable and independent objective criteria for data collection, the study aims to gain valid reality knowledge about how laws and regulations help explain patterns of social behaviour by social actors (SMEs) which relates to environmental management. This will help devise strategies to improve environmental management thereby enhancing environmental sustainability. From the foregoing discussions, the current research being a business study follows the moderate objective stance. Thus, the study does not align itself at the extreme end of the objectivity philosophy in studying environmental management among SMEs since this is very rare in modern social and management research (Holden and Lynch 2004).

5.6 Population and Sample of the Study

The population for the study consist of SMEs operating in manufacturing and service industries in the Kumasi metropolis in Ashanti region who were registered members of the National Board for Small Scale Industry (NBSSI), Association of Ghana Industries (AGI) and Ghana Tourism Authority (GTA) during the study period. The choice of manufacturing and service industries were informed by prior studies which have identified these two sectors to have significant impact on the natural environment (Álvarez Gil et al. 2001; López-Gamero et al. 2009; Battisti and Perry 2011; Mensah and Blankson 2013; Ervin et al. 2013; Saeidi et al. 2015). The addition of the service firms to our sample is a departure from prior research which solely analysed manufacturing firms or service firms (Wilson and Lucas

2008; Mensah and Blankson 2013; Jo et al. 2014). The study, therefore, covers multiple business activities from two dominant sectors of the Ghanaian economy which creates 99% of all jobs. This is expected to provide a more comprehensive and holistic picture (Trump and Gunther 2015) of SMEs' environmental management practices across sectors and activities. The service sector sample is limited to only hotels. However, in the service sector, the accommodation sub-sector constitutes about 11.54% (GSS 2015) and it has been identified to have a relatively high environmental impact among service firms (Lucas and Wilson 2008). The hotel industry due to its functions, services and characteristics is a key element of the chain of activity that takes place in the travel and tourism industry and seems to have so much link in the entire supply chain of the travel and tourism industry which makes its environmental impact relatively greater than other service firms. Its environmental impact ranges from site planning, facility management to excessive consumption of both local and imported non-durable goods, water, energy, waste generation and emissions to air, land and water. There is increasing pressure on hotels than any other service firms to take steps to address their environmental issue (Mensah, 2006; Erdogan and Baris 2007). This makes it important to consider the hotel industry. Aside from this, it is one of the well-organised sub-sectors in Ghana which comes under a national umbrella with the regional office within the study area and therefore relatively easy to deal with their members for research purposes.

The NBSSI and AGI are the two main leading institutions championing both SMEs and large firms' agenda in Ghana with GTA having oversight responsibility of tourism industry including hotel facilities. Each of these institutions has unique features in relation to the respondents' representation (NBSSI – only small firms and AGI – Small, medium and large) and Ghana Tourism Authority for hotels. The database of SMEs in manufacturing and hotels were obtained from NBSSI-AGI and GTA respectively. The total population of 494 consisted of 238 manufacturing firms and 256 hotels in the Kumasi metropolis. To improve the representativeness of the target population and reduce sampling error, firms were sampled on the basis of industrial sector-manufacturing and service using simple random sampling procedure (Ezeah and Roberts 2012). Sample size estimation was based on Yamane (1973) formula for sample size determination based on confidence interval from a given population. The final sample consists of 149 manufacturing firms and 156 service firms bring the total to 305. For the purposes of this study, the definition of SME is adopted from the Regional Project on Enterprise Development (RPED) (Teal 2002) for SMEs in Ghana which classifies

firms with employees of 1-5 as micro, 6-29 small and 30-99 medium. This definition is in line with the Ghana Statistical Service (2015) employee based definition of small and medium enterprises.

Taro Yamane (1973) sample size formula (at 95% confidence level and .05 population variability):

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

Where:

N = the Population
e = the degree of error expected
n = the sample size

5.7 Survey Questionnaire

The survey is a method by which a researcher may collect, organise and analyse data. It is widely considered as the most traditional and commonest mean of gathering research data for an investigation into a wide range of issues particularly in the social sciences (De Vaus 2002). Surveys are very useful when it comes to non-experimental descriptive research designed with the intention of describing reality. This is because survey as research strategy does not attempt to control or manipulate the conditions of the respondent and aside been suitable for exploratory or descriptive studies, it can provide the needed data for hypothesis testing (Kelley et al. 2003). Surveys may take several forms including cross-sectional, longitudinal and explanatory or correlational surveys (Mathers et al. 2007). This thesis employs cross-sectional survey since it is interested in providing a snapshot of environmental management practices among SMEs. The study's objectives are to determine the nature and extent of EMPs of Ghanaian SMEs identify barriers and investigate the relationship between EMPs and financial performance.

Surveys as research tool have its own advantages and disadvantages. Surveys are efficient and cost-effective means of investigating attitudes and behaviours of people or objects. Survey questions are considered mostly as a device for measuring non-observable things and it must align with the research objective. It is also flexible since other data collection methods

can be combined with it easily. However, survey has been criticised for not being better at explaining the underlying reasons for people's behaviour as compared to in-depth interviews. Again, the result of the survey may be affected by errors or bias of the interviewer (Mathers et al. 2007). Survey data collection can be done through various methods including face to face interview, telephone interview and questionnaire. The particular method adopted in survey data collection is influenced by several other factors including the location of the respondents, literacy levels, subject matter and available resources (Szolnoki and Hoffmann 2013). According to De Vaus (2002), one of the appropriate techniques used for the collection of relevant data under survey is a questionnaire. The study uses a questionnaire for data collection due to the large and geographically disperse sample as well as the low level of telephone/postal access among the population (Appiah-Fening et al. 2008). The use of survey questionnaire for gathering data on environmental variables of businesses is not uncommon in environmental-financial link literature (Sroufe 2003; Clemence 2006; Montabon et al. 2007; Aragón-Correa et al. 2008; Molina-Azorín et al. 2009; Ramathadan 2016). The use of survey questionnaire is the preferred method of acquiring environmental data in situations where it is limited or there is an absence of publicly available data on environmental practices/performance of firms (Fernández-Vine et al. 2010). There is no publicly available data on SMEs' environmental management practices in Ghana hence, this method was considered the most appropriate to gather the required data after consideration of the sample size and geographical coverage of the study.

5.7.1 Questionnaire Design and Content

The survey strategy and accompanying questionnaire need to be well designed to make it clear, understandable and easy to complete by respondents. In this way, respondents will be able to comprehend and transmit their answers effectively. A questionnaire which is well designed must possess the following characteristics; appropriateness, unambiguous, intelligible, unbiased, room for all possible responses, ethical, easy to pilot and code (Stone 1993). The essence of a well-designed questionnaire is to ensure that valid responses are obtained for the questions posed. In designing questionnaires two main objectives are taken into account. These are to maximise the response rate and to ensure we gather relevant and accurate information for the study. To achieve these objectives, the questions must be appropriate, concise, carefully administered and the purpose made known to the respondents. Also, the questions sequence and type of questions and general layout contribute to the

accuracy of the information obtained (Leung 2001). In determining the appropriate individual questions to ask, there is the need to explore the literature and be creative in order to establish a link between the research aim(s) and the questions through the research objectives (research issues) (Burgess 2001). Burgess (2001) summed the questionnaire design process as entailing three elements:

a) Determining the question(s) to ask
b) Selection of question type and wording of each question
c) Designing the sequence of questions and overall layout of the questionnaire

The survey questionnaire used in the study has been developed after reviewing the literature on the subject matter. Our review of the literature produced valuable insight on general environmental management practices among firms but considering the context of the current study, there was no readily available questionnaire to adopt. This was because most of the existing environmental studies took place in developed economies and context has been identified to be important in environmental issues (Jeppesen et al. 2012). There was, therefore, the need to develop a "context fitting" instrument for the study. Drawing on the general level of CSR development in Ghana (see section 1.6 and 3.1), environmental literature reviewed and the guidelines provided by DEFRA (2013) on six components of environmental management practices, questions were developed for the study (see Appendix 1b). Questionnaire items were aligned with the three objectives of the study. Questions relating to objective one seeks to uncover the nature (type) of environmental management practices of respondents and asked questions on the exact activities being undertaking to reduce their environmental impact in each identified category (type) which also aligns with the CSR requirements of the firm. The extent of these practices was also evaluated by the questions. Objective two questions focused on identifying the barriers faced by the respondents in their effort to reduce the footprint of their activities on nature. Thus, the respondents' experience of barriers inhibiting their environmental management practices was the main area of focus. The third objective was on the link between environmental management practices (EMPs) and financial performance of the respondents' businesses.

The questionnaire items were mostly closed-ended type since they are easy and quick to complete by respondents. It also enables the quick aggregation of data by researchers even though the richness of responses may be affected by the limited responses provided by the researcher (Boynton and Greenhalgh 2004). To limit this shortcoming identified by the

literature the widely used and tested 5 point Likert scale was used and respondents were provided with free space for further information. To ensure that the questionnaire appeal to respondents for good response rate, the questions were short and well grouped into sections with sub-headings and clear instructions at the beginning of each section. Kelley et al (2003) argued that the form and sequence of questions in a survey may have an effect on the responses obtained, hence the careful design of questionnaire is important to minimise responses bias in the result. They further suggested that survey questionnaire should be well presented and clear. It should be well numbered, grouped according to subjects with headings and instruction as this makes it easy for respondents to follow.

Again the use of close-ended questions helped minimised the level of social desirability bias which is often known to associate with a socially sensitive topic such as the environment (Nederhof 1985). Social desirability bias is the tendency by the respondents to provide answers which are more pleasing to the subject matter at stake and this can affect the true outcome of the study (Neeley and Cronley 2004; Lippitt et al. 2014). In addition to the forced choice questions, the wording of the questions also avoided leading words and face to face interview was also avoided to enhance independence and reduce socially desirable responses (Richardson 2005). Respondents' were further assured of anonymity and confidentiality of information through letter attached to the questionnaire. Also, questions requesting financial performance information were placed at the end of the questionnaire after the environmental management practices and barrier questions (see Appendix 1). These are known to reduce social desirability bias in surveys (Podsakoff et al. 2003). However, Podsakoff et al. (2003) suggested that one of the sources of common method bias especially where the predictor and criterion variable are sourced from the same respondent is social desirability bias which may not be eliminated by the above procedural remedies. It is therefore recommended that statistical remedies should also be applied to ensure that the potential threat associated with common method bias is brought to the barest minimum if not totally eliminated (Podsakoff and Organ 1986; Posdsakoff et al. 2003). Following prior environmental management studies which relied on self-report (Christmann 2000; Clemens 2006; Gadenne et al. 2009) the statistical test performed was Harman's one factor (or single-factor) test. The technique is widely used by researchers when it comes to addressing common method bias (Posdsakoff et al. 2003). It was used to check for the presence of common method bias. The results of the Harman one-factor test indicate that common method bias concern was not a problem. All the

measures in the study were subjected to the analysis and 10 components rather than 1 were extracted. The first component accounted for 33.166%; which is not the majority of the variance explained (i.e. 50% or above).

The questionnaire for the data collection was in four parts with clear instructions indicating how respondents should answer the questions. Questionnaire items were aligned with the three objectives of the study (see Appendix 1b).

6.7.1.1 Part One: Background Information

I. Section A-Owner-Manager Information

This section requested for demographic information about the owner-managers. This is because it has been argued that ownership and management in SMEs are usually intertwined and may equally affect financial performance. It contained 5 questions. The first question asked respondents to identify their age group to enable us to determine the economically active group in which SMEs' owner-managers belong and its effect on the financial performance of the firm. The second question sought to identify the owner-managers' gender to enable us to determine its effect on the financial performance of the firm. The third question enquired about the current position of the respondents if he/she is not the owner-manager of the firm. This is to help determine the status of non-owner-manager respondents. The fourth question was on how long the respondent has been at the current position. This was to determine the relative experiences of the owner-managers and its effect on the financial performance of the firm. The fifth question was on the respondents' highest educational qualification. This was important to establish the educational level of owner-managers and how it affects the financial performance of the firm.

II. Section B- Firm Characteristics

This section contained 4 questions seeking information about the firm. The first question asked about the number of full-time employees to enable us to determine the size of the firm and its effect on financial performance. The second question was on how many years the firm has been in operation to help establish the age of the firm. This is to help determine the effect of firm age on financial performance. The third question asked respondents to describe the ownership of their firm. This was necessary to help classify the type of business ownership

and its effect on financial performance. The fourth question asked respondents to identify the industry in which they operate. The responses from this question were used to determine whether the industry in which the firm operates make any difference when it comes to SME financial performance. It also served as further confirmation of the extracted respondents from the databases.

5.7.1.2 Part Two-Environmental Management Practices.

Part two focused on the nature of specific practices which are used to manage the environmental effects of business activities but with focus on the CSR demands which at the current CSR development level correspond with economic responsibility of the CSR pyramid (see section 1.6). EMPs variable selected were those with economic potentials for the firm. The extent to which the responding firms engage in the management of these activities were also assessed. In part two of the questionnaire, multiple measurement items are used for each latent construct since they provide a greater degree of reliability than single items (Danese and Romano 2011). The design of the questionnaire is also guided by prior literature which found that even though SMEs tend to answer negatively when asked whether they manage their environmental impact but when prompted with a list of specific management activities their responses changed (NetRegs 2002).

This part contained 47 closed-ended questions grouped under six sub-headings. The first set of 9 questions related to energy efficiency which asked respondents to indicate the nature and extent of their energy efficiency practices at their firms. The second set of 8 questions asked respondents about the water management practices and extent of each practice. The third set of 6 questions related to the nature and extent of waste management by their firms. Material management practices contained 9 questions forming the fourth set. Respondents were asked to indicate their material management practices and its extent. The fifth set contained 10 questions measuring the nature and extent of pollution management practices of respondents' firms. The last set of 5 questions in this part was about the nature and extent of respondents' contribution to the management of biodiversity.

5.7.1.3 Part Three-Barriers of Environmental Management Practices

Questions in this part of the questionnaire dealt with the barriers encountered as a result of the level of CSR development by SMEs' respondents in their effort to minimise the environmental impact of their commercial activities. Six broad categories of barriers (lack of knowledge and ownership attitude, regulatory constraints, lack of support services, limitation of resources, lack of stakeholder' pressure and lack of formal environmental education) according to the literature were presented to respondents to answer the extent to which each represents a challenge to their environmental endeavour and help examine how these aligns with the level of CSR development. After this, each of the six broad categories presented specific questions relating to that barrier for respondents to answer and indicate the extent to which it serves as a challenge (see Appendix 1b). This was to help respondents to further substantiate why a particular item in the broader category was identified as a barrier and improve our understanding.

5.7.1.4 Part Four- Firm Financial Performance Information

Following similar approach in the literature, part four requested information on the financial performance of respondents' firms over the last year in comparison with firms in the industry of the same size. The 5 questions in this part measured respondents' firms' financial performance using adapted scale previously used by Judge and Douglas (1998); Clemens (2006) and Aragon-Correa et al (2008). All the 5 questions related to various indicators of financial performance by the firm. This was to help relate the firms' ownership demographics, firm characteristics and environmental management practices to the firms' financial performance.

5.7.2 Pilot Test

Pilot testing of the questionnaire before its final use in a survey is a very important step in the survey questionnaire process. The pilot phase helps to detect defects arising from the design of the questionnaire. The researcher(s) is afforded the chance to amend wordings and instructions which respondents found confusing and also able to undertake analysis to see if the data gathered are actually usable (Marshall 2005). At this stage questions which are long or complex can be divided into parts to make it more manageable and understandable. Bird (2009) is of the view that short and attractive questions serve as motivation to respondents in

responding to the questionnaire. The development of the questions and the answer choices, especially in the case of close-ended questionnaire, are entirely done by the researcher(s) and their team which can be considered as internal, therefore, piloting expose the questionnaire to external parties who can make suggestions to modify or add specific items to the answer choices. Govender et al (2014) advised that whether the questionnaire being used in a study is researcher constructed or adapted, it should be piloted always to obtain feedback to ensure a complete response.

Chisholm et al (1985) added that through pilot testing of questionnaire, reliability and validity can be enhanced. One means of ensuring content validity before piloting is to use a panel of experts who are knowledgeable in the field and use of a questionnaire as data gathering tool. In this respect, the drafted questionnaire was subjected to clarity and other design test by a group of lecturers and postgraduate researchers after which it was submitted to the research supervisory team for their appraisal and comments. The comments and suggestions from the supervisory team were all incorporated and subsequently reviewed by the team again. The final version of this questionnaire was piloted on a sample of 250 SMEs with 186 being received representing 74.4% response rate. The outcome of the pilot study indicated the need for the following modifications. To take out the request for audited financial statement since only three respondents attached one. There was the need to reduce the length of time taken to complete the questionnaire since some respondents were of the view that it took a bit more time to complete the questionnaire. The questions were subsequently reviewed and those found to be repetition or captured by another item and less relevant items in the context of the study under each construct were taken out. This resulted in the six components of environmental management practices having a minimum of 5 items and maximum of 10 items compared to the previous minimum of 9 items and maximum of 17 items. All these helped achieved the purpose of the pilot study. These processes are very important because a questionnaire that does not go through such robust development process and testing may have its credibility questioned and the legitimacy of the final research findings may be in doubt or disregarded completely (Kelley 2003).

5.7.4 Questionnaire Administration

The questionnaire can be administered through various channels including mailing (post), internet, personal (face to face) and telephone interview (Bowling 2005). The mailing of the

questionnaire is considered as the most popular and cost-effective mean of administering survey questionnaire due to its wide coverage (Bird 2009). The internet even though is gaining ground as a survey medium it's accessibility among the general public is relatively low compared to post mail (Kaplowitz et al. 2004). Each of these channels has strengths and weaknesses as data gathering medium. For instance, mail post even though popular and cost-effective is well known to have a low rate of response. The internet is known for its cost and time efficient as well as eliminating paper printing (Fraze et al. 2003) but it has low response rate compared to the paper base (Nulty 2008; Converse et al. 2008). The personal interview (face to face) is costly and time-consuming but have high response rate (Dillman 1991). Whichever medium one chooses aside the strength(s) it possesses is also dependent on other factors prevailing at the geographical environment of the research sample. Therefore, the researcher should consider a medium that will help mitigate the limitations and maximise response rate for effective data analysis. The geographical area of the current study is characterised by the poor postal network, limited telephone and internet access (Appiah-Fening et al. 2008). After consideration of these factors and to increase the response rate the study found personal questionnaire distribution appropriate but the questionnaire was self-administered. Therefore, the structured questionnaires were personally distributed to the owner-managers or general managers of the sampled firms at their premises from 20th April to 31st May 2016.

The decision to administer the questionnaire to the owner-managers or general managers (in most cases the owner-managers were the general managers) is because they are the key strategic decision makers in SMEs where most often there is centralisation of decision making. Environmental management is more of a strategic decision, they were considered to be better placed to answer the questions since they are deemed more knowledgeable and play a crucial role in the design and implementation of such decisions (Aragon-Correa et al. 2008). Aragon-Correa et al (2008) argued that personally administered questionnaire requires comparatively greater effort and time but it helps in ensuring that the respondent understands the questions and right person response to the questions. It also increases the response rate, reliability and data accuracy.

The questionnaire administration was accompanied with an introductory letter explaining that the sole purpose of the research is for academic excise and their anonymity is assured (see Appendix 1). This encouraged the respondents' participation since it allays any fears and met

the informed consent requirement of academic research. At the end of the survey period, a total of 244 questionnaires were returned with 238 considered useful for this study. This represents a response rate of 80%. This is comparable to a response rate of 86% obtained in a questionnaire survey in Ghana by Mensah and Blankson (2013). Table 5.1 provides details of respondents' business-industrial sector and activity/class with mineral water processing (8.82%) and budget hotels (38.66%) being dominant in their respective industrial sectors.

Table 5.1. Sample Firms' Industrial Sector and Activities/Class

Industrial Sector	**Business activity/ class of hotel**	**Number of firms**	**Percentage (%) of the sample**
Manufacturing	Food products	11	4.62%
	Soft drinks and Alcoholic Beverages	9	3.78%
	Hair products and Cosmetics	6	2.52%
	Detergents	9	3.78%
	Mineral Water Processing	21	8.82%
	Textile and Fabric	4	1.68%
	Plastic products	5	2.10%
	Wood products	10	4.20%
	Metals products	11	4.62%
	Pharmaceuticals	3	1.26%
	Tile cement and concrete products	6	2.52%
	Chemicals	8	3.36%
	Leather/footwear	4	1.68%
Service	Three-star	3	1.26%
	Two star	7	2.94%
	One star	15	6.30%
	Budget	92	38.66%
	Guesthouse	14	5.90%
Total		238	100%

5.8 Data Sources

The variables for this study were sourced basically from primary data sources. The dependent and control variables which are mainly financial data, owner-manager and firm characteristics were collected as part of the survey responses. The independent variables consisting of environmental management practices were also sourced through a survey questionnaire. Research questions one and two relied on information from the survey questionnaire contained in part two and three respectively, whiles research question three

used both information from part one, two and four of the survey questionnaire for accomplishment.

5.8.1 Dependent Variable

The main dependent variable in this study is financial performance (FP) which is one of the variables used to assess the performance of the firm. The assessment of a firm's financial performance usually entails using either accounting or market base financial indicators or both (Earnhart and Lizzal 2007). Prior studies investigating environmental-financial relationship have used different accounting base indicators to measure financial performance (company profitability). Hart and Ahuja (1997) investigating the effect of pollution control on the financial performance used three accounting based indicators, return on sales (ROS), return on assets (ROA) and return on equity (ROE) as measures of financial and operating performance. Jaggi and Freedman (1992) also used accounting-based variables to represent firm financial performance. Accounting based indicators of financial performance-return on assets and return on equity were employed by Horváthová (2012) in analysing the effect of environmental performance on financial performance in a sample of Czech Republic firms. Moneva and Ortas (2010) also employed return on assets and return on equity as corporate financial performance measure whiles Russo and Fouts (1997) used return on assets only. Busch and Hoffmann (2011) measured financial performance in their study by using ROA and ROE development whiles net profit margin was used by Lucas and Wilson (2008).

Accounting based indicators as a measure of corporate financial performance have been backed by researchers as being a reflection of the internal efficiency of organisations (Moneva and Ortas 2010). Accounting based indicators give a better indication of managerial performance relating to internal decision-making capabilities than external market evaluation of internal managerial actions. Accounting based indicators also help managers to assess the financial effect of strategic environmental project choices since resource allocation to each project is subject to management discretion which most often is guided by the strategic vision of the organisation (Albertini 2013). Also, environmental activities are expected to affect the cost of the firm (Lucas and Wilson 2008). Accounting based indicators such as ROA, ROE and ROS used as proxies for financial performance are considered to have the ability to evaluate management's resources stewardship function in terms of returns generated from efficient utilization of resources at their disposal (Cohen et al. 1997). Thus, it serves as a

useful tool for assessing management performance by users of financial information. However, there are also criticisms of accounting based indicators including the tendency to focus on only one aspect of economic performance hence very narrow in focus (Al-Tuwaijri et al. 2004). Also, accounting-based indicators have been criticised for being retrospective (past performance) in nature and failing to consider future performance as well as not accounting for differences in risk-taking behaviour of the firms. Further, accounting based indicators may be subjected to management manipulations and this may be aided by accounting policies and procedures (Cordeiro and Sarkis 1997).

Accounting based financial indicators may be obtained by the financial statement (objective measures) or through perceived financial performance measurement (Judge and Douglas 1998; Zeng et al. 2011; Ramathandan 2016). Where there are difficulties associated with obtaining objective measures, others have advocated/supported the use of perceived financial performance indicators in place of objective financial indicators. Miller and Cardinal (1994) supported the use of surrogate financial performance indicators when they suggested that key informants may provide performance data that are more accurate than the data available through archival sources. "In other words, it may be that informant data, which individuals typically give under conditions of promised anonymity for their firms, basically reflect true performance, but archival data to a substantial degree reflects public relations, tax, and other extraneous considerations that create noise" (p.1661). According to O'Donohue and Torugsa (2016), the use of both subjective and objective measurement approach to financial performance indicators are acceptable and valid since the literature has established that subjective and objective performance data have high correlation and concurrent validity between them. Perceived financial performance indicator(s) has been used extensively in the environmental literature (Judge and Douglas 1998; Clemens 2006; Darnall et al. 2008; Zeng et al. 2011; Pereira-Moliner et al. 2015; Saeidi et al. 2015; Feng et al. 2016; O'Donohue and Torugsa 2016; Ramanathan 2016). The current study uses perceived financial performance indicator considering the difficulties/challenges identified in the literature when it comes to audited financial statements among SMEs (Ahinful 2012). Also, the pilot survey questionnaire requested for financial statements in addition to perceptive financial performance indicators. Only 3 respondents attached a copy of their financial statement. This may be due to a high level of confidentiality attached to such information making respondents not feeling very comfortable with giving out such financial information or such

financial information is not available. Based on this outcome, a decision was made to only request for perceptual financial performance indicators which is less intrusive in the form of Likert scale questions. This helps to avoid/reduce respondents' apprehension about the provision of financial information. The measures of financial performance used consist of measures emphasising the firm's profitability and growth. The five items used to measure financial performance was based on Judge and Douglas (1998) and Clemens (2006) perceptual measures of financial performance.

5.8.2 Independent Variables

In examining the environmental-financial relationship, previous studies have used different measures to represent environmental management practices/performance (see table 4.1). The most important issue is that whatever construct is used must specifically measure the intended variable(s) and should align consistently with the research objective(s).

This study makes use of a set of six components of environmental management practices after reviewing the environmental management literature in general and SMEs' EMPs in particular. EMPs relating to these sets were measured through survey questionnaire with five points Likert scale on technical and organisational practices (Molina-Azorín et al. 2009) of sampled firms.

Table 5.2. Variables used in the Study

Variables	**Abbreviation**	**Measurement**
Dependent:		
Financial Performance	FP	Overall total average score calculated from financial indicators retained after factor analysis which was measured on a 5 point Likert scale.
Independent		
Environmental Management Practices	EMPs	Overall total average score calculated from EE, WMC, WM, MM, POL and BD indicators retained after factor analysis which is based on the score of a 5 point Likert scale.
Energy Efficiency Water Management Waste	EE WM WMC	Total average score calculated from indicators retained after factor analysis which is based on the score of a 5 point Likert scale.

Management Material Management Pollution Management Biodiversity Management	 WM POL BD	
Owner-Manager Characteristics		
Owner-Manager Age	OMAGE	Age (in years) of owner-managers
Owner-Manager Gender	OMGEN	A dummy variable for gender of sampled firms' owner-managers
Owner-Manager Education	OMEDU	A dummy variable for education level of sampled firms' owner-managers
Owner- Manager Experience	OMEXP	The natural log of number of years at current position
Firm Characteristics		
Ownership Type	OWNTYP	A dummy variable for the legal status of the business
Firm Size	FSIZE	The natural log of number of employees
Firm Age	FAGE	The natural log of number of years in operational existence
Industry	INDUS	A dummy variable for industries of sampled firms

Each of the six components of EMPs measured management practices of different activity but with impact on the environment hence the average score of the retained items after exploratory factor analysis (EFA) under each of these six components of EMPs forms its score. The average of the six components' scores formed the overall score for EMPs. The overall score for EMPs and the six components of environmental management practices variables were used as proxies for independent variables to examine the environmental management-financial performance relationship. The use of survey data to generate the required information/data to represent independent variable is well noted in the extant literature (McKeiver and Gadenne 2005; Clemens 2006; Mir and Feitelson 2007; Aragon-Correa et al. 2008; Molina-Azorin et al. 2009) particularly where there is limited or no data on the subject matter available publicly. Table 5.2 gives details of all the variables used in the study of the relationship.

5.9 Financial Performance (FP)-Environmental Management Practices (EMPs)

Once it is suggested that EMPs influences FP it is not out of place to think that FP may also influence EMPs. However, according to Ramanathan (2016) even though this is theoretically feasible it lacks rigorous theoretical and empirical justification/grounding in the literature. The following arguments have been advanced to support this assertion;

From stakeholder theory perspective (Freeman et al. 2010), extensive research evidence indicates that the role of stakeholders' (primary and secondary) pressure has been identified as playing a key role in driving environmental management practices of firms (Delmas and Toffel 2004, 2008; Guerci et al.2016). Research has shown that wherever stakeholder pressure prevails especially where stakeholder become active rather than passive receivers of firms' environmental impact, it most often results in action being taken by the firms (He et al. 2014). However, the literature has not exclusively identified a firms' financial position as a driver of environmental management (Ramanathan 2016). It has been suggested that it is top management commitment and support which primarily influence/drive environmental management and not financial performance (Goll and Rasheed 2005; Ramanathan 2016). Even in large firms committed to environmental improvement, it has been found that there appears to be a weaker link between top management and environmental improvement due to an unwillingness to pay top environmentally committed CEOs a premium (Francoeur et al. 2017). In addition, Wisner et al (2006) argued that how financial investment in management processes particularly in environmentally proactive firms results in environmental improvement is not clearly understood due to limited studies.

Among SMEs however, due to non-separation of ownership and control, it makes owner-managers' or top management attitude critical in environmental management (Aragon-Correa et al. 2008; Gadenne et al. 2009). Supporting this Bettisti and Perry (2011) in their study of SMEs in New Zealand identified SME group "cost burden" with the longest years of operation and the second highest turnover but without a focus on environmental improvement on the part of owner-managers due to the disbelief of causing environmental harm. Sen and Crowley (2013) also found that even SMEs with poor financial resources undertook socio-environmental management to build a network and improve their firms' image.

In this vein, Bansal and Roth (2000) found that firms are motivated to pursue environmental management due to competitive advantage, ecological responsibility and legitimisation.

Ramanathan (2016) stated that "There is no research that has highlighted that firms with high financial performance invest heavily in improving environmental performance. This clearly suggests that there is no case for financial performance on its own influencing environmental performance (Reverse causality)".

5.10 Data Analysis Methods

Data analysis involves searching for themes and patterns, looking for data relationships that aid the researcher's understanding and then being able to visually display the information with the write-up. The method(s) of data analysis is dictated by a combination of factors such as the research questions, the study's theoretical underpinnings and how appropriate the technique is able to make sense of the data (Kawulich 2004). This study, therefore, uses appropriate analysis techniques to search for relationships in the data to answer the three research questions. The Statistical Package for the Social Science (SPSS) software version 20 was used for all analysis.

5.10.1 Data Analysis Procedure- Objective 1 and 2

Data obtained from the survey relating to objective 1 and 2 were mainly analysed by using univariate descriptive statistical analysis and bivariate analysis (t-test) to examine the nature and extent and barriers of environmental management practices among sampled SMEs.

5.10.2 Data Analysis Procedure-Objective 3

EFA was the technique adopted to prepare the data for analysing the third objective of the study. EFA was employed as the tool to reduce the measured variables (number of variables) to more manageable units appropriate for analysis and to help the researcher understand the underlying structure of the scales (Tabachnick and Fidell 2013; Hair et al. 2014). Again, given the unique context of the study and the large number of items used to measure the constructs, it was reasonable to start the validation of the scales in EFA. The analysis was undertaken using principal component analysis (PCA) and varimax rotation which resulted in the extraction of items retained. Also, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett test of sphericity, as well as reliability test, were employed. The KMO and Bartlett test of sphericity both indicate the appropriateness of using factor analysis. Reliability tests for extracted items or retained items also indicated that none of the constructs

was below the minimum cut-off point of .700 (Bagozzi and Yi 2012; Fields 2013) (See table 6.16 in section 6.4.1).

The third objective of the study was to investigate the environmental-financial performance link of sampled firms hence the data analysis method involves descriptive statistics, Pearson correlation and regression analysis after the data has been prepared with EFA. Regression analysis is a very useful statistical tool for determining the linear relationship between two or several variables with a focus on the nature of the relationship. Through regression analysis, the values of the dependent variable can be estimated from the values of the independent variables observed. Regression is used extensively to analyse causal relationships between variables. Its application produces an equation which describes the functional relationship between variables which helps to predict the effect of one or several variables on the dependent variable (Schneider et al. 2010). In other words, the investigation of the relationship between variables seek to estimate quantitatively the causal effect of the independent variable on the dependent variable (Campbell and Campbell 2008).

The researcher investigating such relationship places relevance on the statistical significance which is an indicator of the closeness of the true result of the estimated relationship. In describing the cause-effect relationship all extraneous variables are mostly controlled (Frank 2000; McNamee 2005). There is the tendency to confuse regression with correlation which studies the strength of association between variables and does not evaluate cause and effect relationship (Zou et al. 2003). This makes regression analysis more robust than correlation since it helps predict the value (increase or decrease) of the dependent variable from a change in the value of the independent variable. Correlation, on the other hand, cannot perform such function except to indicate direction and magnitude of the association between the variables. Specifically, the current study uses hierarchical regression to examine the effect of the independent and control variables on the dependent variable. Álvarez Gil et al (2001) suggested that this method enables the assessment of the incremental explanatory power of each variable as variables are entered into the models in consecutive steps. According to Singh et al (2015), such approach provides better insight since the effect of each predictor variable is examined after the control variables have been taken care off. This discount the control variables' effect so that the explanatory power of the other variables can be properly assessed. In the current study owner-manager demographics (control variables) were entered first, followed by firm characteristic (control variables) and then environmental management

variables of interest were added to the controls. This approach is also better at treating collinearity (Russo and Fouts 1997; González-Benito and González-Benito 2005).

The use of regression analysis which is a parametric test requires that the data being used meet important statistical assumptions (Osborne and Waters 2002). These assumptions include normality, homoscedasticity, linear relationship between dependent and independent variables and multicollinearity. Where items are measured using scales it must be at least interval or ratio scale. It is generally agreed that where these important assumptions are not met by the data then the non-parametric test must be used in the analysis. These assumptions may be validated through test statistics but larger sample data is normally assumed to automatically satisfy the assumptions and as a general rule of thumb any data from a sample ≥ 30 by the central limit theory is viewed as meeting the set assumptions (Field 2013). However, further, checks were carried out. Visual assessment was carried out with the aid of histogram and the data the points plotted in the P-P plot which also falls approximately in a straight line (see Appendix 3). These together with the skewness and kurtosis indicate that the data used in this study is normally distributed. Kline (2010) has also suggested a skewness and kurtosis threshold of 3 and 10 respectively.

According to Tabachnick and Fidell (2013), the impact of skewness and kurtosis values from normality in large samples is usually suppressed having no effect on the outcome. Also for the results of our regression analysis to be valid, the variances of the errors or the residual across all values of the independent variables must be the same. This satisfies the assumption of homoscedasticity. The opposite is heteroscedasticity which implies that the errors or residual differ across the values of the independent variables. When homoscedasticity is violated it increases heteroscedasticity. For violation of homoscedasticity assumption to present a major problem considering the level of robust nature of ordinary least squares, it must be very severe. However, Fields (2013) suggested that unequal variances (heteroscedasticity) may present a challenge to test of significance in multivariate analysis, but according to Tabachnick and Fidell (2013), a slight level of heteroscedasticity has minimal effect on significance tests. The linearity of the dependant and independent variables in a regression analysis is important because if it is not met, then the model is invalid and no need interpreting the results (Field 2013). The study checked for heteroscedasticity and non-linearity using a scatterplot of standardized residuals against standardized predicted values. The random array of dots showing even dispersion without the graph funnelling out indicates

that heteroscedasticity is not much of a concern to the study. Also, the absence of any curve(s) like pattern suggests linearity. This pattern gives an indication of a situation where homoscedasticity and linearity assumptions have been met (Field 2013, p. 348) (regression diagnostics are shown in Appendix 3). The linearity of the dependent and independent variables in the equations in the study was also checked using F-statistics which were significant at 1% level. These indicate that the dependent and independent variables in the equation were linear.

5.10.3 The Model

The estimated equation uses financial performance (FP) as the dependent variable. The equation for the study is in the form of:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \ldots + \beta_n X_n + \varepsilon_i$$

Where Y is the dependent variable; β_0 is the constant of the regression line; $\beta_{1\text{-}n}$ are the unstandardized beta values of the predictors to be estimated; $X_1 - X_n$ are the predictors, and ε_i is the residual term.

Specifically, to evaluate the specific groups of hypotheses, hierarchical models were estimated. This was done to enable the researcher to evaluate the relevance and estimate the unique (i.e. additional) effect sizes of each group of predictors after controlling for the predictors in the previous model (Pallant 2007). The model specifications were as follows:

Model 1 (controls: owner-level variables):

$$FP_i = \beta_0 + \beta_1 OMAGE_i + \beta_2 OMGEN_i + \beta_3 OMEDU_i + \beta_4 OMEXP_i + \varepsilon_{i1}$$

Model 2 (controls: firm-level variables added to Model 1):

$$FP_i = \psi_0 + \psi_1 OMAGE_i + \psi_2 OMGEN_i + \psi_3 OMEDU_i + \psi_4 OMEXP_i + \psi_5 OWNTYP_i + \psi_6 FAGE_i + \psi_7 FSIZE_i + \psi_8 INDUS_i + \varepsilon_{i2}$$

Model 3 (composite EMPs added to Model 2):

$$FP_i = \eta_0 + \eta_1 EMPs_i + \eta_2 OMAGE_i + \eta_3 OMGEN_i + \eta_4 OMEDU_i + \eta_5 OMEXP_i + \eta_6 OWNTYP_i + \eta_7 FAGE_i + \eta_8 FSIZE_i + \eta_9 INDUS_i + \varepsilon_{i3}$$

Model 4 (decomposed EMPs added to Model 2):

$$FP_i = \chi_0 + \chi_1 EE_i + \chi_2 WMC_i + \chi_3 WM_i + \chi_4 MM_i + \chi_5 POL_i + \chi_6 BD_i + \chi_7 OMAGE_i + \chi_8 OMGEN_i + \chi_9 OMEDU_i + \chi_{10} OMEXP_i + \chi_{11} OWNTYP_i + \chi_{12} FAGE_i + \chi_{13} FSIZE_i + \chi_{14} INDUS_i + \varepsilon_{i4}$$

Where:

FP = Financial performance; EMPs = Environmental Management Practices; EE = Energy Efficiency; WMC = Water Management; WM = Waste Management; MM = Material Management; POL = Pollution Management; BD = Biodiversity Management; OMAGE = Owner-Manager Age; OMGEN = Owner-Manager Gender; OMEDU = Owner-Manager Education; OMEXP = Owner-Manager Experience; OWNTYP = Ownership Type; FAGE = Firm Age; FSIZE = Firm Size; INDUS = Industry; β_{1-4} = coefficients in Model 1; ψ_{1-8} = coefficients in Model 2; η_{1-9} = coefficients in Model 3 and χ_{1-14} = coefficients in Model 4. Subscript i denotes the nth company (i = 1,... 238), β_0; ψ_0; η_0; χ_0 = Constant in Models 1; 2; 3 and 4 respectively; $\varepsilon_{i1...4}$ = Error term. The desirable properties of the error term include being normally and independently distributed, with zero mean and constant variance (Lund and Miner 1975; Baltagi, 2005; Nollet et al. 2016).

5.11 Outliers

The presence of outliers may have a significant influence on the regression analysis. To handle outliers in the study, graphical technique (i.e. scatterplot) was first employed to examine the data structure. Further, where appropriate, transformation techniques (i.e. using natural log) was employed since outliers tend to skew data (Field 2013). In addition, as part of the regression analysis, Cook's distance values and Mahalanobis distance values were estimated and accordingly examined in the light of suggested thresholds (see Appendix 3). None of the Cook's distance values was above 1.0. In fact, they ranged between .000 and .058; with a mean of .005. In this case, Field (2013) suggests that outliers may not be a concern in the study.

In case of Mahalanobis distance values, since examining the absolute values may not be appropriate (Pallant 2007), there was the need to determine the critical chi-square value, using the number of independent variables (i.e. 14; see Model 4 which constituted the least parsimonious model) as the degrees of freedom. The Mahalanobis distance values ranged

from 5.132 to 32.080; with a mean of 13.941. Using the alpha level of .001, as suggested by Tabachnick and Fidell (2013), and 14 degrees of freedom, the critical value read was 36.123 which is higher than the maximum Mahalanobis distance values obtained in the study (i.e. 32.080). This further indicates that outliers may not be a concern in the study (Pallant 2007).

5.12 Multi-Collinearity

To avoid the situation whereby two or more independent variables in the regression model may be highly correlated a multicollinearity test is carried out. Multicollinearity occurs when at least an independent variable is highly correlated with another or combination of independent variables. Multicollinearity is most commonly identified by variance inflation factor (VIF).

Table 5.3. Variance Inflation Factor (VIF) of Explanatory and Control Variables

Variable	VIF	Tolerance 1/VIF
Energy efficiency	1.918	.521
Water management	2.253	.444
Waste management	1.661	.602
Material management	2.591	.386
Pollution management	2.126	.470
Biodiversity management	1.712	.584
Ownership type	1.148	.871
Firm age	1.636	.611
Firm size	1.206	.829
Industry	1.193	.838
Owner-manager age	1.159	.856
Owner-manager gender	1.111	.900
Owner-manager education	1.319	.758
Owner-manager experience	1.530	.653

The statistical value derived from this test gives an indication of the extent of correlation between the independent variables but the bottom line criterion is debatable. A correlation above 90% gives an indication of the occurrence of multicollinearity. An examination of the correlation matrix indicated that the correlation coefficients between the explanatory variables were less than the threshold of .80 (Fields 2013). This is an indication that multicollinearity is not much of an issue in the current study. A further test of the possibility of multicollinearity was carried out using variance inflation factor (VIF). According to Field (2013), there is no problem of multicollinearity whenever the VIF is less than 10 and the tolerance coefficient is greater than .10. From the results, the highest VIF is 2.591 and the

lowest tolerance coefficient is .386. These results (see Table 5.3) further indicate that there is no unacceptable level of multicollinearity among the explanatory variables of the study.

5.13 Questionnaire Reliability and Validity Test

5.13.1 Reliability

Questionnaire reliability test is concerned with the extent of consistency of the measurement scale. It is very important in a survey that the questions being asked result in the same outcome at any time once used under the same condition. Reliability seeks to achieve this by ensuring that survey questions used elicit the same information at any time once it is used under the same condition. This makes wording and structuring of questions very important to avoid different responses for the same questions due to wording and structuring resulting in different meaning to different respondents. Reliability must also deal with internal consistency which refers to the degree to which different questions measure the same construct.

able 5.4. Scale reliability test results

Construct	Number of items	Cronbach alpha
Energy efficiency	9	.848
Water management/consumption	8	.868
Waste management	6	.903
Material management	9	.905
Pollution management	10	.885
Biodiversity management	5	.881
Financial performance	5	.904

The study uses Cronbach's alpha which is widely used to measure the internal reliability of measurement scales. The Cronbach's alpha coefficient serves as a general guide to internal reliability with values between .70 ~ 1.00 being acceptable but other researchers peg the lower acceptable limit at 0.6 (Hair et al. 2014). The Cronbach's alpha test is used to assess how well the measurement scale used in this study measures the environmental management practices of SMEs. Table 5.4 indicates that all items were above the minimum threshold of .6 (Hair et al. 2014).

5.13.2 Validity

The validity of questionnaire refers to the accuracy of the measurement scale. That is the ability to measure exactly what one is supposed to measure in a research. Validity may be measured in three forms (Cronbach and Meehl 1955).

Content validity deals with the ability of the questions to capture/reflect the subject matter of the study and make sure those important related subjects that will improve the measurement are not left out. Thus, it aims at the completeness of information. Its assessment is often regarded as subjective since it is more of the judgmental base and no objective criteria are applied. However, experience and expertise of the assessors play a major role to ensure that face validity is achieved (Mackinson et al. 2010; Zohrabi 2013). It is very qualitative in nature.

Construct validity measures the "extent to which a set of measured variables actually represent the theoretical latent construct they are designed to measure" (Hair et al. 2014, p. 543). Construct validity is concerned with how meaningful a measurement scale is when it comes to its operationalisation. Construct validity deals with how well, ideas, concepts or behaviour (construct) is translated or transformed into an operating and functioning reality (Trochim 2006). The operationalised scale should be consistent with the empirical and theoretical evidence. Two sub-categories of construct validity are convergent and discriminant validity which works together to provide sufficient evidence of construct validity. Construct validity is not sufficiently established with only one sub-category. Convergent validity seeks to establish that measures that should theoretically be related to each are observed to be related whiles discriminant validity seeks to establish that measures that should theoretically not relate to each other are observed not to be related (Trochim 2006).

Criterion validity focuses on the extent to which the questionnaire measures the construct it claims to measure as compared to predictor instrument. The researcher obtains evidence for criterion validity by comparing the measurement obtained from the study with a generally accepted standard indicator (Sim and Arnell 1993). Regression analysis is often applied when establishing criterion validity (Concurrent and predictive validity). Criterion validity focuses on prediction using the correlation coefficient rather than offering an explanation for the outcome (Thanasegaran 2009).

In this study content and construct validity test was performed. The study did not attempt to test for criterion validity since there is no standardized measurable criterion of environmental management practices variables and even in the field of SMEs, there is lack of public data on environmental management practices in most instances (Brammer et al. 2011; Hoogendoorn et al. 2014). The content validity was assessed with the help of postgraduate students, experienced lecturers and the supervisory team. The construct validity of the environmental management practices measuring scales was undertaken by exploratory factor analysis in chapter 6.

5.14 Ethical Consideration

Ethical concerns and dilemmas are part of research practice which researchers of all fields must deal with appropriately in everyday life of a researcher. Ethical issues are very important in research involving humans (directly or indirectly), animals or non-empirical research which may have significant consequences either in short or long-term (Guillemin and Gillam 2010). Researchers must ensure that they conduct their research ethically with respect for the rights and welfare of participants. There is, therefore, the need for an independent body to assess the ethical dimensions of a research to make sure that participants are free from any risk related to their participation in the research. This due process was followed in this study and clearance was received from the University Research Ethics Committee before the study started. The approval is an indication that the research does not pose any risk to the human participants.

5.15 Summary

This chapter has outlined the research philosophy, research design and approach of the study. The study relies on primary data for analysis of the research questions. In this regard, the questionnaire is the main tool for collecting data from SMEs' respondents in the various industrial sectors in the Ghanaian economy. The procedure for the development of environmental management practices indexes has been described in detail together with the analytical technique involved in the study. It also gives due consideration to ethics and has given accounts of the due process that was undertaken. Consideration of ethical issues in research is of utmost importance. Therefore, it was ensured that the study does not pose any risk to the respondents. The chapter is, therefore, a guide for achieving the set objectives of the study.

CHAPTER SIX

Results and Analysis

6.0 Introduction

The chapter presents the data and discusses the findings from the data analysis aimed at achieving the objectives of the study. The chapter presents and discusses the data relating to the nature and extent of EMPs and perceived barriers of EMPs. This is followed by multiple regression analysis which tests the hypotheses outlined in chapter four relating to the relationship between EMPs and financial performance. The rest of the chapter is presented as follows. Section 6.1 presents demographics of the respondents and the firms. This is followed by section 6.2 on the nature and extent of EMPs. Section 6.3 reports the data analysis and findings for barriers of EMPs. Section 6.6 presents and discusses the results of hypotheses tests. Finally, section 6.9 concludes the chapter.

6.1 Respondent and Firm Background

This section provides information relating to the demographics of the questionnaire respondents and their firms (see section A of the questionnaire in Appendix 1). The result from the analysis indicates that 86.6% of the respondents were owners-managers with the rest 13.4% identifying themselves as senior members of the organisation. The high owner-manager respondents are not surprising because most SMEs are owner managed and the fact that specific request was made for owner-managers to answer the questionnaire. This is very important because according to Aragón-Correa et al (2008), in SMEs all strategic decisions are made mostly by owner-manager including environmental management practices. The demographics (Table 6.1 below) of the respondents show that the sector is male (59.7%) dominated compared to female (40.3%). This is contrary to the national gender statistics where females highly out-number their male counterparts. However, this may be explained by the cultural belief that females should take care of the house while the males go to work. Majority of the respondents were within the economically active group (15-55 years) with an average experience of 6 years at the current position. The educational background indicates that majority hold junior/senior high school qualification (40.3%), followed by bachelors' degree (36.6%), master's degree (16%) and professional qualification (6.3%) with 0.8% PhD. The educational background of the respondents is appreciable which may make it relatively

easy for information dissemination on environmental management practices since the educational level is known to influence environmental management (Mir and Feitelson 2007).

Table 6.1. Respondent and Firm Background Profile

			n	%
Owner-manager age (years)	Up to 25		20	8.4
	26 to 35		68	28.6
	36 to 45		64	26.9
	46-55		53	22.3
	56+		33	13.9
Owner-manager gender	Male		142	59.7
	Female		96	40.3
Education background	Junior/Senior High School		96	40.3
	Bachelor		87	36.6
	Master's		38	16.0
	PhD		2	.8
	Others (professional qualification)		15	6.3
Firm ownership	Sole proprietorship		99	41.6
	Partnership		49	20.6
	Company		90	37.8
Firm industry	Manufacturing		107	45.0
	Service		131	55.0
	Min	Max	n	SD
Owner-manager experience (years)	1	31	5.80	4.957
Firm size: number of employees	3	64	9.50	10.734
Firm age (years of operations)	1	29	9.42	5.806

The dominant form of business was sole proprietorship (41.6%) followed by company (37.8%), and partnership (20.6%). On average, participating firms have been in operational existence for 9.42 years (SD = 5.806) indicating that they might have acquired valuable business experience and knowledge over the years. In terms of firm size, an average firm has approximately 10 employees (SD = 10.734), which indicates that the firms are small. This is supported by the results which show that 122 (51.2%) were micro firms, 83 (34.9 %) small and 33 (13.9%) medium. This reflects the national non-household establishments size

classification (GSS 2015). The industrial classification of sample firms shows that 55% were in service with remaining 45% in manufacturing.

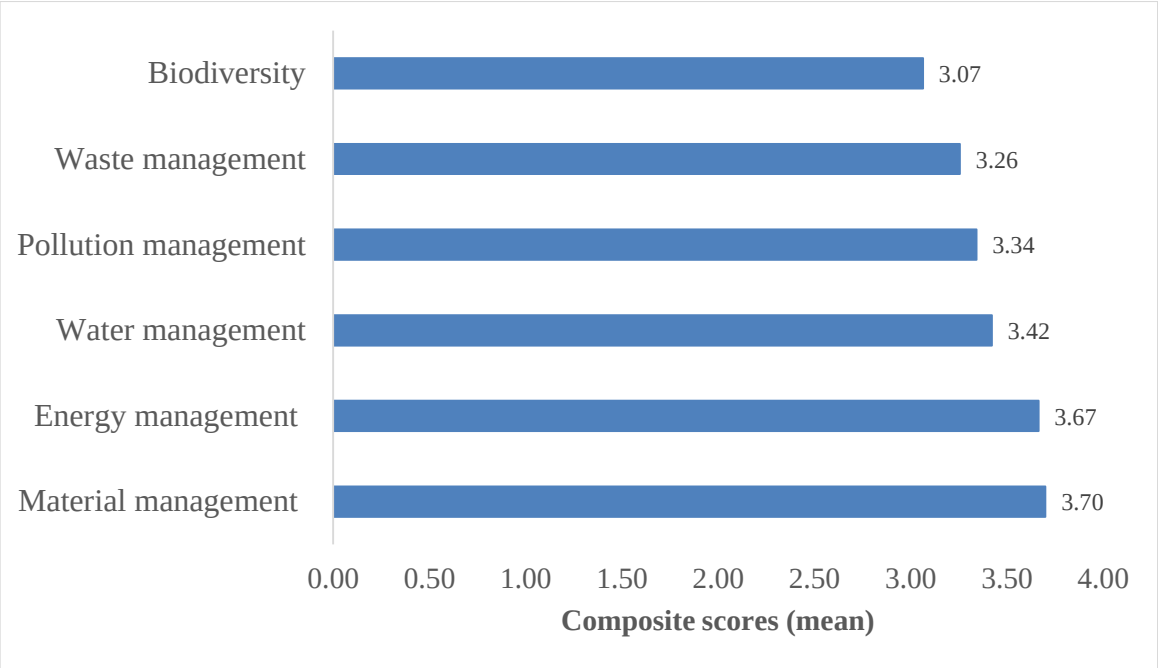
6.2 Nature and Extent of Environmental Management

This section presents the results of the data analysis about the nature and extent of EMPs among the 238 respondents' firms.

6.2.1 Result and Analysis

The analysis begins by exploring the nature and extent of environmental management practices among sampled Ghanaian SMEs. The study explores a wider range of SMEs' behaviour known to impact on the environment than most existing literature. For the ease of analysis, these wide-ranging issues have been classified into six main areas in line with the guidelines of DEFRA (2013). Trumpp et al (2015) also suggested that different environmental operational activities related to different environmental aspects and therefore, sub-dimensional categorisation is theoretically and conceptually acceptable. These were energy efficiency, water management, waste management, material management, pollution and biodiversity management. Respondents were, therefore, required to indicate their level of involvement in items assigned to each of the six main categories. The respondents indicated on a scale of 1 to 5 (1= not at all and 5= to a great extent) the nature and extent of their environmental management practices. The overall mean scores for each of the six categories (see Figure 6.1 below) were material management 3.70, energy efficiency 3.67, water management 3.42, pollution 3.34, waste management 3.26 and biodiversity management 3.07. The results indicate that sampled firms scored relatively high on material management and energy efficiency than the rest. This gives some indication of the importance attached to each of these elements in the operations of the respondents' businesses. Further analysis of the mean score of individual items within each of the six categories was undertaken.

Figure 6.1. Environmental Management Practices Scores



6.2.1.1 Energy Efficiency

From table 6.2 below, energy efficiency consists of nine items measuring respondents' practices relating to energy conservation. The results from mean scores indicate that the highest ranked item in energy efficiency category was turning off lights and equipment not in use, followed by proper maintenance and replacement of old equipment. The last two energy efficiency practices were the use of motion detectors and solar lights. The mean scores of 4.01 and 4.00 respectively for the two topmost ranked items show how strongly such measures are being implemented by Ghanaian SMEs and its importance to them. This finding is in line with a study carried out by Battisti and Perry (2011) and Raj and Seetharaman (2013). The low ranking of use of motion detectors (8^{th}) and solar lights (9^{th}) among SMEs' respondents indicate they face a challenge in this respect. The result may be explained by the fact that good house-keeping is seen as good business practice with the ability to lower cost and attract customers which should be everyone' responsibility at the workplace. This is evidenced by above average mean score for employee education and training in energy efficiency (3.84). The relatively low-ranking position for motion detectors signifies the low level of technology adoption/penetration in Ghana and among the SMEs' respondents. The high mean scores for most of the items which are basic practices in energy efficiency

supports the claim that opportunities exist for both large firms and SMEs to realise cost savings from energy use since it requires little cost, effort and expertise (Baylis et al. 1998; Ayub et al. 2009).

The results from the one sample t-test for the nine energy efficiency practices variables indicate that all the mean scores were statistically different from the mid-point (3). The above mid-point mean scores for all the energy efficiency measures suggest that these energy efficiency practices are being implemented to an appreciable level by respondents.

Table 6.2. Energy Efficiency

Scale: 1=not at all; 5=to a great extent	Min	Max	Mean	Standard Deviation (SD)	*Rank*[1]	t (test value=3.00)
1. Energy efficient lights/bulbs	1	5	4.00	1.188	*2nd*	12.822***
2. Employee education and training	1	5	3.84	1.252	*4th*	10.163***
3. Motion detectors	1	5	3.35	1.516	*8th*	3.437***
4. Proper maintenance and replacement of old equipment	1	5	3.97	1.246	*3rd*	11.829**
5. Use of natural light	1	5	3.26	1.550	*9th*	2.589**
6. Turning off lights and equipment not in use	1	5	4.01	1.163	*1st*	13.070***
7. Energy champion (someone in charge of energy issues)	1	5	3.44	1.423	*7th*	4.687***
8. Cleaning light fittings	1	5	3.56	1.428	*6th*	5.944***
9. Energy efficient procurement	1	5	3.56	1.372	*5th*	5.981***
COMPOSITE SCORE	1	5	3.67	.891		11.477**

Notes: [1]based on mean scores and then SD; ** $p < .01$; *** $p < .001$

6.2.1.2 Water Management

In water management (see Table 6.3 below) the top two environmental management practices observed were closing taps, not in use and eliminating unnecessary water usage. The use of technological devices to check water flow and recycling of wastewater for other use ranked as last two (7^{th} and 8^{th}) in that order. These last items again give an indication of the technological deficit when it comes to water management among Ghanaian SMEs (Mensah

2006). The low ranking of recycling of water may be linked to the non-scarcity of water resources and the previous low cost of water in Ghana which in a way undermined its usage. It is encouraging to note that Ghanaian SMEs are giving some level of attention to the training of employees on water management. This is because water like any other resources is not unlimited and therefore failure to manage it properly may lead to shortage which will have a negative effect on business operations. The existence of water efficiency practices across all 8 items in the water category is similar to the finding by Molina-Azorín et al (2009) that water management practices were common among Spanish hotels' respondents but the extent of the practices differs sharply. From the ranking of the items on water management practices, respondents attach importance to both technical water savings practice (items 1-5 and 8) and organisational water saving practices (items 6 and 7) (Álvarez Gil et al. 2001).

The results from the t-test except for use of technology to check water flow and recycling of wastewater indicate that all the items were positive and statistically significant from the mid-point. This shows that respondents' water management activities are geared towards these measures which have a significant effect on their water management practices. The negative and significant result for recycling of wastewater for other use shows that currently, it does not constitute a major measure for managing water resources among the respondents.

Table 6.3. Water Management

Scale: 1=not at all; 5=to a great extent	Min	Max	Mean	SD	*Rank*[1]	t (test value=3.00)
1. Conduct water walk rounds	1	5	3.39	1.372	*6th*	4.316***
2. Stop leaks and spills	1	5	3.75	1.453	*3rd*	7.949***
3. Eliminate unnecessary water usage	1	5	3.82	1.339	*2nd*	9.313***
4. Use technological devices to check water flow	1	5	3.07	1.552	*7th*	.681
5. Water taps not in use are always well closed	1	5	3.87	1.363	*1st*	9.685***
6. Staff training in water management	1	5	3.55	1.356	*4th*	6.160***
7. Metering	1	5	3.40	1.520	*5th*	3.991***
8. Recycling of wastewater for other uses	1	5	2.54	1.712	*8th*	-4.107***
COMPOSITE SCORE	1	5	3.42	1.027		6.344***

Notes: [1]based on mean scores & then SD; *** $p < .001$

6.2.1.3 Waste Management

Making staff aware of good waste handling procedures, proper waste disposal and purchase of materials with recyclable future all have mean scored above mid-point and ranked 1st, 2nd and 3rd respectively by their mean scores (see Table 6.4 below) in relation to waste management. However, waste recycling and waste separation at source (into different kinds) ranked 5th and 6th in that order as the last two items in the category. The low level of recycling culture among respondents may be contributing to the low waste separation at source. The low waste separation at source is consistent with the finding of Erdogan and Tosun (2009) that such activities were almost non-existence among Turkish SMEs operating in the accommodation sector.

The concentration of effort on the good handling of waste and proper waste disposal underscores the fact that apart from its environmental advantages also saves costs and reputational damage. The below an average mean score of waste separation (mean = 2.99) calls into question how properly waste is disposed off. This is because different types of waste have different impact on the environment and to minimise the impact its disposal is of utmost importance. For example, disposal strategy for paper waste is different from that of rubber waste since their decomposition varies widely. The above mean score for usage of environmentally friendly packing and staff awareness of good waste handling procedure is also encouraging since it will aid proper disposal and further lessen environmental impact. These practices are consistent with those found by Cassells and Lewis (2011), Brammer et al (2012) and Williams and Schaefer (2013) in their research on SMEs' environmental practices. Even though usage of environmentally friendly packing and proper waste disposal were important to respondents, the poor position of waste recycling is contrary to prior research which found waste recycling among the topmost environmental practices of firms (NetRegs 2002; Montabon et al 2007; Hamann et al. 2017). This result may be explained by the fact that there is inadequate recycling firms in Ghana where respondents can get their recyclable waste worked on and save the capital investment required in this activity considering the resource constraints faced by SMEs especially in the Ghanaian economic environment. This finding is similar to the situation faced by SMEs operating in the Goreme historical national park in Turkey (Erdogan and Tosun 2009). Again, it is in line with Sroufe (2003) study of manufacturing firms in the USA which found that waste recycling was given very little attention by respondents. To this end, Baylis et al (1998) contend that waste

minimisation is a fruitless venture considering the low annual savings of 0.27% to 1% of turnover, hence SMEs with their limited resources and survival struggles should not engage in waste minimisation even if resources required are minimal. It must also be stated that there is a large ready market for waste within the SMEs' operating environment in Ghana which makes it less attractive for firms to incur any capital expenditure on recycling.

The t-test results in Table 6.4 show that there are significant differences between the mean scores (usage of environmentally friendly packaging; proper waste disposal, the staff made aware of good waste handling procedures and purchase materials with recyclable future) and the midpoint. This gives an indication that SMEs' waste management practices are duly influenced by these measures to a large extent. On the other hand, the mean score of waste separation and waste recycling are not significantly different from the mid-point. The below mid-point mean score for waste recycling and waste separation at source suggest that respondents do not perceive it to influence their waste management practices and that the firms' efforts in this area are quite low.

Table 6.4. Waste Management

Scale: 1=not at all; 5=to a great extent	Min	Max	Mean	SD	*Rank*[1]	t (test value=3.00)
1. Environmentally friendly (biodegradable) packaging	1	5	3.21	1.343	*4th*	2.419*
2. Waste recycling	1	5	3.01	1.367	*5th*	.143
3. Waste separation at source (into different kinds)	1	5	2.99	1.441	*6th*	-.090
4. Proper waste disposal (professionally)	1	5	3.49	1.428	*2nd*	5.322***
5. Staff are made aware of good waste handling procedures	1	5	3.57	1.420	*1st*	6.142***
6. Purchase materials with recyclable future	1	5	3.27	1.312	*3rd*	3.119**
COMPOSITE SCORE	1	5	3.26	1.137		3.486***

Notes: [1]based on mean scores & then SD; *p < .05; **p < .01; ***p < .001

6.2.1.4 Material Management

Material management had 9 items (see Table 6.5) and the first three by mean scores were material quality followed by checking material for dents and damages before acceptance and avoidance of overstock of materials respectively.

Table 6.5. Material Management

Scale: 1=not at all; 5=to a great extent	Min	Max	Mean	SD	*Rank*[1]	t (test value=3.00)
1. Environmentally friendly (biodegradable) materials	1	5	3.25	1.471	*9th*	2.633**
2. Use of alternate material with lesser waste	1	5	3.26	1.396	*8th*	2.840**
3. Conducive storage of all materials	1	5	3.83	1.326	*4th*	9.527***
4. Stock taking	1	5	3.77	1.415	*6th*	8.269***
5. Quality material	1	5	3.91	1.355	*1st*	10.270***
6. Professional handling of material	1	5	3.79	1.312	*5th*	9.139***
7. Avoidance of overstocking	1	5	3.86	1.373	*3rd*	9.536***
8. Check material for damages /dents before acceptance	1	5	3.91	1.372	*2nd*	10.094***
9. Remind staff to follow good practices by putting up posters	1	5	3.68	1.541	*7th*	6.747***
COMPOSITE SCORE	1	5	3.70	1.036		10.420

Notes: [1]based on mean scores & then SD; ** $p < .01$; *** $p < .001$

Also, conducive storage of materials and professional handling of material were noted by respondents as being very important to their business operations. The responses show the importance attached to material quality by responding businesses since it impacts on the amount of quantity of material consumed per product, quality of product and the firm's reputation. The combined effect of the top seven measures (material quality, check material for dents and damages, stock taking, professional handling of material, conducive storage of all materials, avoidance of overstocking and remind staff to follow good practices by putting up posters) on material consumption in any organisation is significant. These findings are consistent with those found in studies by Rathje and Murphy (2001), Côté et al (2006) and García et al (2008). The bottom two was the use of alternative material with lesser waste and

environmentally friendly (biodegradable) materials. The higher ranking of avoidance of overstocking may be linked to the limited financial resources of SMEs in general and particularly Ghanaian SMEs due to reluctance of formal banking institutions to grant them credit which affects their operating capacities and limit their buying basically to what can be sold/used within a relatively very short period hence avoiding massive expirations.

The results from the one sample t-test for the material management practices variables indicate that the mean scores of all the measures were statistically significant and different from the midpoint (3). The above mid-point mean scores for these measures suggest that respondents appreciate their positive impact on material management. This suggests that there is evidence as to the influence of these measures on material management.

6.2.1.5 Pollution Management

Pollution management practices are shown in Table 6.6 below. The results indicate that the level of majority of environmental measures being initiated can be classified in the range of average to moderate for pollution. There is significant involvement of respondents in these activities to mitigate their firms' pollution impact. The two most popular items in terms of respondents' efforts at reducing pollution were avoiding leakage from production equipment and avoiding open burning of biomass/waste occupying the 1st and 2nd positions respectively. The high level of priority given to these two items may be attributed to their far-reaching impact on general operations and health risk of employees. Fuel and emission efficiency vehicles/equipment was 9th followed by emission reduction technologies on existing vehicles/equipment as the last item. Also, emission reduction technologies seem to receive lesser attention from respondents on their pollution management measures. This is another evidence of the low level of technology penetration among Ghanaian SMEs. This shows that respondents' level of engagement with issues technical in nature is relatively low which may be due to lack of adequate information and appreciation of their effect on cost and environment. Overall, the practices undertaken by the respondents are consistent with those found by studies in Europe (Revell et al. 2010; Koleva 2014; Evangelista 2014).

The t-test results for seven pollution control measures (Avoiding leakage from production equipment, Avoid open burning of biomass/waste, Improved route planning for visits and deliveries, Use of local materials, Encourage use of mass transport by staff/tourist, Use of environmentally friendly fuel and Substituting toxic materials with non-toxic materials)

indicate that the mean scores are statistically significant and different from the mid-point of the scale. These measures are, therefore, considered to have a significant influence on pollution control by respondents. Similarly, the following measures (Taking advantage of e-commerce opportunities, Fuel and emission efficiency vehicles/equipment and emission reduction technologies on existing vehicles/equipment) have mean scores which are not significantly different from the mid-point of the scale. This indicates that these measures even though respondents are actively involved in it there are no evidence to suggest that they influence pollution control significantly.

Table 6.6. Pollution Management

Scale: 1=not at all; 5=to a great extent	Min	Max	Mean	SD	*Rank*[1]	t (test value=3.00)
1. Avoid open burning of biomass/waste	1	5	3.62	1.519	*2nd*	6.181***
2. Substituting toxic materials with non-toxic materials	1	5	3.21	1.487	*7th*	2.172*
3. Avoid leakage from equipment	1	5	3.81	1.432	*1st*	8.592***
4. Use of local materials	1	5	3.42	1.392	*4th*	4.462***
5. Taking advantage of e-commerce opportunities	1	5	3.16	1.503	*8th*	1.590
6. Improved route planning for visits and deliveries	1	5	3.48	1.455	*3rd*	4.937***
7. Encourage use of mass transport by staff/tourist	1	5	3.28	1.516	*5th*	2.795**
8. Use of environmentally friendly fuel	1	5	3.23	1.497	*6th*	2.291*
9. Emission reduction technologies on existing vehicles/equipment	1	5	3.02	1.483	*10th*	.225
10. Fuel and emission efficiency vehicles/equipment	1	5	3.10	1.461	*9th*	.980
COMPOSITE SCORE	1	5	3.34	1.036		5.085***

Notes: [1]based on mean scores & then SD; * p < .05; ** p < .01; *** p < .001

6.2.1.6 Biodiversity Management

The overall mean score of biodiversity management of 3.07 gives some indication of the lesser level of consideration given to this element of environmental management by respondents. The item ranked highly by respondents regarding the mean score was the restoration of contaminated areas (see Table 6.7 below). The high score of the restoration of contaminated areas among all the measures for biodiversity management may be due to the visible nature of its impact to respondents, customers and regulatory authorities as compared to the other items. Winn and Pogutz (2013) revealed that restoration of contaminated areas is one key ecosystem activity firms usually undertake. They suggested that protection of the ecosystem by businesses may be strategic since it will ensure a continuous supply of goods and services in the required quantity and quality by the ecosystem and reduce both reputational and regulatory risks for the business. The relatively low participation by the respondents in the other biodiversity activities is in line with Overbeek et al (2013) finding that fewer firms get involved in biodiversity activities and their actions are more often reactive than proactive. They concluded that the biodiversity concept is relatively new and not easy to grasp for businesses due to its intangibility and lack of single indicator. The lack of knowledge and consideration of biodiversity in business decision making processes was clear as only 27% of 1200 CEOs expressed some level of concern about the risk of biodiversity loss to their businesses (Price Waterhouse Coopers 2010). This position has also been supported by The Economics of Ecosystem and Biodiversity report (2010).

The result from the t-test indicates that except for restoration of contaminated areas all the other biodiversity measures have mean scores which were different from the mid-point of the scale but not statistically significant. Lack of statistical significance indicates that there is no evidence about its level of influence on respondents' biodiversity management. The below mid-point mean values for sponsorship for nature organisations suggest that respondents perceive these measures as not influencing their biodiversity management.

Table 6.7. Biodiversity Management

Scale: 1=not at all; 5=to a great extent	Min	Max	Mean	SD	*Rank*[1]	t (test value=3.00)
1. Treatment of wastewater to avoid the impact of effluents on wetlands	1	5	3.03	1.622	*4th*	.246
2. Soil and vegetation protection	1	5	3.05	1.482	*3rd*	.493
3. Restoration of contaminated areas	1	5	3.24	1.511	*1st*	2.421*
4. Sponsorship for nature organisations	1	5	2.90	1.564	*5th*	-.978
5. Providing staff/guests with ecosystem services information	1	5	3.12	1.564	*2nd*	1.178
COMPOSITE SCORE	1	5	3.07	1.277		.778

Notes: [1]based on mean scores & then SD; *p < .05

6.2.2 Discussion of Results

The nature of the current environmental management practices of Ghanaian SMEs can be described as "common sense cost cutting" resources conservation (Kasim 2009) eco-friendly practices which in a way serves as the first step towards advance environmental management. This is because within each of the six categories basic common sense practices tend to be of priority (e.g. Maintenance of machine, turning off lights and equipment, checking material dents and damages etc). This indicates that in the light of current literature the level of practices adopted by respondents involves a reduction in resources consumption and simple changes in coordination, routines and operations with more focus on short-term economic benefit(s) (Aragón-Correa et al. 2008; Molina-Azorín et al. 2009; Parker et al. 2009). This is in line with the minimalistic view of SME environmental practices which also provides support for the theory of the firm position when it comes to EMPs. Thus, SMEs are more willing to engage in environmental activities which are likely to result in immediate costs minimisation and enhance profit/performance of the business. Again activities such as avoidance of open burning of waste and restoration of contaminated areas may help avoid image and reputational damages (Konar and Cohen 2001; Huang 2013; Jo et al. 2014) and pressure from stakeholders such as immediate surrounding communities which may bring into question the firm's social licence (legitimacy) (He et al. 2014) and hence survival. The dual benefits of such practices make it important irrespective of the motive for its pursuance since both the business and the environment are the gainers.

The evidence from the above findings indicates that Ghanaian SMEs' energy efficiency practice is above average and the specific measures adopted in this area vary. The high participation in the use of energy efficient lights/bulbs and turning off lights and equipment not in use may be attributed to the implementation of legislation (Energy Efficiency Standards and Labelling Regulations, 2005 (L.I 1815), Energy Efficiency Regulations, 2008 (L.I 1932) which ban the importation and use of non-energy efficient bulbs and citizen education on the need to conserve energy to save the Akosobo dam. These measures coupled with the fact that energy management has a profound impact on the business performance and environment may account for the high energy efficiency practices among sample firms. The low usage of motion detectors attests to the low level of technological penetration and its low usage among Ghanaian SMEs (Mensah 2006). A lack of knowledge about its existence and costs may partly explain this outcome. Overall the energy efficiency practices of Ghanaian SMEs coincide with those found by Cassells and Lewis (2011) when they investigated the environmental management practices of SMEs in New Zealand. This suggests that there are similarities in energy practices of Ghanaian SMEs and their counterparts in the developed world. The role of energy legislation and enforcement by the Ghana Energy Commission especially on the importation of non-efficient energy bulbs and equipment has contributed to some extent in achieving these results.

The study also found that the most common water management practices among Ghanaian SMEs are closing taps and avoiding leaks. These are common house-keeping practices which save costs, water and make the working environment safe. Ghanaian SMEs even though have varied measures aimed at addressing water usage, the level of recycling wastewater for re-usage and application of technology in water management is very low. This is an indication that to some extent the abundance of water resources seems to lessen the level of importance attached to water in general (Fernández-Vine et al. 2010) even though low technological knowledge may also be a challenge. The adoption of energy and water conservation practices by respondents' firms may be seen more as a managerial strategy to control overhead costs of operations. These measures save costs since it reduces the amount of utility bills paid by the business which helps the firm to remain profitable and competitive. This in a way supports the argument that when it comes to SMEs, business performance rates highly on their agenda than environmental management. Kasim (2009) in his study of SMEs' environmental management in Malaysia pointed out that in practice SMEs' energy and water management is

more of a business survival strategy. This may also be supported by the recent hike in the prices of energy and water in Ghana by PURC between 59.2% and 89.8% respectively (PURC, 2015). This has made the average Ghanaian business conscious of the utility consumption and has led to 300 megawatts savings in energy which implies a reduction in cost and emission of greenhouse gas (Daily Graphic 2016).

The evidence from the study suggests that waste management in its entirety is not high on the agenda of Ghanaian SMEs considering the mean score for most measures under this category. Although, respondents' staff are educated on good waste handling and disposal to some extent, with waste separation being low one wonders about the effectiveness of these activities to the environment. One reason that may explain this is the poor national culture on waste management which has now led to the declaration of monthly national sanitation day to manage the country's waste problems. With no pragmatic waste management attitude, individuals including businesses also become lax in waste management (free for all). The poor waste separation at source among Ghanaian SMEs affects resources conservation and may further pollute the environment due to disposal difficulties. It reflects the general situation in Ghana where waste disposed are not separated to enable easy recycling for a useful purpose. Waste once generated can be segregated into different components, recycled into resources for re-usage or sale to other parties which will command a higher price and help reduce the need for virgin materials. The poor waste separation among Ghanaian SMEs may also be due to the low level of recycling activities as well as the practice whereby "waste buyers" are allowed to do their own sorting of "dumped" waste at designated areas within the firm (Oduro-Kwarteng et al. 2016). The behaviour of Ghanaian SMEs with regards to waste recycling practices is contrary to those found by McKavier and Gadenne (2005) in the Australia and Cassell and Lewis (2011) among New Zealand SMEs where recycling was high on SMEs' agenda. The weak waste separation and recycling among sample firms suggest that the regulatory framework on waste management as enshrined in the EPA Act 490, Local Government Act, Act 1993 and the District Assemblies' by-laws are not being adhered to and enforced by the authorities.

The findings from this study show that the level of involvement of Ghanaian SMEs in material management is above average but below what can be described as moderate. The result is very encouraging given that majority of the measures being implemented obtained above average score by respondents. Placing high emphasis on material quality, storage,

handling, stocking and conditions at acceptance can reduce the amount of waste that may be generated thereby reducing costs (material cost, waste handling and disposal, energy consumption etc) (Rooney 1993) and quantity of virgin materials hence lesser environmental impact (USA Environmental Protection Agency 2009). These measures may also prevent the locking up of funds and ensure that working capital challenges which are recognised as one of the major inhibitors of Ghanaian SMEs' development are minimised (Abor and Biekpe 2006a; Ahinful 2012). Again, such practices are considered crucial for Ghanaian SMEs' survival considering the financial constraints and lower profit margins of their operations. The responses obtained in this area underscore the central role materials play in various firms' operations. This supports Côté et al (2006) call on SMEs to incorporate material efficiency as a top priority in daily operations since it will enhance economic and environmental performance and help avoid regulatory sanctions at the same time.

Pollution in all forms has health and environmental consequences and its control is very important. The results from the study indicate that Ghanaian SMEs' performance when it comes to pollution (emission) control was slightly above average indicating that SMEs are taking steps to reduce their environmental pollution which is recommendable. The findings are in line with those found in Italy among SMEs by Evangelista (2014). Observation of the pattern of practices within this area shows that relative importance is attached to measures with an immediate impact on firm performance such as leakage avoidance, avoidance of open burning and improved route planning for visits and deliveries which give some indication that pollution management among Ghanaian SMEs is more inclined to the internal benefit (profit) of the firm. There is a higher level of efforts attached to practices with much impact on the daily operations of the firm (Santos 2011). Relating to the pollution performance is biodiversity management which also scored relatively poorly among Ghanaian SME respondents. There seems to be not much attention focusing on mitigating biodiversity impact apart from measures on the restoration of contaminated areas. The result is not so surprising given the low national attention on biodiversity because of developmental agenda being underpinned by natural resources excessive exploitation. The low importance of biodiversity management has resulted in the constant discharge of untreated wastewater from industries into water bodies causing some rivers and lagoons in Ghana dead.

Overall the extent of EMPs among Ghanaian SMEs is below what can be termed as moderate indicating the generally average level of such practices. This is, however, not surprising

considering the environmental history of the Nation. Like most developing countries the art of balancing economic development with environmental protection has become a challenge which is further worsened by high poverty levels lowering demand for environmental quality by stakeholders such as customers (Everett et al. 2010). In spite of this, the result is encouraging since it shows that SMEs are involved in activities with environmental benefits. Two events in Ghana which might have contributed to the promising outlook are the launching of the CSR charter and the institution of the CSR awards for SMEs all by the private sector. These two events help create awareness among the SME community about the need to manage your environmental impact as part of CSR. To achieve moderate to great environmental improvement by SMEs call for the strengthening of regulatory intervention in addition, since maximum environmental engagement and improvement by SMEs requires a holistic mixture of interventions (Parker et al. 2009).

6.3 Environmental Management Barriers

This section presents the results of the data analysis on perceived barriers of EMPs among respondents' firms.

6.3.1 Result and Analysis

After exploring the nature and extent of various environmental initiatives undertaken by respondents' firms, the study also identified the perceived factors hindering SMEs from greater participation in environmental uptake. Consistent with prior literature, the barrier identification was focused in six main areas: lack of knowledge and ownership attitude, regulatory constraints, lack of support services, limited resources, lack of stakeholders' pressure and lack of formal education on environment (McKeiver and Gadenne 2005; Mir and Feitelson 2007; Walker et al. 2008; Gadenne et al. 2009; Daddi et al. 2010; Wilson et al. 2011; Ikediashi et al. 2012). The results from Table 6.8 below indicates that except for lack of knowledge and ownership attitude, respondents somehow identified limited resources (3.29), lack of support services (3.24), lack of formal environmental education (3.18), lack of stakeholders' pressure (3.14) and regulatory constraints (3.01) as constituting a challenge to their environmental initiatives to some extent. SMEs' views on the limitation of resources are closely related (SD =1.286). This suggests that SMEs' respondents generally view limited resources as affecting their environmental management practices but their views vary widely when it comes to the effect of lack of knowledge and ownership attitude (SD =1.462).

However, the general results give an indication of the potential threat that these barriers may pose to environmental management by SMEs. Having identified the barriers SMEs face, further analysis was undertaken into the specific issues that the literature has identified as contributory factors to each broad barrier identified.

Table 6.8. Barriers of Environmental Management Practices (overall)

Barriers	Min	Max	Mean	SD
1. Lack of knowledge and ownership attitude	1	5	2.50	1.462
2. Regulatory constraints	1	5	3.01	1.326
3. Lack of support services	1	5	3.24	1.364
4. Limitation of resources	1	5	3.29	1.286
5. Lack of stakeholders' pressure	1	5	3.14	1.321
6. Lack of formal environmental education	1	5	3.18	1.361

Notes: Scale: 1=strongly disagree; 2=disagree; 3=neither agree nor disagree; 4=agree; 5=strongly agree

6.3.1.1 Knowledge and Attitude

Lack of knowledge and owner's attitude has been identified as environmental management barrier by prior studies (NetRegs 2002). However, from the results in Table 6.8 respondents did identify this as having the least effect on their environmental uptake among all the barrier indicators. Examining the various components of this barrier (see Table 6.9), it is interesting to note that contrary to prior findings (Revell et al. 2010) about 52% of respondents believed that the impact of their firms' operational activities on the environment is not insignificant. Similarly, majority of respondents (56.3%) admitted that their firms were committed to tackling their environmental impact. These findings are contrary to the research results of The European Network of Ecodesign Centres (2013) and Marin et al (2014). Even though this is not overwhelming majority and there is still a lot of work to be done it is a positive indication that some changes are taking place in the mindset of business operators. However, only 28% of respondents rejected the statement that "We are more concern about competition and profitability than management of the environmental impact of the firm's activities" with 48% affirming their belief that their environmental management is beneficial to their business. These give some indication of more than half of the respondents in each case being sceptical about the likely benefits of environmental management to their business. This confirms the

finding of Thornton et al (2009) that SMEs perceive environmental management to be costly without significant benefits. This position confirms research findings that SMEs believe that environmental management are costly without commensurate rewards (del Pino and Perera 2013). The scepticism of respondents has reflected in their low agreement with the statement that management/ownership attitude influences investment in environmental management practices (agreement rate of 45%).

These three statements together give a clear indication about attitudinal challenges regarding investment of firm resources in environmental upkeep. Reconciling this with the first two barrier statements above give some signals that respondents are quick to express concern about their firms' environmental impact but not the resource commitment that is required to go with it. This was the conclusion arrived by Kasim and Ismail (2012) when they asserted that management attitude towards investment and implementation of environmental practices did not much their claimed level of concern and knowledge about the environment. Knowledge and attitude are known to influence each other hence the knowledge components were also examined. The level of knowledge of respondents is likely to influence their attitude towards environmental uptake (Schaper 2002). However, only 49% of respondents affirmed that they have high level of knowledge about the environmental impact of their firm's activities. This is also not helped by about 52% of the respondents who have not attended any environmental workshop or seminars. Environmental workshop and seminars are known mechanisms that can improve the information deficit on the issue.

Other results related to knowledge were "*we lack knowledge on how to manage the environmental impact of the firm's activities"* and "*We lack knowledge on how to incorporate environmental management practices in our business plan"* which recorded rejection rate of 44.6% and 46.1% respectively. Incorporating environmental management into the firms' business plan is seen strategically as the first step of real commitment to tackling a problem since lack of planning is a major contributor to failure. The low incorporation of environmental management practices into business plans is likely to result in non-implementation and hence non-management of the environmental impact of operations. Moors et al (2005) confirmed this when they found lack of clear strategic long-term plan and absence capacities for environmental management as organisational and cultural factors which inhibit innovations in cleaner production.

Table 6.9. Lack of Knowledge and Ownership Attitude

Items	SD	D	SD&D	NAD	A	SA	A&SA
	%	%	%	%	%	%	%
1. We belief that our environmental impact is insignificant	26.6	25.3	51.9	16.2	16.6	15.3	31.9
2. The firm is committed to tackle its environmental impact	12.2	10.5	22.7	20.7	30.2	26.1	56.3
3. The level of knowledge about environmental impact of the firm's activities is very high	10.5	17.5	28	23.6	24.9	23.6	48.5
4. We believe that our environmental management is beneficial to our business	11.4	19.3	30.7	21.9	21.5	25.9	47.4
5. Management/ownership attitude influences investment in environmental management practices	8.7	17.0	25.7	29.3	26.6	18.3	44.9
6. We have attended workshops and seminars on environmental management practices to update our knowledge	29.6	22.6	52.2	20.0	15.2	12.6	27.8
7. We lack knowledge on how to incorporate environmental management practices in our business plan	24.7	19.9	44.6	28.1	16.9	10.4	27.3
8. We lack knowledge on how to manage the environmental impact of the firm's activities.	22.8	23.3	46.1	26.7	19.4	7.8	27.2
9. We are more concern about competition and profitability than management of the environmental impact of the firm's activities	16.8	11.2	28	25.4	28.9	17.7	46.6

Note: SD=strongly disagree, D=disagree, NAD=neither agree nor disagree, A=agree, SA=strongly agree, A & SA= agree or strongly agree

6.3.1.2 Regulatory Constraints

Sample firms do not seem convinced that environmental regulation constitutes a barrier to their environmental management. However, probing the issue further revealed some interesting phenomena. All sample firms involved in this study by the EPA Act 490 and Environmental Assessment Regulations 1999 (L.I.1652) are subject to either incident base regulation (duty of care) or/and permit base regulation (Baylis et al. 1998). The study, therefore, asked respondents if there are regulations affecting their activities. The results from

Table 6.10 below show that only 72.7% of respondents affirmed the existence of regulations affecting their activities. The remaining 27.3% stated that there were no environmental regulations on their activities. This indicates the need for regulatory authorities to intensify their educational effort to increase the level of awareness of environmental responsibilities of all manufacturing and service firms. One reason that may explain this result is the fact that since environmental regulation in Ghana is at its infantile stage just like environmental management, regulatory authorities' effort and attention are primarily focused on large companies due to their high visibility and perception of creating more pollution. This might have created a low level of awareness of environmental regulations among the SMEs. Among the 72.7%, respondents who answered in the affirmative, 74% are familiar with the specific regulations on their activities. The remaining 26% are not familiar with applicable environmental regulations. This is not surprising since it is well noted that most SMEs do not have designated person or department for environmental issues. On the complexity of the existing regulations, 52.6% of respondents indicated that in their opinion the environmental regulations were complex. Also among the respondents affirming regulations on their activities, 60.7% believe that weak enforcement of environmental regulations has resulted in poor compliance by SMEs. However, only 47% of respondents are of the view that regulations encourage environmental management practices (de Oliveira and Jabbour 2017). Again, only 32.9% of respondents are not in agreement that the root cause of environmental uptake is environmental behavioural change and not regulation. This offers support for the position held by Dulipovici (2001) and Ezeah and Roberts (2012) that behavioural change through education and awareness hold the key to significant change in environmental behaviour than regulations.

Table 6.10. Regulatory Constraints

		n	%
1. There are regulations on environment which affect the firm's activities	Yes	173	72.7
	No	65	27.3
2. Management is familiar with environmental regulations applicable to our operations	Yes	128	74.0
	No	45	26.0
3. The environmental regulations are too complex	Yes	91	52.6
	No	82	47.4
4. Weak enforcement of environmental regulations by authorities has resulted in poor SMEs' compliance	Yes	105	60.7
	No	68	39.3

6.3.1.3 Support Services

Supporting institutions are supposed to help bridge the knowledge gap of businesses on environmental management by providing them with relevant and up to date environmental information (Tilley 2000). The results from the respondents indicate that only 40.3% of SMEs' respondents received environmental support services. This indicates that the majority may not have received any environmental support services. State institutions provided only 35.4% of respondents with environmental information. Aside from providing services to SMEs, accessibility of information by clients also plays a crucial role in the support services. The responses show that only 31.3% of respondents were of the view that information accessibility from supporting institutions was not a challenge. The majority (52.1%) of those who received the services acknowledged that the service providers were knowledgeable on environmental issues to some extent in the field (Table 6.11 below). This finding does not support the research finding of Jabbour and Puppim-de-Oliveira (2012) that external supporting institutions helping SMEs lack relevant environmental management knowledge. Also, majority of survey respondents (54.2%) were not impressed with the level of attention given to SMEs' environmental management activities by supporting state intuitions. This in a way corroborates the finding that lesser attention has been given by regulatory authorities on enforcement of SMEs' environmental compliance (del Broi and Juntera 2003; Kasim and Ismail 2012; Seroka-stolka and Jelonek 2013).

Table 6.11. Support Services

	SD	D	SD&D	NAD	A	SA	A&SA
	%	%	%	%	%	%	%
1. Responsible state institutions provide us with relevant environment information	26.0	20.8	46.8	17.8	22.9	12.5	35.4
2. Environmental information is easily accessible from support institutions	22.7	27.1	49.8	18.9	19.8	11.5	31.3
3. Supporting institutions are very knowledgeable on environmental issues	21.9	11.5	33.4	14.6	29.2	22.9	52.1
4. Overall, less attention has been paid to SMEs environmental management activities by responsible state institutions	13.5	16.5	30	15.6	25	29.2	54.2

Note: n = 96; 1=strongly disagree, 2=disagree, 3=neither agree nor disagree, 4=agree, 5=strongly agree

6.3.1.4 Resources Limitation

SMEs are noted to lack the needed resources such as finance, human and time to implement any meaningful environmental management initiatives. Hillary (2004) noted that cost, time and expertise are some of the known resources militating against environmental uptake by SMEs. SMEs tend to perceive environmental investment as a drain on their already limited resources and since majority tend to rely on short-term funding any financially related activity is viewed critically. The result of the current study confirms the above position of SMEs with an overall mean score of 3.29 assigned to the limitation of resources as a barrier to environmental management. This is the highest overall mean score for all the barriers examined. This indicates the extent to which respondents perceive it as a source of environmental management barrier. This result confirms Aiyub et al (2009) finding that lack of resources constitutes a problem in SMEs.

Decomposing the limitation of resources into financial, human and time (see Table 6.12a below) consistent with the literature, respondents were asked to rate the extent to which each component on its own affects their environmental practices. Among the three sub-components of resources limitation, the respondents rated them almost equally indicating that all the three on the average affect the respondents' environmental actions in a similar manner. Lack of money/finance result (mean score 3.25) indicates that respondents view it impacts on their environmental practices as above average. Finance has been identified as one of the constraints for SMEs growth (Abor and Biekpe 2006a). The small and informal nature of the business implies that SMEs in most cases will not qualify for finance from formal financial institutions due to stringent requirements. SMEs therefore, tend to use short-term funds from informal financial sources with a high interest rate which makes owner-managers apprehensive about any investment without clear short-term returns. The above result on lack of money/finance is consistent with the result of Lynch-Wood and Williamson (2013). Other barriers were lack of time (mean score 3.14) and lack of human resources (mean score 3.17). This is consistent with the current literature which has identified and argued that time and human resource constraint negatively affect SMEs' environmental management (Zilahy 2004; Vikhanskiy et al. 2012). SMEs generally due to financial constraints limit their budget on human resources and therefore, have a small number of labour forces. This makes it

difficult if not impossible for SMEs to designate environmental duties to a specific individual and allocate time for workshops and seminars on environmental training. The overall effect of limited finance, human resources and time is that SMEs are at a comparative disadvantage compared to large firms known to have control over discretionary resources.

The study further investigated the respondents' perception of resources availability and environmental uptake (see Table 6.12b below). Respondents were asked if "The firm will embark on environmental impact minimisation if the resources required are minimal" and the affirmative response rate was 56.4%. This gives some indication that with resources availability the participation of SMEs in environmental activities could be on the increase. Also, respondents were asked whether "Resources constraint affect training and expertise in environmental management" and once again the majority affirmed this statement (55.0%). The positive responses generated for these two statements give clear indication that SMEs' handicap position on resources may somehow affect their environmental practices. However, consistent with the prior finding by Thornton et al (2009) respondents are not entirely convinced of the benefit(s) associated with environmental management and this is reflected in the 50.9% of respondents attesting to environmental management being costly in terms of resources without significant benefit.

Table 6.12a. Limited Resources

To what extent is each of the following types of resource serve as a barrier to the firm's environmental management practices?	Min	Max	Mean	SD
1. Lack of money/finance	1	5	3.25	1.422
2. Lack of human resources	1	5	3.17	1.320
3. Lack of time	1	5	3.14	1.312

Note: Scale: 1=not at all; 5=to a great extent

Table 6.12b. Perception of Resources and Environmental Management

To what extent do you agree or disagree with the following statements on resources for environmental management practices?	SD %	D %	SD&D %	NAD %	A %	SA %	A&SA %
1. Environmental management is costly in terms of resources without significant benefit	16.1	11.3	27.4	21.7	26.5	24.4	50.9

2. Resources constraint affect training and expertise in environmental management	11.3	13.9	25.2	19.8	29.0	26.0	55.0
3. The firm will embark on environmental impact minimisation if the resource required is minimal	8.7	10.0	18.7	24.9	29.7	26.7	56.4

1=strongly disagree, 2=disagree, 3=neither agree nor disagree, 4=agree, 5=strongly agree

6.3.1.5 Stakeholder Pressure

From the stakeholder theory, dominant stakeholders influence EMPs of firms. Stakeholder pressure emanating from both primary and secondary stakeholders may influence environmental management among firms. Respondents in the study noted lack of stakeholder pressure as a challenge to SMEs' environmental management. It has been suggested that stakeholder pressure in most instances serves as a key motivator for environmental improvement (Ervin et al. 2013). The investigation of each individual stakeholder identified by existing literature to influence SMEs' environmental initiatives was also undertaken. Customers, in general, are known to be a source of environmental pressure to companies (Revell and Blackburn 2004) and by the constant and frequent contacts/interactions with the firm, their influence may exceed that of regulation/regulators. The responses from the survey (see Figure 6.2) indicated that both local and international customers exerted lower levels of pressure on respondents' firms with mean scores of 2.86 and 2.92 respectively. These responses are lower than 97% recorded by Hilliary and Burr (2011) in their SMEs' study in the UK. However, they are consistent with the finding of Sarumpeat (2005) who found that in low-income countries due to high poverty levels local customers' choices for goods and services are greatly determined by prices than any other factors such as ecological characteristics. Another reason that may account for the lack of pressure from local customers is low environmental awareness among the customers. The poor result of international customers is not surprising, given the fact that majority of the sample firms serve local markets and have limited access to outside market.

From figure 6.2, the below average score of 2.81 for suppliers as a source of pressure is because open market represents the main source of purchasing material by the majority of SMEs (supply base diversity) which provide them with wider choices hence it is not easy to pressure them regarding the organisational and environmental behaviour. Local communities' influence level of 3.29 was above the average. This is in line with the finding of He et al

(2014) in China where local inhabitants pressured chemical firms and local authorities to act on the firms' environmental impact. Local communities being influential are understandable from the stakeholder theory perspective because they are the direct and immediate recipients of any negative environmental outcome such as noise, chemical spill, odour etc. from the companies. Local communities are powerful because they can withhold a firm's operational licence through local politics as well as revoke their social contract with the firm. The high consideration of local community as influencing environmental practices of Ghanaian SMEs may be due to the power of traditional authorities as custodians of the land and hence can easily eject occupants not acting in the interest of the community.

State institutions (mean score 2.84) and industrial associations (mean score 2.90) still have a long way to go in terms of environmental education since their impact is still below average. These findings are not exclusive to this study since similar conclusions have been arrived by Kasim and Ismail (2012).

The power of the media as a trusted source of information has been found to be a tool for achieving improvements in corporate social and environmental management. The wide coverage of the various media positions it as a tool for environmental information dissemination and environmental change both among the business community and the general public. However, the influence of the media in this study was lower (mean score 2.91) than average and this may be due to the concentration of attention on political issues given the relatively young democracy and the euphoria associated with it.

Non-governmental organisations' (NGOs) pressure mean score of 2.78 was below the midpoint. The result confirms He et al (2014) finding that NGOs' involvement in sensitive issues such as environmental pollution is very limited at the local communities. Others have also found limited activism of NGOs when it comes to SMEs and environmental initiatives. Brammer et al (2012) asserted that with limited resources, NGOs prefer to expense such scares resources on large firms where the perceived environmental hazard is great. One reason for the above result in the current study may be the limited number of NGOs (with limited resources) faced with numerous social and environmental challenges known to associate with the early face of economic development.

Lending institutions exerting pressure on respondents to influence their environmental management is not common practice among respondents. The mean score of 2.66 is the least

score among all factors examined. Most financial institutions in the study area do not have an explicit environmental policy on lending which might have accounted for such a low result. However, some microfinance institutions as part of their client management do offer help on how to manage operational cost and reduce resource consumption to be profitable in order to pay back loan facilities. Such service might have contributed to the attained result positively.

Employees (including management) as major stakeholders in a typical company could also influence environmental practices of the firm. The level of environmental awareness, beliefs, suggestions and training received by employees may help shape a firm's EMPs. These, therefore, give some indication that lack of employee pressure may constitute a challenge to environmental management. The current study's results show that employees influence environmental action among respondents with above average score of 3.35. This is consistent with the result of Revell et al (2010) study. It must be noted that in SMEs where almost all strategic decisions including environmental management are made by owners-managers (Aragón-Correa et al. 2008) the influence of employee suggestions and training will much depend on the owner-managers environmental attitude.

From this result, it can be said that with the exception of stakeholders such as the local community and management/employees who seem to influence EMPs of the sample firms to a relatively higher extent, the lack of pressure from the other stakeholders also acts as a barrier to environmental improvement. This may be seen in the light of stakeholder theory, in the sense that stakeholder distance seems to be affecting EMPs.

Figure 6.2. Stakeholder Pressure (Influence) on Environmental Management Practices

Note: scale 1=not at all; 5=to a great extent

6.3.1.6 Environmental Education

Environmental education in its various forms (formal and informal) is likely to increase environmental knowledge among beneficiaries of such service. The need to incorporate environmental studies into the formal educational system in Bangladesh was a response reported by Hossain et al (2012) when they investigated barriers to corporate social and environmental reporting in the country. Such education can significantly increase the environmental awareness level of SMEs' owner-managers and employees. The current study's results indicated that lack of formal environmental education is perceived as a barrier to some extent but further probing indicated that that 51.8% of respondents stated that environmental education was part of the educational curriculum. The majority (73.9%) of these respondents were of the view that their businesses have benefited from their knowledge in environmental education from school. This result confirms the finding that education being a source of information has a significant correlation with environmental practices

implementation (Mckiever and Gadenne 2005). This is encouraging since it has been reported that there is a relatively low level of formal education in CSR in higher educational institutions in Africa (GTZ 2013). It must, however, be stated that environmental education in Ghana commonly known as environmental science is part of the basic school syllabi but the same cannot be said about higher learning institutions.

6.3.2 Discussion of Results

The results relating to barriers of environmental management indicate that lack of knowledge and owner-managers' attitude acts as a challenge in SMEs' environmental uptake. The empirical result has shown that there is a significant positive relationship between environmental knowledge acquisition and environmental commitment (Roy and Thérin 2008). Relating to this is the owner-managers' environmental attitude. These two factors influence each other and therefore are necessary if SMEs are to excel in their environmental commitment. The findings of this study revealed that most of the responding firms have low environmental knowledge and attitudinal challenges on how to manage their firms' environmental impact. This result coincides with similar findings recorded about SMEs' environmental knowledge and attitude in western economies (Battisti and Perry 2011; Jabbour and Puppim-de-Oliveira 2012). The high consideration of profit over the environment by most responding firms may also contribute to this finding. This confirms the prior suggestion of Williamson et al (2006) and Stevens et al (2012) that owner-managers' market-based considerations take precedence over environmental concerns in the operational decisions. Also, respondents are not very certain about the benefits associated with managing the environment and therefore management commitment to environmental investment is low. Again, knowledge on managing and incorporation of environmental management in their business plan is poor with low workshops and seminars. In this respect, one would have expected the Ghanaian EPA to team up with trade associations and District Assemblies to organise environmental workshops and seminars to improve owner-managers' environmental knowledge and attitude. However, as already pointed out in chapter two the EPA itself faces personnel and district presence challenges which might have contributed to the current situation. These findings may be seen in the light of institutional theory, in that institutional weakness seems to be contributing to low EMPs among firms. Improving SMEs' environmental knowledge and attitude has the potential of contributing to how well SMEs

embrace environmental management practices in the future because knowledge and attitude significantly support environmental upkeep (Kasim and Ismail 2012).

The findings on environmental regulation as a constraint indicates that majority of respondents are aware of regulations relating to their businesses. However, complexity and enforcement of the regulations represent a challenge to some respondents which may hinder environmental uptake. This finding is consistent with that of Federation of Small Businesses (2004) and Lynch-Wood and Williamson (2005) who found that complexity of existing EU environmental regulations affects environmental improvements of SMEs. The existence of regulations on the environment, education and its enforcement are keen to SMEs' environmental improvement. This is because regulation drives environmental behaviour higher compared to business performance (Lynch-Wood and Williamson 2014). Environmental education, monitoring and enforcement in Ghana is quite a herculean task for environmental agencies (Mensah 2006; Yalley et al. 2013) partly due to budgetary constraints because of the huge budgetary deficit of the central government (Okudzato et al 2015). Also, the large SMEs' sector presents its own challenges to regulatory bodies. However, from respondents' point of view, for significant change in environmental uptake to take place emphasis must be on environmental behaviour change than regulations. This supports Walker et al (2008) and Ezeah and Roberts (2012) who also came to similar conclusion. The high agreement (60.7%) for environmental behavioural change gives some indication as to where EPA should concentrate its efforts and limited resources. Environmental education and awareness should be of a priority than pure monitoring and enforcement which in a way increases expenditure in the mix of a tight budget. Once SMEs change their environmental behaviour, there may be no need for regular visits, monitoring and enforcement. This is because the firms may be in a position to better understand the implications of their inaction and they may even become "peer monitors" among themselves thereby easing the burden on EPA.

The low level of support received from environmental management institutions is a challenge to environmental management practices. This has serious implications for SMEs environmental management since SMEs are noted to lack knowledge, have an attitudinal problem and mostly do not have department or person designated for environmental issues. Such supporting services would have been very vital to provide environmental information to mitigate some of these identified challenges in the current study (Palmer 2000). This situation

is further worsened by the poor level of accessibility to environmental information from the supporting institutions. The lack of zonal offices and personnel of EPA may contribute to this challenge since in most cases there is only one EPA officer located in the regional capital serving all the districts under the region (Ajarfor 2014).

Ghanaian SME respondents view limited resources as a key constraint impeding their environmental initiatives from the findings of the study. Finance (money), time and human resources are the main factors identified under resources limitation. The general economic climate in Ghana with high inflation, high interest rates, budgetary deficit, high dependence on short-term finance from local market by government to finance budgetary deficits (treasury bill) and infantile stage of Ghana Alternative Exchange for SMEs (GAX) are among some of the factors which affects SMEs' access to affordable finance. In most instances, SMEs after exhausting financing from friends and family have to turn to microfinance institutions (Oppong-boakye et al. 2012) for funds at a very high interest rate and with high inflation, consumers are also price sensitive. Operating under these conditions, investment priorities and cost considerations (Lepoutre and Heene 2006) may put firm profitability and survival ahead of environmental concerns for most Ghanaian SMEs' owner-managers.

Another scarce resource for most Ghanaian SMEs' owner-managers was time. With environmental management practices mostly viewed as a strategic activity requiring senior management attention, it becomes difficult for SMEs' owner-managers who have little or no discretionary time at their disposal because they are multi-tasking (Spence and Rutherfoord 2001; Russo and Perrini 2010). Discretionary time may allow one to search for environmental information and reflect or learn current environmental practices. Schaper (2002) found that time availability is positively correlated with effective collection and processing of environmental information by owner-managers of SMEs. A topical Ghanaian SME owner-manager may not delegate responsibilities due to lack of trust and the business being regarded as a family treasure. This leaves him with too much to do and low discretionary slack which affects their environmental practices. The financial constraints also impact on the human resources of Ghanaian SMEs which means that the firms usually operate with limited employees and it may be very difficult to release anyone for environmental training or activities. The effect may be that environmental management becomes no one's specific responsibility which may affect environmental expertise. The perception of the respondents on resources availability revealed that Ghanaian SMEs' owner-

managers attitude towards the environment may change if resources are very much within their reach.

Another finding from the study is that stakeholders such as state institutions (Environment agencies) local customers, suppliers, trade associations, NGOs and lenders who influence environmental improvement of businesses including SMEs (Schot 1992; Jo et al. 2014) in most developed countries are not viewed as influential by Ghanaian SMEs when it comes to environmental uptake. This represents a barrier since it limits the scope of environmental advocacy to only a few parties (local community and management/employees). There is the need for all stakeholders especially state environmental regulatory institutions (Ghana EPA and MESTI) and trade association to join forces to educate SMEs and the general public about the importance of environmental management to improve the level of awareness.

The results from the lack of formal environmental education revealed that it still represents a barrier to a sizeable number (48%) of respondents although the majority do not see it as a challenge. The educational system should fully incorporate environmental education at all levels.

The findings from this analysis provide support for the assertion that strong institutions, stakeholders and threats to legitimacy encourage effective EMPs and where instructional arrangements and stakeholder involvements are weak or absent it affects proactive EMPs uptakes (Campbell 2007; Amaeshi et al. 2016b). The study has identified that lack of knowledge and ownership attitude, lack of support services, regulatory constraints, lack of environmental education constitute a barrier to EMPs initiatives in Ghana. This is consistent with the normative and cognitive pillars of institutional theory which recognise knowledge, skills, attitude, beliefs and actions as the key ingredients for successful uptake of proactive EMPs (DiMaggio and Powell 1991). Its absence, therefore, constitutes a barrier to such activities. The education, information, skills and explanation of environmental regulations provided to SMEs' owner-managers through educational institutions, visits, seminars and workshops may go a long way to improve their environmental knowledge and shape their attitude which may improve environmental actions and firm legitimacy (Kollman and Prakash 2002). In this regard, educational institutions and industry associations as normative institutions are noted in developed countries to offer courses, seminars, workshops and conferences all aimed at increasing knowledge, change attitude and actions (Kollman and

Prakash 2002). However, as a key stakeholder in the sector, industrial association lacks influence when it comes to SMEs' environmental uptake in Ghana.

From stakeholder theory perspective, both dominant and non-dominant stakeholders are expected to influence firms' action to a certain degree. From the results of the study, apart from two stakeholders (community and employee/management), the vast majority do not seem to exert much influence on firms in the area of environmental management due to the low level of involvement with EMPs of the firms. This is also a barrier because according to the stakeholder and legitimacy theories where the concerns of stakeholders especially including key customers are taken for granted, it may result in actions such as boycotts and lawsuit which may affect the firm performance, legitimacy and even survival (Eesley and Lenox 2006). However, this is not the case in Ghana among SMEs. Regulatory authorities for instance, from both institutional and stakeholder theories perspective are expected to ease the burden of regulations on SMEs and also through regulatory pressure influence the proactive adoption of EMPs since as a stakeholders, they have the attributes of power, legitimacy or urgency to threaten the existence of the organisation for failing to meet acceptable social norms (Lindblom 1983; Mitchell et al. 1997; Tilling and Tilt 2010). However, as discussed in section 2.8 of chapter two, the EPA which is the main regulatory authority has its own challenge which is affecting its coordinating, education and information dissemination role thereby affecting their institutional and stakeholder role making regulatory constraints prevalent.

Also, limited resources have been identified as a barrier to environmental uptake and this may be linked to a regulatory pillar of institutional theory as the setting up of well-functioning financial framework and special SME institutions aid their development (Scott 2007; Abor and Quartey 2010). Ghanaian SMEs as discussed are not ready to join the GAX which would have provided them with long-term finance and ease their financial constraints which have an effect on time and human resources. There is currently no regulation enforcing such action making their resource constraint detrimental to proactive EMP.

Thus, together, institutional void, stakeholder distance and lack of legitimacy threat provide a general theoretical framework to understand perceived barriers of Ghanaian SMEs.

6.4 Regression Analysis of the Barriers

The study further explores the barriers using regression analysis to formally identify the barriers to EMPs to complement the descriptive analysis. This was done by finding the relationship between identified barriers and the EMPs of the sample firms controlling for owner-manager and firm-specific characteristics identified by prior studies as affecting firm EMPs.

6.4.1 Dependent and Independent Variables

The dependent variable in this analysis is the overall environmental management practices score which is the aggregated score of the six components of EMPs. These were measured using a five-point Likert scale (1= not at all to 5= to a great extent) (see chapter 5 section 5.8.1).

Independent variables consist of the overall score by sample firms for the six identified barriers to environmental management practices. These include lack of knowledge and ownership attitude, regulatory constraints, lack of support services, limitation of resources, lack of stakeholders' pressure and lack of formal environmental education. Using these measures respondents were requested to indicate the extent to which their firms perceived each of these as a barrier to EMP on a five-point Likert scale (1= not all to 5= to a great extent).

6.4.2 Control variables

Prior studies have indicated the effect of owner-manager education level, gender, age, and experience on EMP of the firms. Also, firm size, firm age, ownership type and industry have been identified as influencing firm's EMP. This analysis, therefore, controlled for the effect of these variables on EMP. Previous environmental management studies have indicated that the age of owner-managers impacts on the EMP of the firm. Kang (2017) indicated that manager's age is significantly related to their environmental proactiveness and that young managers compared to old managers are very good at integrating strategic information such as those involving the environment in their strategic decision making process which enhances their firms' performance (Hambrick and Mason 1984). Owner-manager gender is another variable known to impact on EMP (Tauringan et al. 2017). Females, for instance, are more concern about the environment relative to males (Manner 2010). The owner-manager

educational level has an influence on their environmental information search and usage which affect the firm's EMP (Schaper 2000; McKiever and Gadenne 2005; Rivera and Lucas 2005; Gadenne et al. 2009). Also, the level of experience of the owner-manager of the firm facilitates networking within an industry which may provide access to stakeholders with environmental expertise and information (Slater and Dixon-Fowler 2009).

Larger firms compared to their smaller counterparts are deemed to have at their disposal the needed resources to engage in environmental activities which will impact significantly on their environmental management practices (Lapoutre and Heen 2006; Chithambo and Tauringana 2014). Also, firm age has an effect on the use of environmental technologies which affects EMPs. Younger firms are more proactive in their use of environmental protection technologies relative to older firms (Alvarez-Gil et al 2001). The industry in which a firm operates can equally affects its environmental proactivity (Clemens 2006; Lucas and Wilson 2008; Pereira-Moliner et al. 2015). The type of ownership of a firm is known to affect EMP (Mensah and Blankson 2013). The measurement and treatment of all these variables are shown in Table 5.16 and Table 6.17 respectively.

6.4.3 The Model

The estimated equation uses Environmental management practices (EMP) as the dependent variable. Specifically, hierarchical models were estimated. This was done to enable the researcher to evaluate the relevance and estimate the unique (i.e. additional) effect sizes of each group of predictors after controlling for the predictors in the previous model (Pallant 2007). The model specifications were as follows:

Model 1 (controls: owner and firm-level variables):

$$EMP = \beta_0 + \beta_1 OMAGEi + \beta_2 OMGENi + \beta_3 OMEDUi + \beta_4 OMEXPi + \beta_5 OWNTYPi + \beta_6 FAGEi + \beta_7 FSIZEi + \beta_8 INDUSi + \varepsilon i_1$$

Model 2 (Barrier indicators added to Model 1):

$$EMPi = \psi_0 + \psi_1 LKAi + \psi_2 RCi + \psi_3 LSSi + \psi_4 LRi + \psi_5 LSPi + \psi_6 LFEEi + \psi_7 OMAGEi + \psi_8 OMGENi + \psi_9 OMEDUi + \psi_{10} OMEXPi + \psi_{11} OWNTYPi + \psi_{12} FAGEi + \psi_{13} FSIZEi + \psi_{14} INDUSi + \varepsilon i_2$$

Where:

EMP = Environmental Management Practices; LKA = Lack of Knowledge and Ownership Attitude; RC = Regulatory Constraints; LSS = Lack of Support Services; LR = Limitation of Resources; LSP = Lack of Stakeholders' Pressure; LFEE = Lack of Formal Environmental Education; OMAGE = Owner-Manager Age; OMGEN = Owner-Manager Gender; OMEDU = Owner-Manager Education; OMEXP = Owner-Manager Experience; OWNTYP = Ownership Type; FAGE = Firm Age; FSIZE = Firm Size; INDUS = Industry; β1-8= coefficients in Model 1 and ψ 1-14 = coefficients in Model 2; β0; ψ0 = Constants in Model 1 and 2 respectively; Subscript i denotes the nth company (i = 1,... 238); $\varepsilon i_1 \ldots \varepsilon i_2$ = Error term

6.4.4 Descriptive Statistics

The results in Table 6.13 show that the mean EMP of the firms is 3.49 which is encouraging. Regarding environmental management barriers, the results show that the SMEs perceive limited resources as having a relatively high effect on their ability to undertake EMPs (mean 3.29 out 5). Lack of support services (mean 3.24), lack of formal education (mean 3.18), lack of stakeholders' pressure (mean 3.14) and regulatory constraints (mean 3.01) follows in order with lack of knowledge and ownership attitude having a mean score of 2.50. Regarding the skewness and kurtosis presented, it is noted that none of them exceeded the suggested threshold of ±3 and ±10 respectively (Kline 2010). Also with large sample size, central limit theorem reassures that sampling distribution of means are normal (Tabachnick and Fidell 2013). This is evidence that non-normality of independent variables is not a concern and will not affect the results of the study. All regression diagnostics are shown in appendix 3.

Table 6.13. Descriptive Statistics

Variables:	Min	Max	Mean	SD	Skewness	Kurtosis
1. Environment management	1	5	3.49	.834	-.673	-.207
2. Lack of knowledge and ownership attitude	1	5	2.50	1.462	.469	-1.197
3. Regulatory constraints	1	5	3.01	1.326	-.013	-1.138
4. Lack of support services	1	5	3.24	1.364	-.355	-1.060
5. Limitation of resources	1	5	3.29	1.286	-.323	-.894
6. Lack of stakeholders' pressure	1	5	3.14	1.321	-.165	-1.145
7. Lack of formal environmental education	1	5	3.18	1.361	-.210	-1.181
8. CEO age	1	5	3.05	1.184	.110	-.935
9. CEO gender	0	1	.60	.492	-.396	-1.858
10. CEO education	0	1	.60	.491	-.414	-1.844
11. CEO experience[1]	0.00	3.43	1.49	.719	.257	-.077
12. Firm ownership	0	1	.38	.486	.506	-1.759
13. Firm industry	0	1	.45	.498	.204	-1.975
14. Firm age[1]	0.00	3.37	2.02	.709	-.625	.162
15. Firm size[1]	1.10	4.16	1.88	.753	1.341	.810

[1] Natural log

6.4.5 Correlation Analysis

The correlation matrix for independent and dependent variables used in the analysis is presented in Table 6.14. Multicollinearity was assessed using the correlation analysis and collinearity diagnostics. The correlation analysis results as shown in Table 6.14 revealed coefficient between the independent variables to be less than the maximum threshold of .70 which indicates that multicollinearity was not a major concern to the study (Field 2013). A check of Variance Inflation Factor (VIF) revealed values far below 10, which further confirms the correlation analysis results (Hair et al. 2014).

Table 6.14. Correlation analysis

Variables:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1 Environmental management	1														
2 Lack of knowledge and ownership attitude	**-.309****	1													
3 Regulatory constraints	**-.055**	.314**	1	.											
4 Lack of support services	**-.355****	.234**	.370**	1											
5 Limitation of resources	**-.288****	.270**	.336**	.409**	1										
6 Lack of stakeholders' pressure	**-.113**	.339**	.328**	.241**	.429**	1									
7 Lack of formal environmental education	**-.172****	.257**	.300**	.349**	.412**	.554**	1								
8 Firm ownership	.204**	-.076	.020	-.141*	.041	.092	.044	1							
9 Firm industry	-.299**	.101	-.089	.070	.027	.016	.073	-.113	1						
10 Firm age	.194**	.047	.071	-.108	.013	.122	.008	.261**	-.040	1					
11 Firm size	.241**	-.054	-.032	-.131*	-.225**	-.029	-.027	.169**	-.177**	.290**	1				
12 CEO age	-.268**	.031	-.023	.098	.116	.035	.012	-.045	.000	.023	-.089	1			
13 CEO gender	.058	-.075	-.005	.003	.004	.071	.090	.076	-.032	.124	.095	-.069	1		
14 CEO education	.448**	-.096	.076	-.100	-.120	-.044	-.124	.105	-.108	.038	.087	-.215**	.082	1	
15 CEO experience	-.021	.057	.152*	.006	.093	.044	.039	.124	.024	.489**	.041	.086	.076	-.069	1

$^{*}p < .05$; $^{**}p < .01$

The results from Table 6.14 also indicate that environmental management is negatively and significantly related to lack of knowledge and ownership attitude, lack of support services, limitation of resources and lack of formal environmental education. This suggests that a firm's ability to improve its environmental management practices is hindered by these factors. There is also a negative correlation between environmental management practice and regulatory constraints and lack of stakeholders' pressure but not significant. This is an indication of the potential challenges posed by such factors to EMP. Again, Table 6.14 indicates that the association between environmental management and firm-specific control variables (firm ownership type, industry age and size) are significant. The results further show a significant correlation between environmental management and two owner-manager specific control variables (age and education). The other two owner-manager control variables (gender and experience) are not significantly related to environmental management practices even though experience displayed negative relationship.

6.4.6 Regression Results and Discussion

Table 6.15 below presents the results of the regression analysis of the study. The socio-demographic characteristics of firm owners and firm characteristics which were control variables were entered first. This was followed by identified environmental management practices barriers. In all, there are two models relating to the independent variables. Model 1 which presents the results of the control variables (socio-demographic of owner-managers and firm-specific characteristics) is significant at 1% and explains 35.7% of the variances in the environmental management practices of the sample firms. Under Model 1, owner-manager age and education are both significant. These indicate that young owner-managers and owner-managers with a high level of education influence the EMP of the firm. The result on owner-manager age offers support for Kang (2017) who also found that manager's age has a significant influence on a firm's environmental management practices. Similarly, Schaper (2000) and Rivera and Leon (2005) found that high level of education among managers impacts positively on EMP since it facilitates relevant environmental information utilisation. However, owner-manager gender and experience were not found to have a significant influence on EMP of sample firms.

Table 6.15. Regression Analysis Results (Main)

	Standardized estimates		VIF
Predictors:	Model 1	Model 2	
-Lack of knowledge and ownership attitude		-.195 (-3.301) ***	1.292
-Regulatory constraints		.039 (.633)	1.436
-Lack of support services		-.193 (-3.077) ***	1.453
-Limitation of resources		-.096 (-1.470)	1.582
-Lack of stakeholders' pressure		-.001 (-.007)	1.756
-Lack of formal environmental education		.042 (.614)	1.713
-CEO age	-.198 (-3.392) ***	-.175 (-3.193) ***	1.118
-CEO gender	-.050 (-.877)	-.052 (-.964)	1.066
-CEO education	.357 (6.075) ***	.324 (5.793) ***	1.161
-CEO experience	-.048 (-.740)	-.042 (-.682)	1.380
-Firm ownership	.086 (1.467)	.066 (1.190)	1.149
-Firm age	-.216 (-3.779) ***	-.198 (-3.633) ***	1.096
-Firm size	.144 (2.130) ***	.151 (2.355) ***	1.531
-Firm industry	.110 (1.836) †	.055 (.946)	1.237
R^2	.357	.455	
ΔR^2		.098	
Adjusted R^2	.332	.417	
ΔF-statistics	14.414***	6.058***	

Notes: *Dependent variable:* environmental management practices (composite); p-values are in the parenthesis; †p < .10; *p < .05; **p < .01; ***p < .001

The result of gender is contrary to the suggestion that females are more environmentally concern due to the massive effect on their duties such as childbearing and home care once there is an environmental disaster. The gender result does not support finding by Manner (2010) and Tauringana et al (2017). The results relating to firm ownership show that the legal status of the firm has no significant effect on EMP of the firms. However, firm age, size and industry are all significantly related to EMP. Firm age is negative and significantly related to EMP backing the finding of Alvarez-Gill et al (2001) that young firms tend to acquire modern and new environmental technologies which help to improve their EMP relative to older firms with old machines. The significant result of firm size supports the positive relationship between firm size and resources available for proactive EMP (Lapoutre and Heene 2006; Chithambo and Tauringana 2015). Also, the industrial sector in which the firm operates influences its EMP significantly. The results show that operating in the manufacturing sector is likely to have a positive effect on EMP. This may be due to the

perceived high environmental impact by such firms which may alert them to their environmental responsibility.

Models 2, estimates the effects of environmental management practices barriers on EMP. In Model 2, the independent variables [lack of knowledge and ownership attitude, regulatory constraints, lack of support services, limitation of resources, lack of stakeholders' pressure and lack of formal environmental education] contributed 9.8% to the variance in environment management practice after controlling for both owner and firm characteristics. The Model 2 explains 45.5% of the variation in the EMP.

In Model 2, lack of knowledge and ownership attitude and lack of support services have a negative and significant relationship with EMP. This suggests that among SMEs, lack of knowledge and ownership attitude impede firms' environmental management practices. Therefore, managing to improve owner-managers' environmental knowledge and attitude may result in better EMP of their firms. Similarly, lack of support services from institutions designated to render such services have a significant effect of not helping firms improve their EMP which impacts negatively on the natural environment. Also, the results show that limitation of resources and lack of stakeholders' pressure have a negative relationship with EMP but not significant. Again, regulatory constraints and lack of formal environmental education have no significant effect on EMP.

From this analysis, the regression results suggest that lack of knowledge and ownership attitude and lack of support services are seen as key variables which limit SMEs' environmental management practices improvements relative to other barriers. However, when the regression results are combined with the correlation analysis the effect of other barrier variables may not be discounted given their negative and in some cases significant relationship with EMP. In this regard, the results do not change the key inferences drawn based on the reported findings from the main descriptive analysis.

6.5 Hypotheses Testing and Discussion

This section presents and discusses the empirical results on data analysis relating to the hypotheses formulated in chapter four. The main objectives are to investigate whether EMPs and its components affect the financial performance of SMEs. The effect of selected owner-

manager demographics and firm-specific characteristics on financial performance is also examined.

6.5.1 Validity and Reliability of Measures

Following previous research approaches (see, for example, Clemens 2006; Danese and Romano 2011; Singh et al. 2015; Pereira-Moliner et al. 2015), construct validity of the study's scales was assessed through exploratory factor analysis (EFA) using principal component analysis and varimax rotation which resulted in the extraction of items retained. In EFA, two steps were taken. In step one; each set of measures was subjected to EFA. This was done for two reasons: (1) not to unnecessarily delete items given the large number of items under each construct, and (2) to assure the internal rule of unidimensionality. Eigenvalues and variance explained are set criteria for the number of factors to be extracted (Field 2013; Hair et al. 2014). Since the larger the absolute size of a factor loading, the more relevant it is in interpreting a factor matrix, only factor loadings of at least .50 (which demonstrates practical significance) was set to be extracted (Hair et al. 2014). Also, only factors with Eigenvalues 1.0 and above were considered (Field 2013). Scale items indicating low factor loadings (i.e. below the .50 cut-off) or low communalities (i.e. below .25) were not subjected to further analysis after step one (Hair et al. 2014).

In all cases, Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity were conducted to determine the suitability of conducting factor analysis on the variables (Pallant 2007). With Eigenvalues ≥ 1.0 and loadings of at least .50, two components each emerged from the measures for energy efficiency (EE), water management (WMC), material management (MM), and pollution management (PM). Considering the statistical results and paying attention to practical/contextual issues (i.e. items that are largely relevant to the study's context), only items loading on the first components were retained. In the case of waste management (WM), biodiversity management (BD), and financial performance (FP), one component each was extracted and each accounted for more than 50% of the variance explained. The Kaiser–Meyer–Olkin (KMO) value for each EFA was above the minimum threshold of .60. Also, the Bartlett's test of Sphericity for each EFA reached statistical significance level. These results respectively indicate that the sample data for the EFA was adequate and factorability was appropriate (Pallant 2007; Tabachnick and Fidell 2013). Also, the reliability test indicates that the Cronbach alpha values were above the

minimum threshold of .70 (Bagozzi and Yi 2012; Fields 2013). The components and their associated loadings, eigenvalues, the percentage of variance explained, Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity are shown in Tables 1, 2, 3, 4, 5, 6 and 7 in appendix 2.

In step two, all the retained measures in the study were subjected to further EFA. The system extracted seven components, with each having Eigenvalues above 1.0. Each measure loaded on its theoretical construct which demonstrates convergent validity (Danese and Romano 2011). Also, the absence of cross-loadings above .50 suggests the multi-dimensional structure of the scales as well as the uniqueness of the constructs and thus demonstrates sufficient evidence for discriminant validity (Danese and Romano 2011). As a robustness check on the distinctiveness of the factors, the inter-factor correlations were examined (Vieira 2011) and none of the correlation coefficients was above .70 which further lends support that discriminant validity of the scales was attained (Vieira 2011; Hair et al. 2014). These results in effect, reflect construct validity of the measures used in estimating the study's proposed relationships (Danese and Romano 2011). The components and their associated loadings, eigenvalues and percentage of variance explained are shown in table 6.16 below.

Table 6.16. EFA Results

Measures	**Construct**						
	Material mgt.	Waste mgt.	Financial perf.	Biodiversity mgt.	Pollution mgt.	Water mgt.	Energy efficiency
EE1	.102	.145	.142	-.016	.148	.106	**.789**
EE2	.092	.240	.315	.101	.139	.175	**.665**
EE4	.196	.147	.113	-.026	.076	.301	**.646**
EE6	.279	.134	.153	.069	.104	.037	**.715**
WMC1	.175	.087	.254	.043	.230	**.760**	.042
WMC2	.459	.049	.233	.119	.073	**.644**	.258
WMC3	.386	.108	.113	.052	.060	**.646**	.141
WMC5	.385	.068	.168	.044	-.023	**.542**	.374
WMC6	.275	.186	.219	.088	.106	**.719**	.118
WM1	.024	**.711**	.080	-.027	.247	.288	.157
WM2	-.133	**.831**	.094	.149	.210	.143	-.061
WM3	.010	**.804**	.202	.182	.099	-.006	.035
WM4	.301	**.754**	.156	.146	-.031	-.011	.211
WM5	.219	**.778**	.169	.125	.036	.040	.287
WM6	.025	**.734**	.205	.098	.269	.095	.250
MM3	**.669**	.204	.180	.053	.086	.265	.198
MM4	**.734**	-.009	.037	.035	.132	.250	.146
MM5	**.794**	.064	.105	.038	.012	.131	.073
MM6	**.771**	-.032	.268	.057	.190	.060	.002
MM7	**.730**	.107	.184	-.001	.191	.124	.194

MM8	**.710**	.031	.263	-.022	.062	.293	.127
MM9	**.549**	.046	.084	.080	.230	.446	.170
POL5	.175	.197	.180	.100	**.629**	-.056	.261
POL6	.171	.191	.126	.177	**.633**	.136	.267
POL7	.180	.247	.232	.322	**.539**	.025	.220
POL8	.206	.063	.135	.169	**.787**	.124	.139
POL9	-.082	.191	.042	.397	**.707**	.114	-.040
POL10	.222	.079	.146	.248	**.670**	.250	-.136
BD1	.027	-.049	.061	**.831**	.147	.023	.083
BD2	-.082	.124	-.042	**.774**	.286	.014	.061
BD3	.285	.040	-.013	**.730**	.154	.204	.131
BD4	-.066	.232	.198	**.800**	.229	-.018	-.144
BD5	.079	.312	.119	**.794**	.107	.053	-.015
FP1	.348	.183	**.757**	.179	.062	.210	.102
FP2	.200	.159	**.800**	.034	.176	.156	.123
FP3	.185	.183	**.732**	.023	.159	.131	.247
FP4	.192	.215	**.755**	.078	.170	.191	.082
FP5	.141	.146	**.755**	.062	.110	.157	.228
Eigenvalues	12.903	4.429	2.910	1.780	1.658	1.470	1.353
% of variance	33.956	11.655	7.658	4.685	4.363	3.869	3.561

KMO = .890
Bartlett's test of Sphericity: χ^2(DF)= 3727.573 (703); p = .0001

Table 6.16 shows the retained measures, their associated loadings and the corresponding variance explained. Under energy efficiency, four measures E1 E2 E4 and E6 were retained accounting for 3.56% of the variance explained. Measures retained under water (WMC1, WMC2, WMC3, WMC5 and WMC6), biodiversity (BD1, BD2, BD3, BD4 and BD5) management and financial performance (FP1, FP2, FP3, FP4 and FP5) were five each explaining 3.87%, 4.69% and 7.66% of the variance respectively. However, six measures each were retained under waste (WM1, WM2, WM3, WM4, WM5 and WM6) and pollution (POL5, POL6, POL7, POL8, POL9 and POL10) management accounting for 4.43% and 4.4% of the variance respectively. Material management had seven retained variables (MM3, MM4, MM5, MM6, MM7, MM8 and MM9) explaining 33.96% of the variance. Kaiser-Meyer-Olkin (KMO) was .890 and the Bartlett test of sphericity was statistically significant at 1%.

6.5.2 Treatment of Variables in the Regression Analysis

In estimating the study's model, only the retained items from the EFA were used. Following appropriate procedures, single indicant variables were created. This was done by averaging the items retained under each construct after the exploratory factor analysis (EFA) (Hair et al. 2014). The overall environmental management measure (composite) was calculated by averaging the score of the six environmental management practices measures (energy, water, waste, material, pollution and biodiversity). Employing composite variables was sound given that the retained measures were statistically valid and reliable as demonstrated above. The treatments for the owner-manager-level variables and the firm-level variables are shown in Table 6.17.

Table 6.17 Transformation/Coding of Control Variables

Variable	Coding/transformation
Firm ownership	1= "company"; 0 = "others"
Firm industry	1= "manufacturing"; 0 = "service"
Firm age	Natural log of number of years in operation
Firm size	Natural log of number of employees
Owner-manager age	1= "15 to 25" 2= "26 to 35" 3= "36 to 45" 4= "46 to 55" 5= "56+"
Owner-manager gender	1= "male"; 0 = "female"
Owner-manager education	1= "high: tertiary/professional education"; 0 = "low: no tertiary/professional education"
Owner-manager experience	Natural log of number of years held current position

6.5.3 Descriptive Statistics

The results in Table 6.18 show that the mean financial performance of the firms is 3.04 indicating the firms' financial performance on average has not changed much compared to the previous year. Regarding environmental management practices, the results show that the SMEs have relatively high levels of energy efficiency practices (mean 3.84 out 5). Material management practices (mean 3.83) and water management (mean 3.68) were also high. This was followed by a slightly above average level of practices relating to waste management

(mean 3.26), pollution management (mean 3.23) and biodiversity (mean 3.07) in the responding firms with overall environmental management practices mean of 3.49 which is encouraging. Regarding the skewness and kurtosis presented, it is noted that none of it exceeded the suggested threshold of ±3 and ±10 respectively (Kline 2010). Also with large sample size, central limit theorem reassures that sampling distribution of means are normal (Tabachnick and Fidell 2013). This is evidence that non-normality of independent variables is not a concern and will not affect the results of the study.

Table 6.18. Summary of Descriptive Statistics

Variables:	Min	Max	Mean	Std. dev.	Skewness	Kurtosis
1. Financial performance	1	5	3.04	.912	-.282	-1.003
2. Environmental mgt. practices	1	5	3.49	.834	-.673	-.207
3. Energy efficiency	1	5	3.84	.974	-.786	-.210
4. Water management	1	5	3.68	1.141	-.908	-.249
5. Waste management	1	5	3.26	1.139	-.491	-.925
6. Material management	1	5	3.83	1.102	-.950	.010
7. Pollution management	1	5	3.23	1.148	-.357	-.766
8. Biodiversity management	1	5	3.07	1.281	-.089	-1.191
9. Firm ownership	0	1	0.38	.486	.506	-1.759
10. Firm industry	0	1	0.45	.498	.204	-1.975
11. Firm age	.00	3.37	2.02	.709	-.625	.162
12. Firm size	1.10	4.16	1.88	.753	1.341	.810
13. Owner-manager age	1	5	3.05	1.184	.110	-.935
14. Owner-manager gender	0	1	0.60	.492	-.396	-1.858
15. Owner-manager education	0	1	0.60	.491	-.414	-1.844
16. Owner-manager experience	.00	3.43	1.49	.719	.257	-.077

6.5.4 Correlation Analysis

The correlation matrix for independent and dependent variables used in the study is presented in Table 6.19. Multicollinearity was assessed using the correlation analysis and collinearity diagnostics. The correlation matrix is used to check the presence of multicollinearity to avoid misspecification of test results of the regression. The correlation analysis results as shown in Table 6.19 revealed coefficient between the independent variables to be less than the maximum threshold of .70 which indicates that multicollinearity was not a major concern to

the study (Field 2013). A check of Variance Inflation Factor (VIF) revealed values far below 10 which further confirms the correlation analysis results (Hair et al. 2014).

Table 6.19 Correlation Analysis Results

Variables:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1 Financial performance	1															
2 Environ. mgt. practices	.673**	1														
3 Energy efficiency	.516**	.708**	1													
4 Water mgt.	.564**	.762**	.543**	1												
5 Waste mgt.	.514**	.733**	.451**	.414**	1											
6 Material mgt.	.575**	.756**	.513**	.694**	.406**	1										
7 Pollution mgt.	.493**	.779**	.441**	.430**	.501**	.476**	1									
8 Biodiversity mgt.	.338**	.688**	.286**	.325**	.465**	.297**	.572**	1								
9 OMAge	-.228**	-.268**	-.130*	-.174**	-.246**	-.282**	-.248**	-.109	1							
10 OMGender	.084	.058	-.001	.095	.038	.148*	-.055	.032	-.069	1						
11 OMEducation	.348**	.448**	.247**	.267**	.350**	.372**	.370**	.362**	-.215**	.082	1					
12 OMExperience	.032	-.021	.175**	.023	-.020	-.129*	-.014	-.093	.086	.076	-.069	1				
13 Firm ownership	.176**	.204**	.206**	.110	.174**	.053	.215**	.150*	-.045	.076	.105	.124	1			
14 Firm age	.209**	.194**	.223**	.136*	.134*	.117	.232**	.039	.023	.124	.038	.489**	.261**	1		
15 Firm size	.185**	.241**	.211**	.129*	.203**	.103	.233**	.186**	-.089	.095	.087	.041	.169**	.290**	1	
16 Firm industry	-.158*	-.299**	-.336**	-.294**	-.152*	-.208**	-.196**	-.159*	.000	-.032	-.108	.024	-.113	-.040	-.177**	1

*p < .05; **p < .01

The results from Table 6.19 also indicate that there is a positive correlation between environmental management practice (composite variable) and financial performance. This shows that environmental management practices have a positive effect on firm financial performance. The results also show that financial performance is positively and significantly related to energy efficiency, water, waste, material, pollution and biodiversity management. This suggests that a firm's ability to manage these activities could improve its financial performance. There is also high and significant positive correlation between environmental management practice and the six components of environmental management practices which demonstrate that they all have one unique higher underlying construct. Again, Table 6.19 indicates that the association between financial performance and firm-specific control variables (firm ownership type, age, industry and size) are significant. The results further show a positive and significant correlation between financial performance and two owner-manager specific control variables (age and education). The other two owner-manager control variables (gender and experience) are positive but not significantly related to financial performance.

6.5.5 Regression Results

Table 6.20 below presents the results of the regression analysis of the study. The socio-demographic characteristics of firm owners which were control variables were entered first. This was followed by firm-specific characteristics. In all, there are four models relating to the independent variables. Model 1 which presents the results of the socio-demographic variables of the firms' owners (control variables) is significant at 1% and explains 15.2% of the variances in financial performance. Model 2 which has firm-specific characteristics (control variables) was also significant at 1% after controlling for the firm owners' characteristics. The firm-specific variables contribute 5.9% to the variance in firm financial performance.

Models 3 and 4 estimate the effects of environmental management practices (composite) and the six components of environmental management practices respectively. In Model 3, the independent variable [Environmental management practices (composite)] significantly contributed 25.6% to the variance in financial performance after controlling for both owner and firm characteristics. The Model 3 explains 46.7% of the variation in the financial performance. In Model 4, adding on the EMPs components to Model 2 significantly increased the R^2 by 28.7%. In all, Model 4 explained 49.8% of the variability in the financial

performance. Both Models 3 and 4 indicate that significant proportion of the variance in financial performance is accounted for by the independent variables, and thus shows the relevance of environmental management practices in determining the financial performance of the firms in the study's context.

Table 6.20. Regression Analysis Results (Main)

	Standardized estimates			
	Model 1	Model 2	Model 3	Model 4
-Environ. mgt. practices			.627 (10.477)***	
-Energy efficiency				.147 (2.234)*
-Water mgt.				.201 (2.825)**
-Waste mgt.				.193 (3.164)**
-Material mgt.				.198 (2.588)**
-Pollution mgt.				.112 (1.619)
-Biodiversity mgt.				-.013 (-.208)
-OMAge	-.163 (-2.630)**	-.159 (-2.620)**	-.048 (-.934)	-.026 (-.500)
-OMGgender	.042 (.690)	.016 (.267)	.029 (.592)	.017 (.343)
-OMEducation	.314 (5.068) ***	.280 (4.586) ***	.055 (.999)	.072 (1.329)
-OMEexperience	.065 (1.069)	-.029 (-.425)	.012 (.221)	.005 (.079)
-Firm ownership		.075 (1.217)	.022 (.430)	.036 (.700)
-Firm age		.171 (2.365) *	.071 (1.174)	.054 (.887)
-Firm size		.067 (1.052)	.005 (.103)	.024 (.453)
-Firm industry		-.099 (-1.644)	.042 (.826)	.060 (1.156)
R^2	.152	.211	.467	.498
ΔR^2		.059	.256	.287
Adjusted R^2	.138	.183	.446	.467
ΔF-statistics	10.466***	4.258**	109.762***	21.272***

Notes: Dependent variable: firm financial performance (composite); Δ in R2 and F-statistics for Model 3 and Model 4 were computed after Model 2; p-values are in the parenthesis; †p < .10; *p < .05; **p < .01; ***p < .001

6.5.5.1 Environmental Management Practices and Financial Performance

I. Environmental Management Practices and its Components

From the results in Table 6.20 above, the study found a positive and significant relationship between environmental management practices (composite) and financial performance (b= 0.627, p<.001) in Model 3. Therefore, H1 is supported because there is a significant and positive relationship between environmental management practices (composite) and financial performance. The result also supports a positive and significant relationship between energy efficiency and financial performance (b= 0.147, p<.05) in Model 4. The result support H2 which posits that there is a significant relationship between energy efficiency and financial performance. Model 4 in Table 6.20 also reveals that water management is strongly associated with financial performance. The result supports the study's hypothesis H3 which states that water management has a statistically significant relationship with financial performance (b= 0.201, p<.01). The result of the waste management, in Model 4 indicates that there is a significantly positive relationship between waste management and financial performance (b= 0.193, p<.01). On the account of this finding, hypothesis H4 of the study is supported. The results in Model 4 provide evidence of the positive relationship between material management and financial performance. The results show statistically significant positive relationship between material management and firm financial performance (b= 0.198, p<.01). Based on this evidence, hypothesis H5 in chapter four which stated that all things being equal, there is a significant relationship between material management and financial performance is supported.

From Model 4 of Table 6.20, the study does not find significant association existing between the other two dimensions of environmental management practices (i.e. pollution management and biodiversity management) and financial performance. Although, the link between pollution management and financial performance was positive (b= 0.112, p>.05), it was not statistically significant at 5%. This implies that H6 which suggested a significant association between pollution management and financial performance did not earn sufficient statistical support from the data hence it was rejected. Also, although the study argued that (H7) biodiversity management and firm financial performance have significant relation, the results obtained (b= -0.013) was not statistically different from zero, therefore H7 was rejected.

6.5.5.2 Control Variables

I. Owner-Manager Socio-Demographics

In respect of owner socio-demographic characteristics, the study found a negative and significant association between owner-manager age and financial performance in Models 1 and 2. The results suggest that young owner-managers are more likely to engage in environmental activities that could enhance firm's financial performance than older owner-managers. However, this finding is contrary to hypothesis H8 which predicted a positive and significant link between owner-manager age and financial performance. H8 is, therefore, not supported. In terms of H9, the study did not find a significant link between owner-manager gender and financial performance. This suggests that hypothesis H9 is not supported by the evidence provided from the study. Hypothesis H10 of the study is supported by the data presented in Models 1 and 2 in Table 6.17. The study found a significant relationship between the level of owner-manager education and firm financial performance. Also, the study proposed a significantly positive association between owner-manager experience and financial performance. The results presented in Models 1 and 2 of Table 6.20 revealed that there is no significant association between owner-manager experience and financial performance. H11 is, therefore, not supported.

II. Firm Characteristics

Regarding firm-specific control variables, the study found no significant link between firm ownership type and financial performance ($b= 0.075$, $p> 0.05$) in the Models. Therefore, H12 is not supported. However, the study found a positive and significant relationship between firm age and firm financial performance in Model 2. This result supports the proposed significant association between firm age and financial performance. H13 is, therefore, supported. Also, the study hypothesised that there is significant relationship between firm size and financial performance. On the grounds of evidence presented in Model 2 in Table 6.20 above, the data does not support this hypothesis since there is positive but insignificant link between firm size and financial performance. Therefore, H14 is not supported. Further, the results in Table 6.20 show that the industry in which the firm operates has no significant association with financial performance. This does not support hypothesis H15 which predicted a significant link between industry and financial performance.

6.6 Discussion of Regression Results

The evidence presented in the study (Model 3) suggests that there is statistically significant positive relationship between environmental management practices and firm financial performance as documented by prior studies which found such association (Klassen and Mclaughlin 1996; King and Lenox 2001; Al-Tuwaijri et al. 2004; Clemens 2006; Nakao et al. 2007; Aragón-Correa et al. 2008; Zeng et al. 2011; Horváthová 2012; Trumpp and Guenther 2015; Ramathaman 2016; Lucas and Noordewier 2016). This is an indication that SMEs may enjoy competitive advantages/benefit from environmental uptake. Environmental management undertaken by sample firms in the areas of energy, water, waste, material and pollution contributes to financial performance through either low cost or differentiation or both (Porter and van der Linde 1995; Ernhart and Lizal 2010; Pereira-Moliner et al. 2015; Feng et al. 2016; Cheon et al. 2017). This result indicates that environmental management practices offer opportunities for firms to improve their financial performance from ecological improvement effects on basic cost parameters of energy use, material use, waste disposal, production efficiency and pollution abatement. Therefore, internal operational efficiencies or practices which result in cost reduction through conservation of energy, water, reduction in waste and materials can result in financial gains since such costs account for significant proportion of total costs of a firm (Moneva and Ortas 2010).

From the revenue improvement perspective, these environmental management practices may enable the firms to increase sales revenue by attracting "green customers", maintain customer loyalty and increase the overall demand for their products. Another source of such loyalty and demand is improved public image and firm legitimacy among stakeholders (Shrivastava 1995). Again, the significant positive result between EMP and FP may be explained from the stakeholder perspective. This is due to the positive perception EMP may create particularly among stakeholders such as employees and customers. This may further improve employees' motivation and patronage by customers, all of which result in further financial performance improvement (Ramanathan, 2016; Lannelongue et al. 2017). Jones (1995) suggested that firms behaving ethically are well positioned to enjoy a competitive advantage due to the development of a lasting and productive relationship with its stakeholders.

The significant relationship between environmental management practices-financial performance may support Klassen and McLauglin (1996) argument that environmental

management's competitive potential is more aligned with generating cost savings and market gains. This finding is, however, contrary to Jaggi and Freedman (1992); Hart and Ahuja (1996); Sarkis and Codeiro (2001); Hassel et al (2005) and Qian (2012) who found a negative relationship between environmental management and financial performance. The finding suggests that the cost of investment in environmental improvement may not outweigh any accrued benefits and that the competitive advantage is theoretically attractive and realistic (Walley and Whitehead 1994).

The results from Model 4 which indicate that there is a significantly positive association between energy efficiency and financial performance is contrary to the negative relationship found by Pham (2015) but in line with earlier studies by Sahu (2014) and Cagno and Trianni (2013) who found a significantly positive association between energy efficiency and profitability. The basis of such finding is that energy prices over the last decade have risen to unprecedented levels due to the pursuit of economic growth agenda and increased consumption (Greening et al. 2000; Cagno and Trianni 2013). Management is, therefore, keen on reducing energy cost since like any other input every cost saved goes to add to the bottom line. Energy management practices are noted to strongly influence energy consumption at the firm level resulting in an effective reduction of the per unit price of energy consumption from gains in energy efficiency (Greening et al. 2000; Apostolos et al. 2013; Cagno and Trianni 2013). This suggests that SMEs could improve their profitability through energy efficiency practices. Federation of Small Businesses in Scotland (2003) suggested that SMEs are in a position to save 23% to 50% on the energy bill by instituting simple energy efficiency measures. Rising cost of energy is well noted to hamper businesses ability to invest and grow since there is resources constraint that businesses must have to deal with (Apostolos et al. 2013). This result shows that the implementation of measures such as the use of energy efficient bulbs, proper maintenance of equipment and putting off lights and equipment, not in use have positive effect on firm financial performance.

The significantly positive coefficient of water management in Model 4 implies that efficient water management practices among Ghanaian SMEs are likely to have a positive effect on the cost of operations. Water has a significant cost in business due to the important role it plays in daily operations from office to the product lines and beyond which can affect the very survival of the firm. High investment in water by the private sector in Ghana has impacted on water pricing. Managing water usage within the business environment has the

tendency to lower operating costs and increase revenue by meeting the "green customers" demand for products and services (Strandberg and Robinson 2009). Ghanaian SMEs' access to long-term capital/funding is constrained due in part to the underdevelopment of the Ghana Alternative Exchange (GAX) and therefore, turn to rely mostly on short-term financing for operations. Under such circumstances, cash flow is usually a challenge and profit margins also low due in part to the pressure of meeting interest payments on the funding and low or lack of entry barriers. Cost savings from frequently use input like water is expected to increase net income and therefore, profitability. This outcome supports that of Garay and Font (2012) and CDP and Eurizon Capital (2013) but contradicts the results of Kamande (2011) and Nyirenda et al. (2013) who found no link between water management and financial performance.

The significance of energy efficiency and water management may also be explained in the context of the current utility situation in Ghana. The nation is facing energy crisis which has been termed "Dumsor" (literally means on-off) and high utility bills due to the removal of government subsidies, privatisation and deregulation measures being implemented by the government through the Public Utility Regulatory Commission (PURC). According to AGI survey (2016), the key challenge identified by 75% of Ghanaian businesses was high energy and water prices. The introduction of these measures has impacted substantially on the pricing and consumption of these items since the utility companies now operate at full cost recovery at least. A recent report from PURC indicated that with the introduction of new pricing policy energy consumption has reduced by 300 megawatts (Daily Graphic 2016). This may also partly explain the extent of management of these variables by firms and its effect on their financial performance.

The management of waste has a significant effect on financial performance (Model 4) which is consistent with Spekman et al (1998), Gunasegaram et al (2004), Li et al (2006), Banar et al (2009), Ochiri et al (2015) and Song et al (2017). Managing waste may result in a reduction of a firm's overall operational costs since, material cost, disposal cost, labour and energy costs associated with waste material may be reduced thereby improving financial performance (Hart and Ahuja 1996; Ellram 2006; Kamande 2011). The result is contrary to the finding by King and Lenox (2002) who suggested that firms do not profit from waste management apart from waste prevention. This result may partly be explained by the ready market for most types of waste within the Ghanaian SMEs' arena (Oduro-Kwarteng et al.

2016). Under such circumstances, the SMEs with limited resources are more willing to sell off the waste than to invest extra resources in recycling. The activities of itinerant waste buyers provide instant cash, reduce disposal cost and saves labour hours. Fernández-Vine et al. (2010) found similar practices among SMEs in Venezuela where due to the high cost of raw materials and low cost of the workforce the informal sector has developed a large ready market for waste materials especially recyclables. Such conditions in developing countries compared to developed countries make it relatively easy to generate income from the waste materials. Rooney (1993) argued that waste is a huge cost to businesses since it involves four cost components; raw material loss, labour loss, cost of disposal and handling charges which affect performance but not inevitable cost that business should incur. This means that reduction of these costs associated with waste generated may contribute to the firm's bottom line (Lysons 2006).

The study found a positive and significant relationship between material management and financial performance in Model 4. The result is consistent with the prior literature (Eroglu and Hoffer 2011) who contend that material shortage directly affects performance since it defines work schedules and production. However, the finding does not support Dudley and Lasserre (1989) and Cannon (2008) who suggested that material management has no effect on financial performance. It has also been suggested that material efficiency practices are expected to result in lower waste/scrap, defects, rework costs and improved productivity thereby positively affecting financial performance (Sahari et al. 2012). Therefore, simple practices such as conducive storage of materials, avoidance of overstocking, buying quality materials and inspection of materials for dent/damages reduces material costs among sampled Ghanaian firms which have a positive effect on their financial performance. Avoiding inventory-related costs also could improve profitability since it is estimated at 10% per annum of the inventory value (Blinder and Maccini 1991). Material management is very important in the scheme of affairs of firms since on average it constitutes more than 50% of the total variable costs. Becoming efficient in material management saves a lot of money (Berry and Randinelli 1998).

The results also show that pollution (emission) control does not significantly affect financial performance. The evidence is consistent with Yu (2011) and Pintea et al (2014) who also found a non-significant association between pollution (emission) and profitability. It is, however, contrary to the significant influence of pollution control on financial performance

found by Hart and Ahuja (1996); King and Lenox (2001), Smale et al (2006) and Qian and Xing (2016). The insignificant result could be explained by the fact that externalities most often is viewed by businesses as representing public cost and does not add anything to firm performance so engaging in its reduction amounts to philanthropy (Friedman 1970). This challenge is worsened in the Ghanaian context due to the post-independence socialist orientation which created the impression that the state is responsible for social problems once taxes have been paid (Amponsah-Tawiah and Dartey-Baah 2011). This orientation makes businesses less proactive on externalities. Another reason for the insignificant result may be attributed to low or non-enforcement of environmental regulations among SMEs (Mensah 2014) which does not encourage pollution reduction. Firms emitting pollution may not incur sanctions, regulatory fines and legal fees which may impact on their performance and force them to improve their emission record which may have benefits (Christmann 2000; Earnhart and Lizal 2010).

Our result also provides no evidence of the significant effect of biodiversity management on financial performance. The insignificant association suggests that biodiversity management among sample firms does not influence their financial performance. This is contrary to the assertion of biodiversity management resulting in better financial performance as found by ACCA (2012) and Cambridge Institute for Sustainability Leadership (2015). This result indicates that the current biodiversity measures such as restoration of contaminated areas, sponsorship of nature organisations and protection of soil and vegetation of Ghanaian SMEs do not significantly affect their financial performance. From the biodiversity management descriptive statistics, it is clear that sample firms attach importance to the restoration of contaminated areas and vegetation protection since this has an immediate and visible impact on their business and its properties but overall less attention for biodiversity management. Also, low environmental awareness and enforcement of environmental laws may account for the insignificance of the result.

The results show that there is a significant positive relationship between EMP and financial performance of SMEs in Ghana. These results may be explained by the theory of the firm (neo-classical view) due to the focus on the economic responsibility of the firm in line with the stages of CSR development in developing countries (Visser 2006). From the theory of the firm perspective, environmental management practices are worth pursuing once it will result in economic benefit to the firm. Environmental management practices are seen more as a

strategic investment than mere social activity which helps firms to fulfil their profit objective and the economic responsibility expectation of society. The result from Model 4 showing the six components of environmental management revealed that all the actions with significant effect were related to (energy efficiency, water, waste and material management) independent variables which were in the category of "reduce consumption of resource" (Côté et al. 2006). Overall, the majority of the actions undertaken (see descriptive results of objective one) are easy to implement since they are not financially burdensome, less technical and effort and time required are usually within SMEs' resource limits (Baylis et al. 1998). The benefits associated with such actions are predictable and visible in the short-term which in effect matches most Ghanaian SMEs' funding situation and the economic responsibility of the firm (Abor and Biekpe 2006a; Carroll 2016). The outcome of such actions also impacts directly on the firms' bottom line through cost reduction (Rooney 1993; Sarkis 2001; Lucas and Wilson 2008). It can be argued that the focus on cost reduction and "picking low hanging fruits" makes EMPs strategic which supports the profit maximisation (theory of the firm) and short-term behaviour of SMEs. Spence and Rutherfoord (2001) and Russo and Perrini (2010) contend that SMEs are independent, multitasking, have limited cash flow which necessitates the need to deal with short-term issues which have a direct implication on profitability and survival. Firms operating with limited resources are more willing to participate in environmental initiatives which have the immediate effect of minimising costs and maximising profit. This can be seen in the light of the theory of the firm in that environmental investment may only be worthwhile if it may result in improved firm performance and since businesses exist to make profit then resource allocation is likely to follow suit. It has been suggested, however, that in search for profit SMEs' may concentrate their effort and limited resources in areas of immediate benefit which may result in resource efficiency and hence adverse environmental effects are minimised. This gives some support to the advocates of the "win-win" and business case for environmental management.

However, the non-significance of the other two disaggregated variables (pollution management and biodiversity management) in Model 4 seems to suggest that not all EMPs undertaken by Ghanaian SMEs results in significant improvement in the bottom line. This calls into question the strategic perspective of such activities by the SMEs since there is no significant positive effect of these activities on FP which is contrary to the strategic implication of undertaking EMPs from the theory of the firm perspective and may fail the

firm in fulfilling its economic responsibility. Seen in the light of the theory of the firm, this is a contradiction because the theory of the firm encourages business to use it available resources to engage in EMPs which will increase its profits since environmental management expenditure is seen as valuable investment which needs to result in improvement of the firm's financial performance else EMPs may be regarded as mere social activity which adds cost to the business even though no significant link exists. These two practices may not lend support to the theory of the firm's position for the firms' engagement in EMPs but there is the need to investigate firm-specific practices such as effort or other non-financial performance variables in order to understand why these variables have no significant effect on firm financial performance. This will help managers identify the conditions under which such EMPs may not impacts on FP even when considered as strategic firm activity in an environment where CSR development is at base of the Carroll pyramid.

The results from Model 4 together with that of the nature and extent of environmental management practices among Ghanaian SMEs is interesting giving a clear indication of where efforts were mostly concentrated and the impact of each variable on financial performance. The beta scores of the six components of environmental management practices presented in Table 6.20 above indicate the relative contribution of each of the six independent variables to the explanation of financial performance of the firms. The contribution of water management is the highest with a beta of .201. This is followed by material management with a beta of .198, waste management with a beta of .193 and energy efficiency with a beta of .147 in that order. These results show that among Ghanaian SMEs, ability to manage water consumption has the largest effect on the firm financial performance even though material, waste and energy also make a significant contribution to the financial performance of the firm. Pollution management (.112) occupies the fifth position in terms of contribution to the explanation of the dependent variable. The contribution of biodiversity management (-.013) is negative and last indicating that currently, this item does not add to the financial performance of the firm.

This suggests that different dimensions of environmental management practices implemented in a firm may contribute differently to affect financial performance. This gives backing to the importance of testing disaggregated environmental management variables than just one variable (González-Benito and González-Benito 2005; Montabon et al. 2007; Pereira-Moliner et al. 2015; Nollet et al. 2016).

On the control variables, the study found a significantly negative relationship between owner-manager age and financial performance. This in a way contradicts the theoretical suggestion that, advancement in age is deemed to associate with an accumulation of experience (both company-specific knowledge and general economic/social knowledge) which enhances situational analysis/management at the workplace with a positive effect on performance. The significant and negative results in respect of owner-manager age is consistent with the aggressive style of investment attributed to young owner-managers' boldness, risk appetite and ability to integrate information into their decision making process for firm growth and profitability (Storey 1994; Prendergast and Stole 1996). Blackburn et al (2013) supported this with their finding that young owner-managers are more willing than older owner-managers to share good business practices and involve in a joint venture which enhances their firms' performance. The result, however, contradicts Woldie et al (2008) who found that firms managed by older owner-managers grew faster than that of the younger owner-mangers. In terms of owner-manager gender, the study found no statistically significant association with financial performance. This result may indicate that gender on its own may not influence performance and supports the findings of Watson (2002); Johnsen and McMahon (2005) and Dezso and Ross (2008) who suggested that gender has no significant effect on firm performance. The result contradicts findings of prior studies on owner-manager gender (Davies et al. 2010).

The significant positive relationship between owner-manager education level and financial performance means that firms with owner-managers who have attained a higher level of education demonstrated by their educational qualification perform better financially than their counterparts with lower levels of education. This result may be seen in the light of highly educated firm owners being more willing to bring on board equity investors than debt financing compared to their lesser educated counterparts who because of wanting to maintain control rather employs debt financing which may affect their profitability due to high-interest payment (Abor and Biekpe 2006b). This result is consistent with Graham and Harvey (2002); Goll and Rasheed (2005) and Gottesman and Morey (2006) who also suggested that information utilisation in strategic decision making, innovation, better change management and good team player are associated with higher levels of education. Finally, the result indicated that there is no statistically significant relationship between owner-manager experience and firm financial performance. This confirms Storey's (1994) finding that

experience of owner-managers does not have any significant effect on firm performance. However, it is contrary the result by Afrifa (2013) and Isaga (2015) who found that owner-manager experience impacts on financial performance.

With respect to firm-specific control variables, the evidence of insignificant effect of ownership type on financial performance suggests that ownership type does not influence firm financial performance. This result offers support for Arosa et al (2010) assertion that there is no link between ownership type and firm performance. This result is contrary to Abor and Biekpe (2006b) and Greenwood et al (2006) argument that ownership status of a business affects its overall performance and profitability. Firm age is statistically significant and positive in relation to financial performance. This indicates that firm age influences financial performance from the result of the study. This is consistent with the finding Islam et al (2011) but contrary to the negative impact of age on financial performance found by Shergill and Sarkaria (1999) and Loderer and Waelchli (2009). Firm age it is argued is normally associated with experience and knowledge in the operational environment. This makes it relatively easy for older firms to develop adaptive skills in challenging business environment which will aid its survival and eventual performance. According to Shergill and Sarkaria (1999), older firms are expected to use their enormous experiences, core skills, networks, performance records and credit history (Musamali and Tarus 2013) to outperform young ones at the marketplace. The possession of all these factors makes it easy for older firms to deal with industry stakeholder. In Ghana like other jurisdiction, performance record, credit history and years of existence are important to lenders.

The study also found a positive but insignificant relationship between firm size and financial performance. This result offers support to Filbeck and Gorman (2004) who found no significant relationship between firm size and performance. This indicates that the impact of firm size on profitability is very limited and the result is contrary to the significant impact of firm size recorded by earlier studies (see Ramasamy et al. 2005; Tarziján and Ramirez 2010; Salman and Yazdanfar 2012). The result is contrary to our expectation indicating that firm size in isolation may not impact much on performance. The result of industry classification suggests that there is no statistically significant relationship between industry and financial performance. Prior literature on industry and firm performance indicates that industry is a key determinant of profitability (Porter 1980). Schiefer and Hartmann (2013) pointed out that between 5 and 18 percent of firms' performance is due to the effect of the industry. This is

supported by Schmalensee (1985) who found industrial effect explaining over 75% of performance variations in the sampled firms. The study's result contradicts these and rather provides evidence to the effect that industry is a less significant determinant factor in firm performance. This finding in part support Galbreath and Galvin (2008) who contend that firm-specific resources rather than industry effect is dominant in explaining the performance variation across firms.

6.7 Robustness Test

The main aim of undertaking a robustness check is to measure the model's capacity to remain unaffected by small deliberate variations in the model parameters (Heyden et al. 2006). This is a form of sensitivity analysis and helps to demonstrate the reliability of the model's usage. To ascertain the robustness of the main model in this study, two types of robustness check are conducted. First, an examination is carried out on the relationship between Revenue Growth (RG) which is a sub-component of the financial performance index and environmental management practices. Second, a sub-sample is used to examine the environmental management practices-firm financial performance link and an analysis according to firm size. This is in line with Lucas and Wilson (2008) call for studies to understand how differences in characteristics and sectors influence the environmental management-financial performance relationship.

6.7.1 Environmental Management Practices and Revenue Growth

Highly aggregated dependant variable even though useful may not provide the results relating to other activities of the business as a firm may excel, be average or below average in these other activities which combine to present a picture of overall performance (Ray et al. 2004). Prior research has indicated that the use of single self-evaluated measure of financial performance rather than aggregated financial indicator as a dependent variable is not unusual (Montabon et al. 2007). For example, Tanriverdi and Lee (2008) used sales growth and market share as single indicators of financial performance in their analysis. Market share as single performance indicator has also been used in addition to aggregated measures for regression analysis by Antoncic and Prodan (2008). Again Vijfvinkel et al (2011) used to profit and revenue developments measured as single variables rather than aggregated variables to represent financial performance in their environmental sustainability-financial performance regression analysis. In examining the effect(s) of environmental management

practices on firm financial performance, different channels of influence have been proposed. The effect of environmental management can be through increased revenue by attracting environmentally sensitive customers or improved profit by cost savings (Porter and Van der Linde 1995). Revenue growth is often seen as a measure of a firm's growth which is also the primary goal of a greater number of firms (Erdoğan and Kaya 2014). This is because revenue growth may provide the best picture of short and long-term changes in an organisation (Coad and Hölzl 2010). Vijfvinkel et al (2011) argued that cost savings from environmental management practices or sustainability practices have indirect impact on revenue growth of a firm. This is because a firm which is able to lower its operational costs is well placed to lower its asking price for its products and services thereby increasing sales. This, therefore, implies that revenue growth may indicate the overall demand generated by a firm for its product(s). This is a broader indicator of how well a firm is doing even though it does not capture efficiency like profitability indicators. The current study, therefore, decided to adopt revenue growth which is a sub-component of financial performance as the dependent variable to test the sensitivity of the main model. This has the effect of isolating the effect(s) of the other financial performance indicators from the results.

Table 6.21 below presents the results of the relationship between environmental management practices and revenue growth. Model 1 shows that the R^2 is 0.122 indicating that the model which contains owner-manager socio-demographic characteristics explains 12.2% of the variability in the growth of revenue among sample firms. This is comparable to 13.8% of Model 1 in Table 6.20. All variables retained their direction and significance as in the main regression. Model 2 contributes 5.8% to the variations in revenue growth. Under Model 2, in addition to firm age, the firm industry is significant indicating the influence of the service sector on revenue growth relative to the manufacturing.

The Model 3 which includes the overall measure of environmental management practices (composite) have an R^2 of 36.2%. It also indicates that the overall measure of environmental management practices (composite) has a significant and positive association with growth in revenue at 1 percent significant level. This indicates that a firm's environmental management practices influence its revenue growth. The socio-demographics of firm owners (control variables) including owner-manager age, gender, education and experience remained unchanged from that reported in Model 3 in the main regression. Also, the relationship of firm-specific characteristics (control variables) including firm ownership, firm age, firm size

and firm industry is not significant. Overall the result is similar to that achieved in Model 3 under Table 6.20 with no significant differences.

The results of the relationship between the six components of environmental management practices and the revenue growth are presented in Model 4, of Table 6.21. From Model 4, the sub-components of environmental management practices explained 20.5% of the variation in revenue growth. The overall Model has an R^2 of 0.385 indicating that the model explains 38.5% of the variability in the revenue growth performance. The effect of the disaggregated environmental variables in Model 4 indicates that water, waste and material all have a positive and significant effect on revenue growth at the 5% significant level. Pollution and biodiversity management remain insignificant. This suggests that by managing these factors (water, waste and material) in operations it may result in a reduction of costs which will impact positively on the firm's revenue. Although the significance of energy management diminished it still maintained a positive relationship with revenue growth.

Table 6.21. Environmental Management Practices and Growth in Sales

	Standardized estimates			
	Model 1	Model 2	Model 3	Model 4
-Environ. mgt. practices			.529 (8.076) ***	
-Energy efficiency				.095 (1.311)
-Water mgt.				.172 (2.187)*
-Waste mgt.				.137 (2.030)*
-Material mgt.				.205 (2.421)*
-Pollution mgt.				.094 (1.229)
-Biodiversity mgt.				.001 (.014)
-OMAge	-.162 (-2.565)**	-.159 (-2.566)**	-.065 (-1.161)	-.045 (-.794)
-OMGender	.055 (.881)	.031 (.507)	.042 (.780)	.025 (.459)
-OMEducation	.267 (4.225)***	.232 (3.728)***	.042 (.701)	.054 (.902)
-OMExperience	.045 (.733)	-.027 (-.388)	.008 (.130)	.013 (.196)
-Firm ownership		.044 (.697)	-.001 (-.017)	.016 (.285)
-Firm age		.135 (1.833)†	.051 (.767)	.033 (.495)
-Firm size		.094 (.082)	.030 (.525)	.084 (.050)
-Firm industry		-.142 (-2.310)*	-.023 (-.400)	-.010 (-.176)
R^2	.122	.180	.362	.385

ΔR^2		.058	.182	.205
Adjusted R^2	.107	.151	.337	.346
ΔF-statistics	8.091^{***}	4.024^{**}	65.221^{***}	12.387^{***}

Notes: Dependent variable: growth in revenue/sales; Δ in R^2 and F-statistics for Model 3 and Model 4 were computed after Model 2; p-values are in the parenthesis; $^{\dagger}p < .10$; $^{*}p < .05$; $^{**}p < .01$; $^{***}p < .001$

All the socio-demographic characteristics maintained the same relationship direction in Model 4 as they did in the main regression Model 4 in Table 6.20. Regarding firm-specific characteristic control variables, ownership type, firm age, firm size and firm industry were all insignificant as in Model 4 of the main regression results. From these analyses, it suggests that generally, the results and findings from Model 4 in Table 6.21 and that of Model 4 in Table 6.20 are largely consistent. An indication that the results are not sensitive to a different type of financial performance indicator. Based on the outcome of this testing the reported results from the models are deemed appropriate.

6.7.2 Environmental Management Practice of Industrial Sectors and Financial Performance

The study in an attempt to check the robustness of the findings controlled for the potential impact of the sample structure. This was done to check influences likely to arise from the different industrial sectors (Trump et al. 2015). This was done by undertaking an analysis on sub-samples consisting of only service or manufacturing companies thereby renouncing the cross-sectional character of the sample (Trump et al. 2015). Research has shown that environmental improvements which often lead to lowering environmental costs have a varying effect on different industries (King and Lenox 2001; Jo et al. 2014). This indicates that industry-specific effect may influence the study' result. The proponents of the market-based view (MBV) believe firms that are positioned in the attractive industry may be able to make an abnormal profit (Porter 1980). From their perspective, the industry is important performance determinant. Schiefer and Hartmann (2013) pointed out that the effect of the industry on performance reported by various studies range between 5 and 18 percent.

Table 6.22 below presents the results of the relationship between environmental management practices and financial performance of both sectors. Model 1 which contains owner-manager socio-demographic characteristics explains 12.4% and 20.8% of the variability in the financial performance in both industries respectively. In Model 1 under service industry, owner-manager gender was not significant but owner-manager age and education were

significant. However, the level of significance for both owner-manager age and education reduced but the direction of the relationship remained as it was in Model 1 in Table 6.20. Under manufacturing in Model 1 owner-manager age and gender were not significant but education and experience were both positive and significant. This means that in the manufacturing industry owner-managers education and experience influence financial performance offering support for Toohey (2009), Afrifa (2013) and Isaga (2015) who also found significant positive effect of experience on firm performance. Model 2 contributes 6.5% and 5.7% of the variations in financial performance in service and manufacturing respectively. Under Model 2, in addition to firm age, firm size is positive and significant in the service industry but not manufacturing, indicating that larger firms in the service sector perform better financially. However, ownership type is significant and positive in manufacturing which shows that firms with company legal status perform relatively well financially than sole proprietorship and partnership. This supports Greenwood et al (2006) finding that due to diverse knowledge and skills base of firms with company status it impacts positively on their performance. Also, owner-manager age is negative and significant for manufacturing firms.

In Model 3, the environmental management practices account for 21.4% and 28.2% of the variances in financial performance of service and manufacturing firms respectively. The link between environmental management practices (composite variable) and financial performance is positive and statistically significant at the 1% level in both industries. This implies that environmental management practices improve the financial performance of the firms in both industries. The owner-manager age, gender, education and experience remained insignificant which is the same as in Model 3 of the main Model's results. Also, firm-specific control variables, firm ownership, firm age and firm size remained insignificant. The results from this analysis are similar in all aspect to the results obtained in the main regression analysis in Table 6.20 Model 3.

Table 6.22. Industrial Sector and Financial Performance

	Standardized estimates							
	Model 1		Model 2		Model 3		Model 4	
	Service	Manuf.	Service	Manuf.	Service	Manuf.	Service	Manuf.
-Environ. mgt. practices					.551 (6.613)***	.664 (7.807)***		
-Energy efficiency							.175 (1.963)*	.061 (.653)
-Water mgt.							.259 (2.430)*	.203 (2.037)*
-Waste mgt.							.204 (2.424)*	.177 (1.692)†
-Material mgt.							.017 (.138)	.314 (3.065)**
-Pollution mgt.							.184 (1.912)†	.068 (.621)
-Biodiversity mgt.							-.033 (-.367)	.017 (.191)
-OMAge	-.171 (-1.947)†	-.130 (-1.435)	-.136 (-1.562)	-.167 (-1.852)†	-.073 (-.972)	.008 (.107)	-.046 (-.613)	.035 (.461)
-OMGender	.092 (1.094)	-.034 (-.385)	.070 (.841)	-.047 (-.539)	.061 (.849)	-.010 (-.146)	.075 (1.034)	-.058 (-.801)
-OMEducation	.236 (2.754)**	.392 (4.299)***	.243 (2.903)**	.328 (3.520)***	.062 (.087)	.061 (.753)	.088 (1.127)	.102 (1.208)
-OMExperience	-.045 (-.524)	.181 (2.025)*	-.123 (-1.361)	.062 (.552)	-.098 (-1.257)	.145 (1.613)	-.157 (-1.792)†	.163 (1.732)†
-Firm ownership			-.027 (-.320)	.205 (2.266)*	-.050 (-.685)	105 (1.448)	-.030 (-.395)	.100 (1.379)
-Firm age			.201 (2.183)*	.161 (1.265)	.094 (1.166)	.005 (.046)	.092 (1.098)	-.019 (-.182)
-Firm size			.157 (1.870)†	-.068 (-.677)	.006 (.076)	.018 (.232)	.004 (.056)	.053 (.669)
R^2	.124	.208	.189	.265	.403	.547	.440	.585
ΔR^2			.065	.057	.214	.282	.250	.320
Adjusted R^2	.096	.177	.143	.213	.364	.510	.378	.526
ΔF-statistics	4.462**	6.711***	3.301*	2.537†	43.726***	60.948***	8.719***	11.924***

Notes: Dependent variable: firm financial performance (composite); Δ in R^2 and F-statistics for Model 3 and Model 4 were computed after Model 2; p-values are in the parenthesis; †p < .10; *p < .05; **p < .01; ***p < .001

The results of the relationship between the six components of environmental management practices and financial performance in the service and manufacturing sectors are presented in Models 4. The sub-components in the Model accounts for 25.0% and 32.0% of the financial performance variations in the sub-samples of service and manufacturing respectively. The results show that in the service industry, energy efficiency, water, waste and pollution are statistically significant with material management losing it's significant but maintaining its direction. Biodiversity management remained statistically insignificant and negative. In the manufacturing sector, water, waste and material are all positive and significant with energy losing it's significant but remaining positive. Both pollution and biodiversity are insignificant. When the socio-demographic characteristics of owner-managers were examined age, gender, education remained insignificant. However, the owner-manager experience was found to be negative and significant in the service industry and positive and significant in the manufacturing industry. This suggests that whiles owner-managers experience decreases financial performance in the service industry, it improves financial performance in the manufacturing industry. Regarding firm-specific characteristic control variables, ownership type, firm age and firm size all displayed insignificant relationship with financial performance. From this analysis, it suggests that generally, the results and findings from the models in Table 6.22 and that of the main models in Table 6.20 above are largely consistent. An indication that the results are not sensitive to a different type of industry.

6.7.3 Environmental Management Practice of Different Firm Sizes and Financial Performance

A further analysis was undertaken to examine the effect of environmental management practices of different firms according to their sizes on financial performance. It has been suggested that larger firm usually denoted by size is more proactive in environmental management practices than smaller firm. This is premise on the resource based view of the firm which argues that larger firms are more endow with stable resources (time, finance and human resources) which makes it relatively easy for them to undertake environmental management practices (Williamson et al. 2006; Lepoutre and Heene 2006). Also, larger firms due to their visibility are more exposed to public scrutiny and any irresponsible behaviour may affect their reputation and survival (Lynch-Wood et al. 2009). This size effect is expected to be less pronounced among SMEs. However, all things being equal, larger SMEs may have more resources and visibility than smaller SMEs and maybe more involved in

EMPs. Therefore, differences in firm size may impact on performance differently from this perspective (Uhlaner et al. 2012). Table 6.23 below presents the results of environmental management and financial performance of SMEs of different sizes.

Model 1 which contains owner-manager socio-demographic characteristics explains 19.0%, 23.7% and 11.4% of the variability in the financial performance in micro, small and medium firms respectively. In Model 1 owner-manager age was significant only for small firms with owner-manager gender being significant for only medium firms. Education was, however, significant for both micro and small firm but not medium and owner-manager experience was not significant for any firm size. This means that gender influence FP of medium firms which support Abor and Biekpe (2006b) who found a significant relationship between gender and firm performance. Also, education of micro and small firms' owner-managers is an important indicator of FP of the firm.

Model 2 which contains firm-specific characteristics contributes 7.2%, 3.0% and 27.8% of the variations in financial performance of micro and medium firms respectively. Under Model 2, firm ownership was only significant for medium firms which indicate that medium firms with company legal status perform relatively well financially than sole proprietorship and partnership. Industry type and firm age were only significant for micro firms which show that micro firms in the service industry and old micro firms perform better financially. The firm ownership, industry and age are not significant in small firms. Also, industry and firm age do not significantly affect the financial performance of medium firms.

Table 6.23 Firm size and Financial Performance

Predictors:	Standardised estimates								
	Model 1			Model 2			Model 3		
	Micro	Small	Medium	Micro	Small	Medium	Micro	Small	Medium
-Environ. mgt. practices							.591(6.774)***	.662(5.799)***	.764(5.467)***
-Energy efficiency									
-Water mgt.									
-Waste mgt.									
-Material mgt.									
-Pollution mgt.									
-Biodiversity mgt.									
-CEO age	-.132(-1.557)	-.259(-2.420)*	-.113(-.621)	-.103(-1.247)	-.273(-2.531)*	.211(1.101)	-.065(-.918)	-.068(-.699)	.410(3.027)***
-CEO gender	.110(1.295)	-.138(-1.367)	.323(1.775)†	.067(.810)	-.142(-1.399)	.067(.377)	.057(.806)	-.068(-.794)	-.094(-.752)
-CEO education	.364(4.310)***	.309(2.842)**	-.022(-.118)	.321(3.870)***	.274(2.413)*	.167(.970)	.052(.644)	.097(.973)	.106(.897)
-CEO experience	.066(.793)	.111(1.079)	-.031(-.172)	-.064(-.675)	.020(.168)	-.077(-.395)	-.071(-.879)	.127(1.276)	.219(1.535)
-Firm ownership				-.008(-.099)	.049(.448)	.716(3.328)***	001(.009)	-.024(-.254)	.452(2.925)**
-Firm industry				-.159(-1.958)†	-.066(-.635)	-.047(-.274)	.015(.203)	.107(1.171)	-.105(-.885)
-Firm age				.265(2.691)**	.156(1.367)	-.200(-.938)	.168(1.985)*	-.061(-.602)	-.240(-1.654)†
R^2	.190	.237	.114	.262	.266	.392	.475	.495	.729
ΔR^2				.072	.030	.278	.213	.229	.337
Adjusted R^2	.162	.198	-.013	.217	.198	.222	.438	.441	.639
Δ(F-statistics)	6.849***	6.045***	.900	3.725*	1.006	3.819*	45.891***	33.624***	29.890***
DF	117	78	28	114	75	25	113	74	24

Notes: Dependent variable: firm financial performance (composite); p-values are in the parenthesis; †p < .10; *p < .05; **p < .01; ***p < .001

Table 6.23 Firm size and Financial Performance-Continued

Predictors:	Standardised estimate		
	Model 4		
	Micro	Small	Medium
-Environ. mgt. practices			
-Energy efficiency	.115(1.193)	.158(1.357)	.129(.610)
-Water mgt.	.069(.669)	.349(2.839)**	.431(2.146)*
-Waste mgt.	.203(2.298)*	.235(2.004)*	.304(1.732)†
-Material mgt.	.223(2.061)*	.235(1.629)	.010(.048)
-Pollution mgt.	.210(2.140)*	-.027(-.190)	.160(.960)
-Biodiversity mgt.	.006(.065)	-.052(-.457)	.072(.425)
-CEO age	-.038(-.528)	-.021(-.208)	.406(2.625)**
-CEO gender	.048(.637)	-.086(-1.027)	-.116(-.766)
-CEO education	.027(.325)	.101(1.049)	.151(1.100)
-CEO experience	-.071(-.848)	.085(.788)	.226(1.310)
-Firm ownership	.009(.123)	.013(.146)	.469(2.548)**
-Firm industry	.021(.281)	.148(1.632)	-.144(-1.002)
-Firm age	.152(1.760)†	-.078(-.786)	-.271(-1.506)
R^2	.491	.593	.758
ΔR^2	.229	.327	.366
Adjusted R^2	.430	.516	.393
Δ(F-statistics)	8.111***	9.229***	4.789**
DF	108	69	19

Notes: Dependent variable: firm financial performance (composite);
Δ in R^2 and F-statistics for Model 4 was computed after Model 2;
p-values are in the parenthesis; †p < .10; *p < .05; **p < .01; ***p < .001

In Model 3 the environmental management practices account for 21.3%, 22.9% and 33.7% of the variances in financial performance of micro, small and medium firms respectively. The link between environmental management practices (composite variable) and financial performance is positive and statistically significant at the 1% level in all firm sizes. This implies that environmental management practices improve the financial performance of firms of all sizes. This offers support for Aragon-Correa et al (2008) argument that firm size should not inhibit firms from enjoying competitive advantages associated with EMPs. However, the effect of firm size may not be discounted entirely as it impacts on the firm' ability to undertake EMPs and its effect on financial performance. The contribution of environmental management to financial performance is relatively high in medium firms with a beta of .764, followed by small firms and then micro firm.

The owner-manager age, gender, education and experience remained insignificant for micro and small firms which are the same as in Model 3 of the main results. Under medium firms, all owner-manager control variables were insignificant except owner-manager age which was significant and indicates that older owner-manager have an influence on financial performance. Also, firm-specific control variables under micro and small remained insignificant with the exception of firm age which is positive and significant. However, under the medium category, company status and firm age have a significant effect on firm financial performance. The results from this analysis are qualitatively similar in all aspect to the results obtained in the main regression analysis in Table 6.20 Model 3.

The results of the relationship between the six components of environmental management practices and financial performance in micro, small and medium firms are presented in Model 4. The sub-components in the Model accounts for 22.9%, 32.7% and 36.6% of the financial performance variations in the sub-samples of micro, small and medium firms respectively. The results show that in the micro firms, waste, material and pollution are statistically significant with energy, water and biodiversity management been insignificant. In small and medium firms, water and waste management are all positive and significant. Waste management influence financial performance in all firm sizes. Micro firms seem to focus more on material and pollution management than small and medium firms. This may be due to their relatively limited resources and their deep embeddedness in the local community which necessitates close attention to pollution (Jamali et al. 2017). Biodiversity management remains insignificant respective of firm size. This indicates that the concept of biodiversity management is still infantile among SMEs. When the socio-demographic characteristics of owner-managers were examined gender, education and experience are insignificant. However, owner-manager age was found to be positive and significant in medium firms. This suggests that owner-managers age improves financial performance among medium firms. Regarding firm-specific characteristics variables, with the exception of firm age and firm ownership which were significant under micro and medium respectively, all the other variables displayed insignificant relationship with financial performance. From this analysis, it suggests that generally, the results and findings from the models in Table 6.23 and that of the main models in Table 6.20 above do not differ significantly.

In summary, the results from the alternative financial performance indicator (revenue growth), industrial sector sample and firm size analyses show general consistency with the main regression analysis. In this regard, the results do not change the key inferences drawn based on the reported findings from the main analysis. Overall, the findings from the sensitivity analyses agree with those obtained from the main regression analysis reported in Table 6.20.

6.8 Summary

The aim of the chapter is to present and discuss the empirical results relating to the objectives of the study. The chapter has presented and analysed primary data collected from sampled firms in an attempt to answer the research questions of the study. The chapter started with an analysis of results relating to the nature and extent of environmental management practices of Ghanaian SMEs. This was followed by an analysis of the barriers which respondents perceive as hindering their environmental practices. Using descriptive statistics especially the mean and t-test, the nature of environmental management practices among sample firms is more tilted towards "common sense cost cutting" resources conservation and the extent of the environmental management practices is generally at average level which is quite promising considering the developmental path of the nation and the ranking of the national environmental management as weak (Yale University 2014, 2016). Environmental management efforts are relatively high for material, energy and water management. This result is discussed in the light of the literature, theoretical framework of the study and the general socio-economic and environmental conditions in Ghana. Similarly, the identified environmental barriers including limited resources, lack of support services, poor level of stakeholder pressure, lack of knowledge and owner attitude and regulatory challenges were discussed. From the results of the barrier identification and analysis, it is evident that the various environmental agencies must increase the level of environmental education and support for this important segment of the business community and the general public to increase the demand for environmental quality from these businesses.

To address the question relating to the effect of environmental management on the financial performance of the firms, the primary data was again subjected to series of statistical analysis including descriptive statistics, EFA, correlation analysis and multiple regressions. The multiple regression analysis variables included environmental management practices

(composite) and its six components, owner-manager socio-demographic characteristics and firm-specific characteristics. The results of the regression analysis indicate that environmental management practices (composite) and four of its components have a positive and significant association with firm financial performance. However, pollution and biodiversity management has no significant relationship with firm financial performance. Robustness tests conducted show that alternative financial performance indicator (revenue growth), industrial sector samples and firm size analyses showed general consistency with the main regression analysis.

CHAPTER SEVEN

Summary, Conclusion and Recommendations

7.0 Introduction

This concluding chapter presents the summary, implications, limitations of the study and possible avenues for future research. The rest of the chapter is organised as follows. Section 7.1 presents the summary of the study. This is followed by section 7.2 which presents the contribution of the study. Section 7.3 summarises the recommendations and policy implication of the study. The study presents the main limitations and future research directions in section 7.4 and section 7.5 concludes the chapter.

7.1 Summary of the Study

From the review of the relevant literature, not much is known in the context of Ghana about the nature, extent and barriers of EMPs and how EMPs affects SMEs' financial performance. The main objective of this research was to investigate the relationship between environmental management practices and financial performance among Ghanaian SMEs.

The research also has two subsidiary objectives which are as follows:

1. To determine the nature and extent of environmental management practices (Energy efficiency, water management, waste management, material management, pollution management (emission to air, water and land) and biodiversity management) of Ghanaian SMEs.

2. To identify barriers to environmental management practices of Ghanaian SMEs.

The population for the study consist of SMEs operating in manufacturing and service sectors in Kumasi metropolis in Ashanti region who were registered members of the National Board for Small Scale Industry (NBSSI), Association of Ghana Industries (AGI) and Ghana Tourist Authority (GTA) during the study period. The choice of manufacturing and service industries were informed by prior studies which have identified these two sectors to have significant impact on the natural environment (Álvarez Gil et al. 2001; López-Gamero et al. 2009; Battisti and Perry 2011; Mensah and Blankson 2013; Ervin et al. 2013; Saeidi et al. 2015). The choice of Kumasi metropolis is based on the fact that it is the second largest commercial town in Ghana and one of two metropolises which houses greater proportion of all businesses

in the region. To improve the representativeness of the target population and reduce sampling error, firms were sampled based on industrial sector- manufacturing and service using simple random sampling procedure (Ezeah and Roberts 2012). The final sample consisted of 149 manufacturing firms and 156 service firms bringing the total to 305. A survey (questionnaire) was undertaken to collect data relating to the EMPs, barriers and FP of the respondents for analysis.

From the findings of the study, the nature of the current environmental management practices of Ghanaian SMEs can be described as "common sense cost cutting" resource conservation eco-friendly practices which in a way serves as the first step towards advance environmental management. It is clear that within each of the six categories basic common sense practices tend to be of priority. The results also revealed that the firms were involved in all the six components of EMPs with relatively low involvement in biodiversity management. The study identified that respondents' firms concentrate much effort on material management, energy efficiency and water management to a relatively higher extent since the overall score of these environmental management variables were above the rest. This outcome may be attributed to the significant proportion of total cost of operations they constitute as well as the regulatory authorities' effort especially in the area of energy efficiency equipment. It was noted that the general application of technological measures in the firms' environmental practices were relatively low. Another issue of concern is the poor waste separation at source by sample firms. The results show that generally, the extent of the average Ghanaian SME's EMPs is average for the majority of the six sub-components of EMPs which is very encouraging.

The study also identifies the barriers encountered by Ghanaian SMEs in their environmental management practices. It was found that SMEs encounter several challenges in their environmental uptake journey which theoretically may be underpinned by institutional void, stakeholder distance and lack of threat to legitimacy for not being environmentally conscious.

The findings from the study indicate that resource limitation represents a key challenge to SMEs' environmental management practice. Specifically, SMEs identified finance, human resources and time as their major constraints when it comes to environmental practices even though they alluded to its likely overall benefit to their business. Respondents were of the view that their limited resources affect their ability to undertake training and develop expertise in environmental management. Also, lack of support services was seen as a barrier

to respondents' environmental improvement practices. In addition, the SMEs' respondents who received environmental support services noted that information accessibility presents a challenge as it is not easy to access environmental information from the supporting institutions. In spite of these challenges, respondents who received services from supporting institutions acknowledged the fact that institutional staff were very knowledgeable on the environmental issues presented to them.

Another major barrier to environmental management practices in the Ghanaian context is lack of stakeholder pressure. The findings suggest that Ghanaian SMEs when it comes to their EMPs do not experience much pressure from the customers, regulatory state institutions, media, NGOs, suppliers, lenders and international customers with the exception being a local community and management/employees. Interestingly, the SMEs' respondents did not identify lack of knowledge and ownership attitude as a barrier to EMPs. However, further probe revealed some level of challenges relating to knowledge and ownership attitude when it comes to EMPs of the respondents' firms. These include Ghanaian SMEs' being more concern about profitability than management of the environmental impact of their firms' activities which in a way supports the lack of ownership commitment and profit orientation of SMEs.

The study further examined the relationship between EMPs and FP of Ghanaian SMEs. The evidence from the data suggests that EMPs (composite) of respondents' firms influence positively their FP. In order to better understand and provide rich insight into the inconclusive results of prior studies, the EMPs were disaggregated into six components (González-Benito and González-Benito 2005) and their individual effect on FP examined. In testing the effect of EMPs on firm FP, the influence of firm-specific and owner-manager characteristics were taken into consideration since prior literature on firm performance has suggested that these impact on FP. The results from the tested hypotheses are shown in Table 7.1 below.

The findings revealed that not all the components of EMPs have a significant effect on FP. Whiles energy, water, waste and material management have a positive and significant effect on firm FP, pollution has a positive but insignificant relationship with FP.

Table 7.1 Results of Hypothesis Test

Hypothesis	Outcome
H1: There is a significant relationship between environmental management and financial performance	Supported
H2: There is a significant relationship between energy efficiency practices and financial performance	Supported
H3: There is a significant relationship between water management and financial performance	Supported
H4: There is a significant relationship between waste management and financial performance	Supported
H5: There is a significant relationship between material management and financial performance	Supported
H6: There is a significant relationship between pollution and financial performance	Not supported
H7: There is a significant relationship between biodiversity management and financial performance	Not supported
H8: There is a positive and significant relationship between owner-manager age and financial performance	Not supported
H9: There is a significant relationship between owner-manager gender and financial performance	Not supported
H10: There is a significant relationship between owner-manager education and financial performance	Supported
H11: There is a positive and significant relationship between owner-manager experience and financial performance	Not supported
H12: There is a significant relationship between ownership type and financial performance	Not supported
H13: There is a significant relationship between firm age and financial performance	Not supported
H14: There is a significant relationship between firm size and financial performance	Not supported
H15: There is a significant relationship between industry classification and financial performance	Not supported

Biodiversity management has a negative but insignificant link with financial performance. This suggests that Ghanaian SMEs unlike their counterparts in the developed countries seem to focus less on pollution and contribution to biodiversity. This may be due to regulatory enforcement and environmental awareness difference in the two economies. However, the relative effect of each variable on FP also differs. The result of the study suggests that even though EMPs (composite) has a significant and positive effect not all environmental management practices undertaken by the firms yield a similar outcome in relation to their effect on financial performance. Thus, the testing of an aggregated variable or single indicator might not give a full picture of the extent to which the results offer support to the

theory of the firm (neo-classical notion of EMPs) when it comes to EMPs in an environment where economic responsibility of the firm is keen.

Also, some of the owner-manager socio-demographics and firm-specific control variables have a significant effect on FP.

7.2 Contribution of the Research

From the theoretical perspective, the study relied on the theory of the firm, institutional, stakeholder and legitimacy theories to examine the barriers and financial effect of EMPs among SMEs in developing country context. It found that the perceived barriers of EMPs to some extent coincide with the theoretical perspectives of institutional, stakeholder and legitimacy theories. Institutional theory is underpinned by the assumption that institutional environment exerts great influence on the development or adoption of formal structures deemed socially acceptable in the organisation than the market pressure in most instances (Hoffman 1999) for the adoption of proactive EMPs. Stakeholder, on the other hand, hold the view that failure to manage key stakeholders may impact on firm performance and that dominant stakeholders such as customers (Sen and Cowley 2013) influence firms to undertake EMPs since they can initiate actions with a negative effect on the firm. The firms' failure to adhere to acceptable social norms and values may affect its legitimacy and survival. Therefore, the absence or ineffectiveness of institutions and stakeholders which do not threaten the legitimacy of the SMEs affect proactiveness of EMPs. Ghanaian SMEs face challenges relating to environmental knowledge and ownership attitude, support services, regulatory constraints, limitation of resources and formal environmental education. Also, the overall level of influence from stakeholders is low. Thus, regulatory and normative institutional weaknesses and stakeholder distance underscore these theoretical perspectives. This is an indication that the key tenets of these theories are applicable in developing country's context for the proactive adoption of EMPs.

The results from the testing of the hypotheses could not offer full support for the theory of the firm (neo-classical notion) view of EMPs as a strategic firm activity which improves firm FP for shareholders. The aggregated EMPs score is positive and significantly related to FP which is in line with the existing study (McWilliam and Segiel 2001) but the disaggregated EMPs are not all significant. EMP is multi-dimensional and therefore basing theoretical explanation solely on aggregated variable or single indicator may not offer a holistic explanation to aid

theory building and testing. This gives an indication that other factors rather than economic may be influencing some individual EMPs' uptake in the study environment even though EMPs of the firm is expected to be guided by the economic responsibility of the firm due to the stage of CSR development. This needs to be investigated for full understanding.

The results of the study also demonstrate the difference that the choice of EMPs variables make when investigating the environmental-financial performance link. Most prior research analysing the relationship between environmental management and FP used either one or an aggregated environmental measure. For example, Sahu (2014) and Pham (2015) all examined the environmental-financial link using energy management as the only environmental measure. Jaggi and Freedman (1992) used only water pollution as the measure of environmental management. However, Aragon-Correa et al (2008), Molina-Azorín et al (2009), López-Gamero et al (2009) also used eco-efficiency with limited EMPs variables such as energy, water and waste included. Although the use of aggregated environmental management measure is insightful, it stops short of disclosing the effect of each of the individual components on FP. This is because it is expected that variation in efforts and resources may impact on the individual environmental measures' association with FP. This may be the case with SMEs, which have been identified as having resources constraints (e.g., finance, human, expertise and time) to manage all the environmental impacts of their activities. The current study provides empirical evidence on the association between EMPs (composite) and each of six components of EMPs following DEFRA (2013) guidelines. Integrating the different components of environmental management rather than only the aggregated environmental measure into the analysis provides deeper insight on how firms' management of the different environmental components impacts on FP.

Also, research evidence on the relationship between EMPs and FP of SMEs is limited in the existing literature. The few ones include Clemens (2006) in the USA, Aragon-Correa et al (2008) in Spain and Qian and Xing (2016) in Australia. The reasons which may account for the limited studies on the environmental management-financial performance link include the non-organised nature of SMEs as a group, private nature of most SMEs and no legal obligation to publish their financial statements. Again, high-level secrecy and reluctance on the part of the owners to give business information out particularly those relating to financial performance for the fear of tax implications. These make it costly in terms of finance and time to gather data to undertake research on the subject matter in SMEs. Therefore, gathering

adequate and accurate data on SMEs to investigate this phenomenon becomes quite a difficult task which requires a lot of resources and effort on the part of researchers.

Investigating the effect of EMPs on FP of SMEs provides evidence of the link existing between these variables. The positive effect of EMPs on FP reported provides new evidence on the relationship between EMPs and FP. This evidence is very important since to the best of our knowledge there seems to be no study that has examined how environmental management practices affect the financial performance of SMEs from developing country perspective. The existing literature to the best of our knowledge has mostly documented evidence pertaining to western economies especially in relation to SMEs (Clemens 2006; Aragón-Correa et al. 2008). The socio-economic and environmental situations in most developing countries are not the same as those of the matured economies in the western world. In most western economies, there is great environmental support and high level of awareness about negative environmental activities. This makes it different from those of developing countries which are currently pursuing economic development relying very much on natural resources which in some instance have resulted in overexploitation. The high poverty levels among the populace also put survival ahead of environmental issues and there are weak environmental regulatory institutions (Alberton et al. 2009; Hossain et al. 2012; Earnhart et al. 2014). Therefore, the current study's geographical context which is characterised by weak environmental management helps broaden our knowledge level on the inconclusive debate on environmental management and financial performance especially from the perspective of the less economically developed country (MESTI 2012; Yale University 2014, 2016).

Another importance of the study relating to subsidiary objective 1 is that it contributes to the literature on the nature and extent of environmental management practices from SMEs' perspective since majority of the documented evidence is from large firms. It is well noted that vast differences exist between SMEs and their larger counterparts in the areas of organisational structure, management style, knowledge level and owner-manager characteristics which are known to influence environmental behaviour to a greater extent (Williamson et al. 2006). SMEs are not miniature of larger firms and therefore findings from research related to large firms may not be applicable to SMEs (Tilley, 1999; Vijfvinkel et al. 2011). The strategy and motivation for environmental management in the two types of entities may differ for instance larger firms due to high visibility and perceive association of

negative environmental impact with size are exposed to high public scrutiny and reputational risk (Lynch-Wood et al. 2009). Hence, they may engage in improving the impact of their operations on the environment. This may not be the same with SMEs which individually is perceived to have an insignificant environmental impact and the focus of their environmental activities seem to be tilted towards activities which will enhance their profitability and survival (Molina-Azorín et al. 2009). Therefore, the nature and extent of EMPs among SMEs are expected to be different from those of larger firms.

With regards to Ghana, the study provides an insight into the nature and extent of EMPs of the wider Ghanaian SMEs for the first time. Recent studies have focused mainly on CSR with flashes of environmental issues of large organisations particularly in the mining sector (Ofori and Hinson 2007; Amponsah-Tawiah and Dartey-Baah 2011). To date studies conducted focus on either large firms or one industrial sector. For instance, Mensah (2006) conducted a study on environmental management performanc among hotels in Accra, Yalley et al (2013) in building construction and oil companies by Achew and Danso-Boateng (2013). Hence to the best of our knowledge, there is no study dedicated to the wider SMEs population and this study through empirical evidence has documented the nature and extent of EMPs relating to energy, water, waste, material, pollution and biodiversity across two key industrial sectors. This has given a clear idea of what aspects of environmental impact that SMEs manage.

Also in relation to subsidiary objective 2, the study contributes to understanding EMPs barriers from both internal and external factors in diverse SME sample. There are relatively limited studies which specifically address EMPs barriers in non- manufacturing SMEs (Ervin et al. 2013). There has also been much attention on drivers of environmental management among firms with a little emphasis on the obstacles firms face in their environmental uptake journey (Pinget et al. 2015). With the help of detail primary survey, the current study expands the analysis of the potential barriers to EMPs to include respondents from both manufacturing and service sectors. Also, the study brings to bear the barriers mitigating against SMEs in developing countries in their environmental endeavours. Unlike advanced countries where there are various initiatives (both financial and technical) to support the environmental effort of SMEs, SMEs in most developing countries lack such support (Williamson and Lynch-Wood 2005; NetRegs 2007). This may present different barriers to environmental uptake from those of the advanced countries. By unearthing the detailed issues constituting each

identified barrier, this study helps bridge the knowledge gap on the barriers facing SMEs in their environmental engagement. This will help policymakers to come out with policies to mitigate SMEs' environmental impact and contribute to climate change effort (Williamson and Lynch-Wood 2005).

7.3 Recommendations/Policy Implications

The results of the study have implications for SME managers and policymakers. First, the evidence provided by the study on the relationship between EMPs and FP has practical implication for owner-managers and policymakers. The result of the study demonstrates that there is a positive and significant relationship between EMPs and FP of the firms. Resources constraint is a very dominant issue when it comes to challenges faced by SMEs. The results of the study are therefore promising for SMEs' environmental management. For SMEs' owner-managers it shows that by investing organisational resources in the environmental management of the firm, financial performance benefits are likely to flow to the firm due to the significant effect of EMPs on FP over short-term. SMEs are known to be more inclined to short-term result than long-term due to the fact that in most instances their working capital financing is relatively for short-term (García-Teruel and Martínez-Solano 2007). This makes the long-term result less attractive to SMEs (Foreman-Peck et al. 2006). This provides valuable insight to SMEs' owner-managers who wish to take advantage of environmental management to improve their financial performance.

In addition, the provision of evidence of the effect of the decomposed environmental management variables on financial performance is highly important. It indicated that the effect of the EMPs is associated strongly with specific EMPs variables (energy, water, waste and material) making it relatively easy for strategic decision making by management. SMEs need to prioritise the management of energy, water, waste and material. This result has the potential of focusing SMEs' attention on the need to manage these variables to save costs and enhance profitability. By so doing, however, resources consumption and greenhouse gases emission may also reduce. For policymakers, such as the EPA and MESTI, this serves as a good piece of evidenced-based environmental management information which could be used in SMEs' environmental awareness programmes. Using this piece of evidence in training programmes provides information for SMEs' owner-managers on the economic role of environmental practices which in a way assures them of environmental management benefits.

On the study's objective of determining the nature and extent of environmental management practices of Ghanaian SMEs, the results revealed that the nature of EMPs is tilted towards what can be described as resources conservation and generally the level of environmental management practices among Ghanaian SMEs is average but promising considering the national environmental culture. However, the relative score for biodiversity management is low. SMEs are often sceptical about the cost-effectiveness of environmental investment. Given these conditions, therefore, SMEs may not be incentivised on their own to manage environmental aspects that do not yield commensurate returns. There is, therefore, the need for policymakers to design environmental educational programs to highlight the beneficial aspects to businesses of managing all aspects of their impacts as well as the harmful effect of environmental irresponsibility. Particular emphasis must be made of the benefits derived from biodiversity and its usefulness for business survival. Again, the EPA and its allied agencies must monitor and enforce the environmental standards as enshrined in Act, 490 and ensure the full implementation of the national biodiversity strategy to protect the ecosystem.

Relating to the nature and extent of EMPs, the study revealed that there is a low level of technological use in environmental practices of SMEs as well as poor waste separation at source. The use of technology is noted to boost efficiency in resources usage and hence conservation since in some instances it eliminates human factor thereby reducing errors. Also, waste separation facilitates efficient and effective processing of waste into other useful materials. For example, most plastics products are recycled for another usage such as garden furniture but where mixed with other unsuitable waste materials it may not be possible or become too costly thereby defeating the objective of resources conservation. The EPA should team up with the various District Assemblies to enforce the waste disposal regulations which entail the separation of waste at source and proper waste disposal. Since the District Assemblies are the ones on the operational field, enforcement may be a bit easy once they are made aware of the environmental challenges such non-separation of waste creates. MESTI and EPA should contract technological firm and liaise with NBSSI, AGI and GTA to educate their members on how latest technologies can be used in their operations to save costs of resources and reduce environmental impact. In this direction, MESTI should set up implementation fund which will enable SMEs to reduce the financial burden associated with acquisition and installation of the technological equipment. Policymakers particularly the EPA should consider producing an abridged version of the EPA Act 490 highlighting the

duty of care and sections requiring businesses to protect the environment. Such document could so be produced in some common local languages to make it easy for owner-managers with low educational level to understand.

The study's results relating to subsidiary objective 2 which is to identify the barriers to EMPs of Ghanaian SMEs revealed several challenges which need the attention of those in charge of environmental issues at the firm and national level. The first is that the results revealed that the knowledge and attitude of owner-managers serve as a barrier to SMEs' environmental management practices. Owner-managers' knowledge and attitude towards the environment is known to influence their environmental behaviour (Roy and Thérin 2008). The knowledge level and attitude of small business owners are very key in their environmental uptake. This is because knowledge to some extent induces awareness and attitude motivates real action to be taken on the issue. It is therefore recommended that policymakers team up with the various industrial associations to organise environmental seminars and workshops on benefits of environmental management on zonal basis to help increase the environmental knowledge and change attitudes towards the environment by SMEs' owner-managers. Given that the level of knowledge on the management of the environmental impact and incorporating environmental management into their strategic plan is low, owner-managers being made aware of it may liaise with their respective associations to bring in experts to improve their level of knowledge which may impact on their actions.

Also, one of the highly-rated barriers to environmental management by respondents is limited resources. The issue of limited resources among SMEs have long been recognised by management literature on SMEs' operations (Aryeetey et al. 1994; Oppong-Boakye et al. 2012; Ahinful 2012). There is, therefore, the need to support SMEs with finance and environmental expertise to achieve any meaningful environmental uptake. In this regard, the policymakers should team up with Microfinance and Small Loan Centre (MASLOC) and NBSSI which are the national institutions set up with one of the functions being to advance loans to micro and small enterprises at a non-commercial rate of interest. This has the tendency of easing the financial burden of SMEs which will have a rippling effect on other resources. Firms accessing the fund should be given environmental management target which in a way will determine the amount and rate at which the next loan will be issued. Environmental experts should be assigned to a group of beneficiaries to offer them technical assistance necessary during the period.

Again, the lack of stakeholders' pressure represents a barrier to environmental uptake among SMEs. The results from the study indicate that apart from the local community and management/employee, the rest of the stakeholders were not seen as influencing the environmental behaviour of SMEs to any large extent. Stakeholder pressure is one of the key motivational factors for uptake of environmental management by firms. In this respect, the media, the NGOs and the National Commission for Civic Education (NCCE) should embark on citizenship environmental awareness campaign to demand environmental responsibility from SMEs who provide them with goods and services. Also, policymakers as part of the national sanitation day should commend SMEs which have been managing their environmental impact on the national and private media houses to encourage such behaviour and improve the level of support services offered to SMEs.

On the issue of recycling of waste by SMEs, there is currently no policy in place requiring firms to recycle waste generated which are deemed recyclable. The findings suggest that there is a very low level of recycling of waste amount SME respondents which in a way adds to the environmental challenges facing the country. The finding suggests the need for immediate policy direction on the need for every company to undertake steps to recycle it recyclable waste to reduce environmental pollution. In this vein, Local Government Act, 1993 should be amended to include such provision. Such legislation should be more prescriptive to allow the District Assemblies to come out with specific provisions and by-laws to target waste activities in their operational areas. The Local Government Ministry should equip District Assemblies with recycling equipment to enable companies without ability or access to recycling equipment to use such facilities at an affordable cost to the company.

Relating to the policy on the recycling is the need for a policy on product stewardship which will enable authorities to hold both local and foreign companies operating in Ghana or having their products in the Ghanaian market accountable for the environmental impact of their products. Currently, there is no product stewardship policy in place which implies that once the product gets to the hands of the customer, the firms are not held accountable for any environmental effect. Waste management among respondents is not high and not having such policy to make firms responsible for the entire lifecycle effect of the product is worrying considering the high waste concerns in the country. The government must consider extended

product stewardship policy as well as bilateral and multilateral agreement with home nations of foreign companies to allow the return of scraps or billed them for any waste which the company did not handle as expected.

The current environmental regulatory policy in operation in Ghana which is EPA Act 490, is too much focus on large firms and this has in a way influenced policy implementations such as AKOBEN project. The Act recommends the need for annual returns and in some cases EIA which considering the educational level of owner-managers and limited resources of most SMEs, it will be very laudable to relook at such provisions and design very simple and easy to complete forms for SMEs to encourage the provision of environmental information to the regulator. This will also help ease the challenge of non-provision of subsequent returns after the initial licence has been issued (Mensah 2006). This is also important since the findings suggest that even respondents who are aware of the existence of environmental regulations in Ghana perceive its complex nature as a problem to compliance.

7.4 Limitations of the Study and Suggestions for Further Research

This study like many other studies acknowledges a number of limitations in spite of its findings having managerial and policy implications. The study relied on closed-ended questionnaire for data collection for analysis. Such questionnaire has its own inherent disadvantage of not allowing respondents to express their view as they wish. However, to minimise this limitation extra space was provided at the end of the questionnaire to allow respondents to add any additional information they wish to give. The key issue is that this solution cannot fully cater for the depth of information that could have been obtained should an interview have been conducted but considering the sample size involved this would have been very costly and time-consuming. Also, the questionnaire was answered by only one person in each firm. This implies that there was no corroboration of the data provided by the respondent in each firm and the EMPs scores may be the perception of the respondent. However, it has been argued that EMPs is strategic and the managers are well placed to provide needed answers. The current approach of data collection has been applied in several environmental studies including Christmann (2000), Álvarez Gil et al (2001), Clemens (2006), López-Gamero et al (2009), Molina-Azorín et al (2009) and Ramathaman (2016). Clemens (2006) suggested the use of Herman test as a way of avoiding mono-method bias. The Herman test for the current study suggested no much issue with subjectivity. In spite of

this evidence, the result of the study should be interpreted with caution. Future studies using the close-ended questionnaire as data collection tool should consider adding more semi-structured questions to overcome the depth of information challenges associated with a close-ended questionnaire. Further, to corroborate the data collected from each firm, two respondents should be chosen to fill in two questions so that the responses can be compared. Alternatively, an interview could be conducted with selected experts on the subject matter and the result can be compared with those collected from the firm.

The study incorporated several variables in examining the effects of EMPs on FP. These include firm-specific and owner-manager characteristics as control variables in examining the effect of EMP on FP of the firms. However, this is not exhaustive and more firm-specific and owner-manager characteristics could be added. Additional factors that may be included are asset tangibility, liquidity and location. These factors will increase the level of understanding of the environmental-financial performance link. Also, future studies may investigate the association between firm-specific, owner-manager characteristics and EMPs of Ghanaian SMEs. This will help policymakers target environmental regulations and educations at specific SMEs' group base on the identified characteristics.

One other shortcoming of the current study is the cross-sectional nature of the study. Whiles this was necessary due to financial and time constraints, it only provided a snapshot of the environmental management practices of the responding firms during only the survey period. Therefore, sample firms' environmental behaviour before or after the survey cannot be analysed. Thus, analysis of environmental behaviour over a period of time is not possible. Longitudinal studies could help confirm the relationship between environmental management practices and financial performance over a longer period of time. This will provide useful insight into the environmental management and financial performance phenomenon.

Another limitation of the study is its reliance on financial performance indicator as firm performance. There are many other measures which can be used as a firm performance indicator(s) in both industries and different researchers have used different indicators to proxy firm performance (Christmann 2000; Álvarez Gil et al. 2001; Ray et al. 2004; Montabon et al. 2007). The application of different measures to represent firm performance gives a clear indication that performance in itself is a complex variable and a single or an aggregated measure may not capture the complete picture. This implies that care must be

exercised when interpreting the current result. Future studies in this area may consider including non-financial performance indicators such as customers loyalty, customer satisfaction, employment growth and innovativeness into the model of the study. This will help provide valuable insight and understanding of how the different types of performance proxies are affected by EMPs of a firm. González-Benito and González-Benito (2005), argued that there is no single link between environmental management and business performance and that the manifestation of the relationship depends on the portfolio of environmental practices demonstrated on the one hand and the kind of business performance which is considered.

Again, the sample selection criteria used represents a limitation of the study. First, the study uses the Regional Project on Enterprise Development (RPED) definition for SME for selection of respondents from NBSSI, AGI and GTA databases. The implication is that the EMPs and its effect on the financial performance of firms which were members of these institutions but did not meet the definition were not captured in this study. Equally, EMPs of small-scale businesses which were not members of these institutions in the survey area were also not analysed. Addition of these two groups in the sample could have resulted in the conclusions being different in this study. Second, the survey was limited to only Kumasi in Ashanti region which cuts off all other members of the NBSSI, AGI and GTA in other districts in Ashanti region as well as those in the remaining nine regions of Ghana. An ideal situation would have been the collection of data from all the regions in Ghana to enhance representativeness. However, the limited resources in terms of finance and time allowed for the study did not make it permissible for the researcher to cover all the ten regions of Ghana for data collection. Future studies on the topic should broaden the scope of the sample to encompass businesses in these databases which did not meet the current definition used in order to explore their environmental practices, barriers and financial performance since they constitute a significant percentage of private sector businesses in Ghana. Again, future studies wishing to replicate this topic should endeavour to select SMEs' respondents from all the ten regions of Ghana to provide a nationwide picture of the nature and extent, barriers and financial effect of EMPs.

Further, the study's results even though are in the context of a developing country it is possible similar results may not be achieved in other developing countries. It will, therefore,

be very informative if future studies could look at comparative studies of two developing countries. This will help compare and contrast the results for better understanding.

7.5 Conclusion

SMEs account for the greater percentage of all businesses in many jurisdictions and the percentage even increases as one move towards less developed and low-income countries. In a similar vein, their combined environmental impact is argued to be highly significant (Hilliary 2004; Qian and Xing 2016). Therefore, any attempt to help reduce their environmental impact is in the right direction. This chapter has attempted to summarise the study's results, contributions, limitations and policy implications. The main objective of the study was to investigate the relationship between EMPs on FP of Ghanaian SMEs to establish the link which will guide future policy interventions. The evidence from the study indicates that EMPs have a positive effect on SMEs' FP in the short-term. The results of the study support the advocates of the "win-win" and business case for environmental management. A firm's environmental management practices can achieve dual benefit of improving negative environmental impact and financial performance. Hence environmental improvement investment can help a firm achieve competitive advantage. In conclusion, EMPs have benefits for SMEs. However, SMEs face some challenges in their environmental uptake which policymakers must pay immediate attention to so that Ghana's fight against climate change can be materialised.

REFERENCES

Abor, J., 2007. Debt policy and performance of SMEs. The Journal of Risk Finance, 8 (4), 364–379.

Abor, J. and Biekpe, N., 2006a. Small business financing initiatives in Ghana. Problems and Perspectives in Management, 4 (3), 69–77.

Abor, J. and Biekpe, N., 2006b. SMEs' access to debt finance: A comparison of male-owned and female-owned businesses in Ghana. Entrepreneurship and Innovation, 7 (2), 105-112.

Abugre, J. B. and Abugre, J. B., 2015. Managerial role in organizational CSR: Empirical lessons from Ghana. Corporate Governance, 14,104-119.

ACCA, 2012. Is natural capital a material issue? An evaluation of the relevance of biodiversity and ecosystem services to accountancy professionals and the private sector. Available from: http://www.accaglobal.com/content/dam/acca/global /PDF technical/environmental-publications/natural-capital.pdf [Accessed 12 October 2012].

Achew, O.-W. and Danso-Boateng, E., 2013. Environmental management in the oil, gas and related energy industries in Ghana. International Journal of Chemical and Environmental Engineering, 4 (2), 116–122.

Adachi, N., 2013. Biodiversity and the real responsibilities of business. Available from http://www.midoripress-aeon.net/column/20130826 biodiversityandthereal responsibilities of business.html [Accessed 22 January 2014].

Adams, A., 2015. EPA closes down Adamus Mining. Ghanaian Chronicle, Accra, Ghana.

Afrifa, G. A. and Tauringana, V., 2015. Corporate governance and performance of UK listed small and medium enterprises. Corporate Governance: The international journal of business in society, 15 (5), 719–733.

Afrifa, G. A., 2013. Working capital management practices of UK SMEs: The role of education and experience. International Journal of Academic Research in Accounting Finance and Management Sciences, 3 (4), 185–196.

Agenor, P.R., 2000. The economics of adjustment and growth, Academic Press, New York.

Ahinful, G. S., 2012. An exploration of the problems facing SMEs in securing bank financing in Kumasi, Ghana. International Journal of Business and Management Cases, 1 (5), 1-9.

Ahuja, G. and Majumdar, S. K., 1998. An assessment of the performance of Indian state owned enterprises. Journal of Productivity Analysis, 9, 113–132.

Aiyub, K., Arifin, K., Awang, A. and Jahii, M. J., 2009. Environmental performance in Small and Medium Sized Enterprises (SMEs) certified to ISO 14001 in the United Kingdom. International Business Management, 3 (1), 7–14.

Ajarfor, S. A., 2014. EPA to unveil 12 zonal offices. Available from: www.newsghana.com [Accessed 5 April 2015].

Akabzaa, T. and Darimani, A., 2001. Impact of mining sector investment in Ghana: A study of the Tarkwa mining region. A draft report for SAPRI, 1–71.

Akindipe, O. S., 2014. The role of raw material management in production operations. International Journal of Managing Value and Supply Chains, 5 (3), 37–44.

Albertini, E., 2013. Does environmental management improve financial performance? A meta analytical review. Organisation and Environment, 26 (4), 431–457.

Alberton, A., da Costa Jr., A. C. N., de Souza Campos, M.L. and Marcon, R., 2009. EMS certification and economic-financial performance: A study on Brazilian companies. Paper presented at the summer conference at Copenhagen Business School, Solbjerg Plads 3 DK2000 Frederiksberg, DENMARK, June 17 – 19.

Ali, H. and Birley, S., 1998. Integrating deductive and inductive approaches in a study of new ventures and customer perceived risk, Cranfield University.

Alperstedt, G. D. and Bulgacov, S., 2015. Environmental Management , Strategic Practices and Praxis : A Study in Santa Catarina Industrial Companies. BAR, Rio de Janeiro,12(3) 288–308.

Alshuwaikhat, H. M. and Abubakar, I., 2008. An integrated approach to achieving campus sustainability: Assessment of the current campus environmental management practices. Journal of Cleaner Production, 16 (16), 1777–1785.

Al-Tuwaijri, S. A., Christensen, T. E. and Hughes, K., 2004. The relations among environmental disclosure, environmental performance, and economic performance: a simultaneous equations approach. Accounting, Organisations and Society, 29 (5-6), 447–471.

Álvarez-Gil, M. J., Burgos Jiménez, J. and Céspedes Lorente, J. J., 2001. An analysis of environmental management, organisational context and performance of Spanish hotels. Omega, 29 (6), 457–471.

Amaeshi, K., Adegbite, E. and Rajwani, T., 2016b. Corporate Social responsibility in challenging and non-enabling institutional contexts: Do Institutional Voids matter ? Journal of Business Ethics, 135–153.

Amaeshi, K., Adegbite, E., Ogbechie, C., Idemudia, U., Anderson, K., Kan, S., Issa, M., and Anakwue, O. I. J., 2016a. Corporate social responsibility in SMEs : A shift from philanthropy to institutional works ? Journal of Business Ethics, 385–400.

Amponsah-Tawiah, K. and Dartey-Baah, K., 2011. Corporate social responsibility in Ghana. International Journal of Business and Social Science, 2 (17), 107–112.

Ann, G. E., Zailani, S. and Wahid, N. A., 2006. A study on the impact of environmental management system (EMS) certification towards firms' performance in Malaysia, Management of Environmental Quality: An International Journal,17(1), 73–93.

Antoncic, B. and Prodan, I., 2008. Alliances, corporate technological entrepreneurship and firm performance: Testing a model on manufacturing firms. Technovation, 28 (5), 257–265.

Anyormi, M. K., 2007. Politics, environment and sustainable development: A survey of Ghana's development path from independence in 1957 to the threshold of the 4 th

Republic 1990 Stockholm 2007. Unpublished master thesis, University of Ghana, Ghana

Apostolos, F., Alexios, P., Georgios, P., Panagiotis, S. and George, C., 2013. Energy efficiency of manufacturing processes: A critical review. Procedia CIRP, 7, 628 633.

Appiah-Fening, F., Pesakovic, G. and Amaria, P., 2008. Relationship between quality management practices and the performance of Small and Medium Size Enterprises (SMEs) in Ghana. International Journal of Quality and Reliability Management, 25 (7), 694–708.

Aragon-Correa, J. A., Hurtado-Torres, N., Sharma, S., and Garcia-Morales, V. J., 2008. Environmental strategy and performance in small firms: A resource-based perspective. Journal of Environmental Management, 86 (1), 88–103.

Armsworth, P. R., Armsworth, A. N., Compton, N., Cottle, P., Davies, I., Emmett, B. A., Fandrich, V., Foote, M., Gaston, K. J., Gardiner, P., Hess, T., Hopkins, J., Horsley, N., Leaver, N., Maynard, T., and Shannon, D., 2010. The ecological research needs of business. Journal of Applied Ecology, 47 (2), 235–243.

Arosa, B., Iturralde, T. and Maseda, A., 2010. Ownership structure and firm performance in non-listed firms: Evidence from Spain. Journal of Family Business Strategy, 1(2), 88-96.

Arthur, P., 2001. Promoting small-scale industries in Ghana: Development institutions culture and politics. Unpublished Doctoral Dissertation submitted to Queen's University, Ontario, Canada.

Aryeetey, E., Harrigan, J. and Nissanke, M., 2000. Economic reforms in Ghana: The miracle and the mirage. James Currey ltd, Oxford.

Aryeetey, E., Baah-Nuakoh, A., Duggleby, T., Hettige, H. and Steel, W.F., 1994. "Supply and demand for finance of Small Scale Enterprises in Ghana", Discussion Paper No. 251, World Bank, Washington, DC.

Aryeetey, E. and Ahene, A. A., 2005. "Changing regulatory environment for Small Medium size Enterprises and their performance in Ghana". Working Paper Series, Paper No. 103, Centre on Regulation and Competition, Institute for Development Policy and Management, University of Manchester, Manchester.

Asamilbila, B.B., 2016. EPA closes down two filling stations. Available from: there publinews.com [Accessed 2 August 2016].

Ashford, N. A., 1993. Understanding technological responses of industrial firms to environmental problems: Implications for government policy. Environmental strategies for industry: International Perspectives in Research Needs and Policy Implications, 277–307.

Asmah, R. and Biney, C. A., 2001. Assessment of air, water and land-based sources of pollution in the coastal zone of the Accra-Tema metropolitan area. Journal of the Ghana Science Association, 3(3), 126-135

Association of Ghana Industries, 2016. The AGI business barometer 2nd quarter 2016 Summary report. Available from: http://agighana.org/uploadedfiles/document/09d0 f9f5502 fdf5b56f500e53ae8a085.pdf [Accessed 15 November 2016]

Ates, S. A. and Durakbasa, N. M., 2012. Evaluation of corporate energy management practices of energy intensive industries in Turkey. Energy, 45 (1), 81–91.

Aupperle, K. E., Carroll, A. B.and Hatfield, J. D., 1985. An empirical examination of the relationships between corporate social responsibility and profitability. Academy of Management Journal, 28(2), 446–63.

Badu, K.A., 2014. Minerals Commission revokes license of Romex Mining Corporation. Available from: license-of-romex-mining- corporation/#sthash. IpfV5LZL.dpuf [3 January 2016].

Bagozzi, R. P. and Yi, Y., 2012. Specification, evaluation, and interpretation of structural equation models. Journal of the Academy of Marketing Science, 40 (1), 8–34.

Baltagi, B. H., 2005. Econometric Analysis of Panel Data, (3rd ed), New York, John.

Banar, M., Cokaygil, Z., and Ozkan, A., 2009. Life cycle assessment of solid waste management options for Eskisehir, Turkey. Waste Management, 29 (1), 54–62.

Bansal, P., and Roth, K., 2000. Why companies go green: A model of ecological responsiveness. Academy of Management Journal, 43(4), 717–736.

Barker, V. L. and Mueller, G. C., 2002. CEO characteristics and firm R&D spending. Management Science, 48 (6), 782–801.

Barney, J., 1991. Firm resources and sustained competitive advantage. Journal of Management, 17 (1), 99–120.

Barney, J. B., Corte, V. D., Kiousis, K., Leiblein, M., Miller, D., Peng, M., Sciarelli, M. and Wang, H., 2001. Is the Resource-Based 'View' a useful perspective for strategic management research? Academy of Management Review, 26 (1), 41–56.

Battisti, M. and Perry, M., 2011. Walking the talk? Environmental responsibility from the perspective of small-business owners. Corporate Social Responsibility and Environmental Management, 18 (3), 172–185.

Baylis, R., Connell, L. and Flynn, A., 1998. Company size, environmental regulation and ecological modernization: Further analysis at the level of the firm. Business Strategy and the Environment, 7, 285–296.

Becchetti, L., Ciciretti, R. and Hasna, I.,2007. Corporate social responsibility and shareholder's value: An event study analysis. Working paper, Federal Reserve Bank of Atlanta.

Berman, S. L., Wicks, A. C., Kotha, S. and Jones, T. M., 1999. Does stakeholder orientation matter? The relationship between stakeholder management models and firm financial performance. Academy of Management Journal, 42 (5), 488–506.

Bernard, V.L. and Noel, J., 1991. ''Do inventory disclosures predict sales and earnings?'' Journal of Accounting, Auditing and Finance, 6 (2),145–81.

Berry, M. A. and Rondinelli, D. A., 1998. Proactive corporate environmental management: A new industrial revolution. Academy of Management Perspectives, 12 (2), 38–50.

Betts, T. K., Wiengarten, F., and Tadisina, S. K., 2015. Exploring the impact of stakeholder pressure on environmental management strategies at the plant level: What does industry have to do with it? Journal of Cleaner Production, 92, 282–294.

Betey, C. B. and Essel, G., 2013. Environmental impact assessment and sustainable development: A critical review. Environment and Natural Resources Research, 3 (2), 37-51.

Bhattacherjee, A., 2012. Social science research: Principles, methods, and practices: Textbook collection, Book 3, University of South Florida.

Bhutta, N. T. and Hasan, A., 2013. Impact of firm specific factors on profitability of firms in food sector. Open Journal of Accounting, 2, 19–25.

Bianchi, P., Miller, L., and Bertini, S., 1997. The Italian SME experience and possible lessons for emerging countries. UNDO

Biondi, V., Frey, M. and Iraldo, F., 1998. Environmental management system implementation by SMEs: EU experience and perspectives. Partnership and leadership: Building alliances for a sustainable future. IEFE - Bocconi, Environmental Department.

Bird, D. K., 2009. The use of questionnaires for acquiring information on public perception of natural hazards and risk mitigation: A review of current knowledge and practice. Natural Hazards and Earth System Science, 9 (4), 1307–1325.

Blackburn, R., Hart, M., and Wainwright, T., 2013. Small business performance: business, strategy and owner-manager characteristics. Journal of Small Business and Enterprise Development, 20 (1), 8–27.

Blaikie, N.,1993. Approaches to social enquiry, 1st ed, Cambridge, Polity Press.

Blinder, A. S. and Maccini, L. J., 1991. The Resurgence of inventory research: What have we learned? Journal of Economic Survey, 5 (1), 73-96.

Blum, B. E., 2003. Making biodiversity conservation profitable, Environment, 35 (4), 38-45.

Boadi, K. O. and Kuitunen, M. 2002. Urban waste pollution in the Korle Lagoon, Accra, Ghana, The Environmentalist, 22, 301–309.

Bogdan, R. and Taylor, S.J., 1975. Introduction to qualitative research methods: A phenomenological approach to the social sciences. New York, John Wiley and Sons, Inc.

Bortey, I. N., 2013. The Ghana Alternative Market (GAX) and the development of SMEs in Ghana. Available from https://www.modernghana.com/news/498591/1/the-ghana alternativemarket-gax-and-the-development-of-smes-in-ghana.html [Accessed 25 August 2015]

Bowling, A., 2005. Mode of questionnaire administration can have serious effects on data quality. Journal of Public Health, 27 (3), 281–291.

Boynton, P. M. and Greenhalgh, T., 2004. Hands-on guide to questionnaire research: Selecting, designing, and developing your questionnaire. British Medical Journal, 328 (7451), 1312–1315.

Brammer, S., Hoejmose, S., and Marchant, K., 2012. Environmental management in SMEs in the UK: Practices, pressures and perceived benefits. Business Strategy and the Environment, 21 (7), 423–434.

Brown, N. and Deegan, C., 1998. The public disclosure of environmental performance information-a dual test of media agenda setting theory and legitimacy theory. Accounting and Business Research, 29 (1), 21–41.

Bruckner, C., 2008. Ghana, a liberated country. British Dental Journal, 204 (3), 163–165.

Brunninge. O., Nordqvist, M. and Wiklund, J., 2007. Corporate governance and strategic change in SMEs: The effects of ownership, board composition and top management teams. Small Business Economics, 29(3), 295–308.

Bryman, A. and Bell, E., 2011. Business research methods, (3rd edn). Oxford, Oxford University Press.

Bryman, A. and Bell, E., 2007. Business research methods (2nd edn), Oxford, Oxford University Press.

Bryman, A. and Bell, E., 2003. Business research methods. New York, Oxford University Press

Burgess, F. T., 2001. Information systems services guide to the design of questionnaires. A general introduction to the design of questionnaires for survey researcher. 1st ed, University of Leeds.

Burrell, G. and Morgan, G.,1979. Sociological paradigms and organisational analysis: Elements of the sociology of corporate life, Aldershot, England, Gower Publishing Company Limited.

Burke, L. and Logsdon, J. M. 1996. How corparate social responsibility pay off. Long Range Planning, 29 (4), 495-502.

Busch, T. and Hoffmann, V. H., 2011. How hot is your bottom line? Linking carbon and financial performance. Business and Society, 50 (2), 233–265.

Business and Financial Times, 2014. 35 hospitality facilities, 41fuel stations in Brong-Ahafo to face the sanctions, Accra, Ghana.

Buysse, K. and Verbeke, A., 2003. Proactive environmental strategies: A stakeholder management perspective. Strategic Management Journal, 24 (5), 453–470.

Cagno, E. and Trianni, A., 2013. Exploring drivers for energy efficiency within Small and Medium-Sized Enterprises: First evidence from Italian manufacturing enterprises. Applied Energy, 104, 276–285.

CDP and Deloitte, 2013. From water management to water stewardship: Companies facing a need to build resiliencyCDP US Water Report 2013. Available from: https://www.cdp.net/CDPResults/CDP-US-Water-Report-2013.pd [Accessed 15 November 2015].

CDP and Eurizon Capital, 2013. Metals and Mining: A sector under water pressure: Analysis for institutional investors of critical issues facing the industry. Available from:

https://www.cdp.net/CDPResults/Metals-Mining-sector-under-water-pressure.pdf [Accessed 12 November 2015].

Cambridge Institute for Sustainability Leadership, 2015. The 'doing business with nature': Opportunities from natural capital. Available from: http://www.cisl.cam.ac. uk/ publications/doing-business-with-nature-report [Accessed 20 October 2015].

Campbell, D. and Campbell, S., 2008. Statlab workshop introduction to regression and data analysis. Available from: http://www.yale.edu/statlab [Accessed 4 November 2014].

Campbell, J., 2007. Why would corporations behave in socially responsible ways? An institutional theory of corporate social responsibility. Academy of Management Review, 32 (3), 946–967.

Cannon, A. R., 2008. Inventory improvement and financial performance. International Journalof Production Economics, 115, 581–593.

Capkun, V., Hameri, A.-P., and Weiss, L. A., 2009. On the relationship between inventory and financial performance in manufacturing companies. International Journal of Operations and Production Management, 29 (8), 789–806.

Carroll, A. B., 2016. Carroll's pyramid of CSR: Taking another look. International Journal of Corporate Social Responsibility, (1)3,1–8.

Carroll, A. B. 1979. A three-dimensional conceptual mode of corporate performance. Academy of Management Review, 4 (4), pp. 497-505.

Carroll, A. B., and Shabana, K. M. 2010. The business cases for corporate social responsibility: a review of concepts, research and practice. International Journal of Management Reviews, 12, 85–105.

Cassells, S. and Lewis, K., 2011. SMEs and environmental responsibility: Do actions reflect attitudes? Corporate Social Responsibility and Environmental Management, 199 (3), 186–199.

Center for Climate and Energy Solutions 2015. Outcomes of the U.N. climate change conference in Paris. 21st Session of the Conference of the Parties to the United

Nations framework convention on climate change (COP 21) November 30-December 12.

Céspedes-Lorente, J., Burgos-Jiménez, J., and Álvarez-Gil, M. J., 2003. Stakeholders' environmental influence. An empirical analysis in the Spanish hotel industry. Scandinavian Journal of Management, 19 (3), 333–358.

Chambers, E, Chapple, W, Moon, J. and Sullivan, M. 2003. CSR in Asia: A seven country study of CSR website reporting. ICCSR research paper series, no. 09-2003.

Chan, E. S. W., 2011. Implementing environmental management systems in small- and medium-sized hotels: Obstacles, Journal of Hospitality and Tourism Research, 35 (1), 3–23.

Cheon, S; Maltz, A and Dooley, K. 2017. The link between economic and environmental performance of the top 10 U.S. ports. Maritime Policy and Management, 44(2), 227–247.

Chiliya, N. and Roberts-Lombard, M., 2012. Impact of level of education and experience on profitability of small grocery shops in South Africa. International Journal of Business, 3 (1), 462–470.

Chithambo, L., and Tauringana, V. 2014. Company specific determinants of greenhouse gases disclosures. Journal of Applied Accounting Research, 15(3), 323-338.

Chisholm, E. M., de Dombal, F. T., and Giles, G. R., 1985. Validation of a self administered questionnaire to elicit gastrointestinal symptoms. British medical journal (Clinical research ed.), 290 (6484), 1795–6.

Christmann, P., 2000. Effects of 'best practices' of environmental management on cost advantage: The role of complementary assets. Academy of Management Journal, 43 (4), 663–680.

Clarke, J. 1998. Corporate social reporting: An ethical practice. Ethical issues in accounting, 184–99.

Clarkson, P. M., Overell, M. B., and Chapple, L., 2011. Environmental reporting and its relation to corporate environmental performance. Abacus, 47 (1), 27–60.

Claver, E., López, M. D., Molina, J. F., and Tarí, J. J., 2007. Environmental management and firm performance: A case study. Journal of Environmental Management, 84 (4), 606 -619.

Claver, E., Molina, J., and Tari, J., 2002. Firm and industry effects on firm profitability: A Spanish empirical analysis. European Management Journal, 20 (3), 321–328.

Clemens, B., 2006. Economic incentives and small firms: Does it pay to be green? Journal of Business Research, 59 (4), 492–500.

Coad, A., Segarra, A., and Teruel, M., 2016. Innovation and firm growth: Does firm age play a role? Research Policy, 45 (2), 387–400.

Coad, A. and Hölzl, W., 2010. Firm growth: Empirical analysis. Papers on Economics and Evolution number 1002, Austrian Institute of Economic Research.

Coad, A., Segarra, A. and Teruel, M., 2010. Like milk or wine: Does firm performance improve with age? Papers on Economics and Evolution no.1006. Max Planck Institute of Economics, Evolutionary Economics, Germany.

Coca-Cola, 2012. 2011/2012 sustainability report. Available from: http://www.coca-colacompany.com/sustainabilityreport/index.html [Accessed 30 January 2015].

Cohen, L., Manion, L., Morrison, K. and Morrison, R.B., 2007. Research methods in Education, 6th ed. Oxon, Routledge.

Cohen, M. A., Fenn, S. A., and Konar, S., 1997. Environmental and financial performance: Are they related? Available from: http://citeseerx.ist.psu. edu/viewdoc/ download? doi=10.1.1.498.9820&rep=rep1&typepdf [8 October 2014].

Converse, D. P., Wolfe. E., Huang, X., Frederick L. and Oswald, L. F., 2008. Response rates for mixed-mode surveys. Using mail and e-mail/web. American Journal of Evaluation, 29, 99-107.

Cordeiro, J.J. and Sarkis, J., 1997. Environmental proactivism and firm performance: Evidence from security analyst earnings forecast. Business Strategy and the Environment 6(2), 104-114.

Côté, R., Booth, A., and Louis, B., 2006. Eco-efficiency and SMEs in Nova Scotia, Canada. Journal of Cleaner Production, 14 (6-7), 542–550.

Creech, H., Paas, L., Gabriel, H. G., Voora, V., Constance Hybsier, C. and Marquard, H., 2014. Small-scale social-environmental enterprises in the green economy: supporting grassroots innovation. Development in Practice, 24(3), 366-378.

Creswell, J.W. and Plano Clark, V. L., 2007. Designing and conducting mixed methods research 2nd ed. Thousand Oaks, Canada, Sage Publications.

Creswell, J., 2003. Research design: Qualitative, quantitative, and mixed methods approaches, 3rd ed. London, Sage Publications.

Cronbach, L. J. and Meehl, P. E., 1955. Construct validity in psychological tests. Psychological Bulletin, 52 (4), 281–302.

Crotty, M., 1998. The foundations of social research: Meaning and perspective in the research process. Australia, Allen and Unwin.

Daily Graphic, 2016. Tariff increases lead to 300mw energy conservation – PURC, business News. Accra, Ghana.

Danese, P. and Romano, P., 2011. Supply chain integration and efficiency performance: A study on the interactions between customer and supplier integration. Supply Chain Management: An International Journal, 16 (4), 220–230.

Darnall, N., Seol, I., and Sarkis, J., 2009. Perceived stakeholder influences and organisations' use of environmental audits. Accounting, Organisations and Society, 34 (2), 170–187.

Darnall, N., Henriques, I., and Sadorsky, P., 2008. Do environmental management systems improve business performance in an international setting? Journal of International Management, 14 (4), 364–376.

Davis, K., 1973. The case for and against business assumption of social responsibilities. Academy of Management Journal, 16(2), 312-322.

Davis, S. P., Babakus, E., Englis, D. P. and Pett, T., 2010. The influence of CEO gender on market orientation and performance in service Small and Medium-Sized service businesses. Journal of Small Business Management, 48(4), 475–496.

Deegan, C. and Unerman, G., 2011. Financial accounting theory. Second European Edition, Berkshire, McGraw- Hill Education.

Deegan, C. and Samkin, G., 2009. New Zealand financial accounting. Sydney, McGraw- Hill Education.

Deegan, C., 2009, Financial accounting theory, 3rd ed. Sydney, McGraw- Hill Education.

Deegan, C., 2006. Financial Accounting Theory, 2nd ed. Sydney, McGraw- Hill Education.

Deegan, C. and Rankin, M., 1996. Do Australian companies report environmental news objectively? An analysis of environmental disclosures by firms prosecuted successfully by the Environmental Protection Authority. Accounting, Auditing and Accountability Journal, 9(2), 50 - 67.

de Oliveira, P. A. J. and Jabbour, C. J., 2017. Environmental management, climate change, CSR, and governance in clusters of small firms in developing countries: Toward an integrated analytical framework. Business and Society, 56(1) 130-151.

de Villiers, C., Naiker, V., and van Staden, C. J., 2011. The effect of board characteristics on firm environmental performance. Journal of Management, 37 (6), 1636–1663.

DEFRA, 2013. Environmental reporting guidelines: Including mandatory greenhouse gas emissions reporting guidance, UK.

Delloitte, 2012. Business and the biodiversity challenge: A study of actions among the Fortune Global 50 companies. Available from: biodiversity.eu/global/download [Accessed 21 March 2015].

del Pino, S. P. and Perera, A., 2013. 4 Barriers to overcome in achieving corporate environmental sustainability. Available from: http://www.wri.org/profile/alex-perera [6 March 2013].

del Brío, J. Á. and Junquera, B., 2003. A review of the literature on environmental innovation management in SMEs: Implications for public policies. Technovation, 23 (12), 939–948.

Delmas, M. A., and Toffel, M. W. 2008. Organisational responses to environmental demands. Strategic Management Journal, 29, 1027–1055.

Delmas, M. and Toffel, W. M., 2004. Stakeholders and environmental management practices: An institutional framework, Business Strategy and the Environment 13, 209–222.

Delmas, M. A, 2002. The diffusion of environmental management standards in Europe and in the United States: An institutional perspective. Policy Sciences, 35 91–119.

Delmas, M. A. and Terlaak. K. A., 2001. Framwork for analysing voluntary environmental agreements. California Management review, 43(3), 44-63.

Denney, M. and Evans, W., 2009. Best Environmental practices of leading retailers from around the world. Available from: http://www.musgravegroup.com/wp-content/up loads /2016/04/1526-GreeningRetailSummary-Oct21_SM.pdf [Accessed 23 January 2015].

Denzin, N. and Lincoln, Y., 2003. The discipline and practice of qualitative research. In Denzin, N. and Lincoln, Y. (eds.) collecting and interpreting qualitative materials, 2nd ed, California, SAGE Publications.

De Vaus, D., 2002. Surveys in social sciences, 5th ed. Australia, Allen and Unwin.

Dezso, L. C. and Ross, G. D., 2008. "Girl power": Female participation in top management and firm performance. University of Maryland.

DiMaggio, P. and Powell, W., 1983. 'The Iron Cage Revisited: Institutional Isomorphism and Collective Rationality in Organizational Fields'. American Sociological Review, 48, 146-60.

DiMaggio, P. J., 1988. Interest and Agency in Institutional Theory. In L. G. Zucker (Ed.), Patterns and Organizations: Culture and Environment (pp. 4-21). Cambridge, Massachusetts: Ballinger Publishing Company.

Dillman, D. A., 1991. The design and administration of mail surveys. Annual Review of Sociology, 17 (1), 225–249.

Dixon-Fowler, H. R., Slater, D. J., Johnson, J. L., Ellstrand, A. E. and Romi, A. M., 2013. Beyond "does it pay to be green?" A meta-analysis of moderators of the CEP–CFP relationship. Journal of Business Ethics,112(2), 353-366.

Dobbs, M. and Hamilton, R. T., 2007. Small business growth: Recent evidence and new directions. International Journal of Entrepreneurial Behaviour and Research, 13(5), 296-322.

Domfeh, K. A., 2014. Three firms access funds to list on the Ghana Alternative Market. Available from: https://www.modernghana.com/news/535485/three-firms-access funds-to-list-on-the-ghana-alternative-ma.html [Accessed 25 August 2015]

Domfeh, K. A., 2006. Managing the environment in a decade of administrative reforms in Ghana. International Journal of Public Sector Management, 17(7), 606 - 620.

Donaldson, T. and Preston, L. E., 1995. The stakeholder theory of the corporation: Concepts, evidence, and implications. Academy of Management Review, 20(1), 65-91.

Downs, A., 1964. Inside bureaucracy. Real Estate Research Corporation, Chicago.

Dudley, L. and Lasserre, P., 1989. Information as a substitute for inventories. European Economic Review 33, 67–88.

Duflou, J. R., Sutherland, J. W., Dornfeld, D., Herrmann, C., Jeswiet, J., Kara, S., Hauschild, M., and Kellens, K., 2012. Towards energy and resource efficient manufacturing: A processes and systems approach. CIRP Annals - Manufacturing Technology, 61 (2), 587–609.

Dulipovici, A., 2001. SMEs: The natural facts, results of CFIB environment survey. Available from: www.14000 registry.com/pdf/facts.pdf [Accessed 20 December 2014].

Dzorgbo, D-B., 2001. Ghana in Search of Development: The challenge of governance, economic management, and institution building, UK, Ashgate Publishing Limited.

Earnhart, D., Khanna, M. and Lyon, T. P., 2014. Corporate environmental strategies in emerging economies. Review of Environment and Economic Policy, 8 (2), 164-185.

Earnhart, D. and Lizal, L., 2010. The effect of corporate environmental performance on financial outcomes – Profits, revenues, and costs: Evidence from the Czech transition economy. DRUID Working Paper No. 10-15.

Earnhart, D. and Lizal, L., 2007. Effect of pollution control on corporate financial performance in a transition economy, European Environment, 17, 247–266.

Eesley, C. and Lenox, M. J., 2006. Firm responses to secondary stakeholder action. Strategic Management Journal, 27 (8), 765–781.

Ellram, L., Tate, W.L. and Carter, R.G., 2006. Product-process-supply chain: An integrative approach to three-dimensional concurrent engineering. International Journal of Physical Distribution and Logistics Management, 37 (4), 305-330.

Elijido-Ten, E., 2007. Applying stakeholder theory to analyse corporate environmental performance: Evidence from Australian listed companies. Asian Review of Accounting, 15 (2), 164–184.

Elsayed, K. and Paton, D., 2005. The impact of environmental performance on firm performance: Static and dynamic panel data evidence. Structural Change and Economic Dynamics 16(3), 395–412.

Endrikat, J., Guenther, E., and Hoppe, H., 2014. Making sense of conflicting empirical findings: A meta-analytic review of the relationship between corporate environmental and financial performance. European Management Journal, 32 (5), 735–751.

Ennis, C., Kottwiz, J., Lin, X. S. and Markusson, N., 2012. Exploring the relationships between carbon disclosure and performance in FTSE 350 companies. 2012 Annual conference of British Academy of Management at Sheffield.

Enrenfeld, R. J. and Howard, J. 1996. Setting environmental goals: The view from industry a review of practices from the 1960s to the present. Washington, The National Academies Press.

Environmental Protection Agency, 1991: Ghana Environmental Action Plan, Accra, Ghana.

Environmental Protection Agency, 2015.Ghana legal environmental information. Available from:http://www.epa.gov.gh/web/index.php/projects/ghanalex [Accessed 20 June 2015].

Environmental Protection Agency, 2015. AKOBEN programme http://www. epa.gov .gh/ web/index.php/projects/akoben [Accessed 21 June 2015].

Environmental Protection Agency Victoria, 2008. Hints and tips for improving resources efficiency in your business. Available from: http://www.epa.vic.gov.au/ ourwork/ publications /publication/2008/october/1255 [Accessed 13 October 2014].

Epstein, M. J. and Marie-Josée, R., 2001. Sustainability in action: Identifying and measuring the key performance drivers. Long Range Planning, 34, 585–604.

Erastus, Y. E., Stephen, A., and Abdullai, I., 2014. Institutional framework for promoting Small and Medium Scale Enterprises in Ghana: Perspective of Entrepreneurs, 3 (10), 28–45.

Erdoğan, D. and Kaya, E., 2014. Understanding performance indicators of organisational achievement in Turkish Airline Companies. Journal of Management Research, 6 (4), 109-123.

Erdogan, N. and Tosun, C., 2009. Environmental performance of tourism accommodations in the protected areas: Case of Goreme Historical National Park. International Journal of Hospitality Management, 28 (3), 406–414.

Erdogan N, Baris E., 2007. Environmental protection programs and conservation practices of hotels in Ankara Turkey. Tourism Management 28, 604–614.

Eroglu, C. and Hofer, C., 2011. Inventory types and firm performance: Vector autoregressive and vector error correction models. Journal of Business Logistics, 32 (3), 227–239.

Ervin, D., Wu, J., Khanna, M., Jones, C., and Wirkkala, T., 2013. Motivations and barriers to corporate environmental management. Business Strategy and the Environment, 22 (6), 390–409.

Evangelista, P., 2014. Environmental sustainability practices in the transport and logistics service industry: An exploratory case study investigation. Research in Transportation Business and Management, 12, 63–72.

Everett, T., Ishawaran, L., Ansaloni, G. P., and Rubin, A., 2010. Economic growth and the environment. DEFRA evidence and analysis series paper2, UK.

Ezeah, C. and Roberts, C. L., 2012. Analysis of barriers and success factors affecting the adoption of sustainable management of municipal solid waste in Nigeria. Journal of Environmental Management, 103, 9–14.

Fassin, Y., 2009. The stakeholder model refined. Journal of Business Ethics, 84 (1), 113–135.

Fatoki, O. and Oni, O. A., 2015. The impact of managerial competencies on the performance of immigrant- owned enterprises in South Africa. Journal of Economics, 6 (3), 219-225.

Federation of Small Businesses, 2004. Lifting the barriers to growth in UK Small Businesses. The FSB biennial membership survey, 2004: Report to the Federation of Small Businesses.

Federation of Small Businesses in Scotland, 2003. Energy and environmental toolkit. Available from: http://www.fsb.org.uk/docs/default-source/fsborguk/policy/rpu/ scot land/assets/publi resouenergytoolkitoct2003.pdf? [30 September 2015].

Feng, T., Cai, D., Wang, D., and Zhang, X., 2016. Environmental management systems and financial performance: The joint effect of switching cost and competitive intensity. Journal of Cleaner Production, 113, 781–791.

Fernandez-Vine, B. M., Gomez-Navarro, T., and Capuz-Rizo, S. F., 2010. Eco-efficiency in the SMEs of Venezuela. Current status and future perspectives. Journal of Cleaner Production, 18, 736–746.

Filbeck, G. and Gorman, R. F., 2004. The relationship between the environmental and financial performance of public utilities. Environmental and Resource Economics, 29 (2), 137-157.

Field, A., 2013. Discovering statistics using SPSS, 4th ed. Thousand Oaks, California, SAGE Publications Inc.

Florén, H., Frishammar, J., Lee, C., Ericsson, M., and Gustafsson, S., 2013. A framework for raw materials management in process industries, Research and Development Management Conference at Manchester, UK.

Flowers, P., 2009. Research Philosophies – Importance and relevance. Leading Learning and Change, Cranfield School of Management.

Foreman-Peck, J., Makepeace, G., and Morgan, B., 2006. Growth and profitability of Small and Medium-Sized Enterprises: Some Welsh evidence. Regional Studies, 40 (4), 307-319.

Francoeur, C., Melis, A., Gaia, S., and Aresu, S. 2017. Green or Greed? An Alternative look at CEO compensation and corporate environmental commitment, Journal of Business Ethics, 140(3) 439-453.

Frank, K. A., 2000. Impact of a confounding variable on a regression coefficient. Sociological Methods and Research, 29 (2), 147–194.

Fraze, S., Hardin, K., Brashears, T., Haygood, J., and Smith, J. H., 2003. The effects of delivery mode upon survey response rate and perceived attitudes of Texas Agri Science teachers. Journal of Agricultural Education, 44 (2), 27–37.

Freeman, R. E., Harrison, J. S., Wicks, A. C., Parmar, B., and de Colle, S. 2010. Stakeholder theory: The state of the art, Cambridge, University Press.

Freeman, R., 1984. Strategic Management: A Stakeholder approach, Boston, Pitman Publishing Inc.

Friedman, M., 1970. The social responsibility of business is to increase its profits. The New York Times Magazine, New York Times Corporation.

Frooman, J., 1999. Stakeholder influence strategies, Academy of Management Review, 24 (2), 191-205.

Fujii, H., Iwata, K., Kaneko, S., and Managi, S., 2013. Corporate environmental and economic performance of Japanese manufacturing firms: Empirical study for sustainable development. Business Strategy and the Environment, 22 (3), 187–201.

Future Energy Solutions and Enviros Aspinwall, 2002. Transport and environmental management systems: Good practice guide 318. Energy Efficiency Best Practice Programme, London.

Gadenne, D. L., Kennedy, J., and McKeiver, C., 2009. An empirical study of environmental awareness and practices in SMEs. Journal of Business Ethics, 84 (1), 45–63.

Galbreath, J. and Galvin, P., 2008. Firm factors, industry structure and performance variation: New empirical evidence to a classic debate. Journal of Business Research, 61 (2), 109-117.

Galvez-Martos, J.-L., Styles, D., and Schoenberger, H., 2013. Identified best environmental management practices to improve the energy performance of the retail trade sector in Europe. Energy Policy, 63, 982–994.

Garay, L. and Font, X., 2012. Doing good to do well? Corporate social responsibility reasons, practices and impacts in small and medium accommodation enterprises. International Journal of Hospitality Management, 31 (2), 329–337.

Garcia -de-Mariango, J. and Rodriguez-de-Reveira-Cermedes, F. 2009. Corporate social responsibility and the classical theory of the firm: Are both theories irreconcilable? Rev. Innovar, 20(37), 5-19.

García, V., Pongrácz, E., Phillips, P., and Keiski, R., 2008. Factors affecting resource use optimisation of the chemical industry in the Northern Ostrobothnia region of Finland. Journal of Cleaner Production, 16, 1987–1994.

García-Teruel, P. J. and Martínez-Solano, P., 2007. Effects of working capital management on SME profitability. International Journal of Managerial Finance, 3 (2), 164 177.

Garriga, E. and Mele, D., 2004. 'Corporate social responsibility theories: Mapping the territory'. Journal of Business Ethics 53, 51–71.

Ghana News Agency, 2016. EPA closes down facilities without environmental permit. Available from: www.ghanabusinessnews.com [Accessed 23 June 2016].

Ghana News Agency, 2007. Accra to generate 60 tons of plastic waste by 2008, GNA news, Accra Ghana.

Ghana statistical Service (GSS) 2016. Regional Spatial Business Report: Integrated business establishment report, Accra.

Ghana statistical Service (GSS), 2016. Revised 2015 annual Gross Domestic Product. Accra.

Ghana Statistical Service (GSS), 2015. Integrated business establishment survey, Summary report, Accra.

Gilley, M. K., Worrell, L. D., and El-Jelly, A., 2000. Corporate environmental initiatives and anticipated firm performance: The differential effects of process-driven versus product- driven greening initiatives. Journal of Management, 26 (6), 1199 - 1216.

Gioia, D. A. and Pitre, E., 1990. Multiparadigm perspectives on theory building. Academy of Management Review, 15 (4), 584–602.

GIZ, 2013. Shaping corporate social responsibility in Sub-Saharan Africa: Guidance notes from a mapping survey. https://www.giz.de/fachexpertise/downloads/giz2013-en africa-csr-mapping.pdf 1–298 [Accessed 27 November 2014].

Glover, J. L., Champion, D., Daniels, K. J., and Dainty, A. J. D., 2014. An institutional theory perspective on sustainable practices across the dairy supply chain. International Journal of Production Economics, 152, 102–111.

Goddard, J, Tavakoli, M. and Wilson, J., 2005. Determinants of profitability in European manufacturing and services: Evidence from a dynamic panel data. Applied Financial Economics, 15, 1269-1282.

Goodman, A. 2000. Implementing sustainability in service operation at Scandic Hotels. Interfaces, 30(3), 2002-214.

Gorard, G., 2004. Combining methods in educational and social research. Berkshire, Open University Press.

Goll, I. and Rasheed, A. A., 2005. The relationships between top management demographic characteristics, rational decision making, environmental munificence, and firm performance. Organisation Studies, 26 (7), 999–1023.

Gonenc, H and Scholtens, B. 2017. Environmental and financial performance of fossil fuel firms: A closer inspection of their interaction. Ecological Economics, 132, 307–328.

González-Benito, J. and González-Benito, Ó., 2005. Environmental proactivity and business performance: An empirical analysis. Omega, 33 (1), 1–15.

Gottesman, A. A. and Morey, R. M., 2006. Does a better education make for better managers? An empirical examination of CEO educational quality and firm performance. Pace University, New York.

Govender I., Mabuza, L. H., Ogunbanjo, G. A. and Mash, B., 2014. African primary care research: Performing surveys using questionnaires. African Journal of Primary Health Care and Family Medicine; 6(1), 1-7.

Graham, J. and Harvey, C., 2002. "How do CFOs make capital budgeting and capital structure decisions?" Journal of Applied Corporate Finance 15(1), 8-23.

Gray, D. E., 2014. Theoretical perspectives and research methodologies. Doing research in the real world, 3rd ed. London, Stage Publication.

Gray, R., Owen, D.L. and Adams, C., 1996. Accounting and accountability: Changes and challenges in corporate and social reporting, London, Prentice-Hall.

Gray, R., Kouhy, R. and Lavers, S., 1995. Corporate social and environmental reporting. A review of the literature and a longitudinal study of UK disclosure. Accounting, Auditing and Accountability Journal, 8(2), 47-77.

Greening, L. A., Greene, D. L., and Difiglio, C., 2000. Energy efficiency and consumption the rebound effect - a survey. Energy Policy, 28 (6-7), 389–401.

Greenwood, R., Deephouse, D. L., and Li, S. X., 2006. Ownership and performance of professional service firms. Organisation Studies, 28 (2), 219–238.

Griffin, J. J. and Mahon, J. F., 1997. Performance debate : Twenty-five years of incomparable research. Business and Society, 36(5), 5-31.

Guba, E. G. and Lincoln, Y. S., 1994. Competing paradigms in qualitative research, in N. K.

Guerci, M., Longoni, A., and Luzzini, D., 2016. Translating stakeholder pressures into environmental performance – the mediating role of green HRM practices. The International Journal of Human Resource Management, 27 (2), 262–289.

Guillemin, M., and Gillam, L., 2010. Ethics, reflexivity, and "ethically important moments" in research. Qualitative Inquiry, 10(2), 261-280.

Guler, I., Guillén, M. F., Macpherson, J. M., and Guillen, M. F., 2002. Global competition, institutions, and the diffusion of organizational practices: The international spread of ISO 9000 quality certificates. Administrative Science Quarterly, 47 (2), 207.

Gunasegaram, A., Patel, C. R. and McGaughey, R., 2004. "A framework for supply chain performance measurement," International Journal of Production Economics, 87 (3), 333-347.

Hoffman, A. J., 1999. Institutional evolution and change environmentalism and the US chemical industry. Academy of Management Journal, 42(4),351–371.

Hambrick, D. C. and Mason, P.A. 1984. 'Upper Echelons: The organization as a reflection of Its top managers'. Academy of Management Review, 9, 193–206.

Hammann, E., Habisch, A. and Pechlaner, H., 2009. Values that create value: socially responsible business practices in SMEs-empirical evidence from German companies. Business Ethics: European Review. 18 (1), 37-51.

Hamann, R., Smith, J., Tashman, P., and Marshall, S. R. 2017. Why do SMEs go green? An analysis of wine firms in South Africa. Business and Society, 56(1), 23-56.

Hardwick, P., 1997. Measuring cost inefficiency in the UK life insurance industry. Applied Financial Economics, 7, 37-44.

Hair Jr. F. J., Black, C. W., Babin, J. B. and Anderson, E. R., 2014. Multivariate data analysis, 7th ed. Edinburgh Gata, Harlow, Pearson Education Ltd.

Harris, D. and Helfat, C., 1997. Specificity of CEO human capital and compensation. Strategic Management Journal,18, 895-920.

Hart, S. L. and Ahuja, G., 1996. Does it pay to be green? An empirical examination of the relationship between emission reduction and firm performance. Business Strategy and the Environment, 5, 30–37.

Hart, O., 1989. An Economist's Perspective on the theory of the firm. Columbia Law Review, 89 (7), 1757.

Hart, S. L., 1995. A natural-resource-based view of the firm. Academy of Management Review, 20 (4), 986–1014.

Hatch, M. J. and Cunliffe, A.L., 2006. Organisational theory, 2nd ed. Oxford, Oxford University Press.

Hassan, U. S., 2011. Environmental cost and firm performance: Evidence from quoted oil companies in Nigeria. International Journal of Marketing and Technology, 1 (6), 6-21.

Hassel, L., Nilsson, H., and Nyquist, S. I. V, 2005. The value relevance of environmental performance, 14 (1), 41–61.

Hawawini, G., Subramanian, V., and Verdin, P., 2003. Is performance driven by industry or firm-specific factors? A new look at the evidence. Strategic Management Journal, 24, 1–16.

Hays, H. F., Day, N. and Belanus, S., 2012. Credit union performance: Does CEO gender matter?; Journal of Behavioral Studies in Business, 5, 1-14.

He, G., Zhang, L., Mol, A. P. J., Wang, T., and Lu, Y., 2014. Why small and medium chemical companies continue to pose severe environmental risks in rural China. Environmental Pollution, 185, 158–167.

Hendry, J., 2001. "Missing the target: Normative stakeholder theory and the corporate governance debate", Business Ethics Quarterly, 11(1), 159-176.

Hillary, R., 2004. Environmental management systems and the smaller enterprise. Journal of Cleaner production, 12(6), 561–569.

Hillary, R., 2000. Small and Medium Sized Enterprises and eco-management systems: Barriers, opportunities and drivers, in CD papers of the European environmental conference, World Business Council for Sustainable Development: Aalborg.

Hillary, R., 1995. Small firms and the environment. A groundwork status report, Groundwork, Birmingham.

Hillary, B. R. and Burr, P., 2011. Evidence-based Study into the benefits of EMSs for SMEs, DEFRA, UK.

Hirsch, S., Schiefer, J., Gschwandtner, A., and Hartmann, M., 2014. The determinants of firm profitability differences in EU food processing. Journal of Agricultural Economics, 65 (3), 703–721.

Hoffman, J. A. and Jennings, D. P. 2014. Institutional theory and the natural environment: Research in the anthropocene: Available from:www.erb.umich.edu/Research/ Hoffman-Jenkins-anthropocene.pdf [Accessed 10 November 2014].

Hoffman, A. J., 1999. Institutional evolution and change environmentalism and the US chemical industry. Academy of Management Journal, 42(4),351–371.

Holmstrom, R.B. and Tirole, J., 1987. The theory of the firm. working paper, no 456. Department of Economics, Massachusetts institute of technology.

Holden, M. T. and Lynch, P., 2004. Choosing the appropriate methodology: Understanding research philosophy. The Marketing Review, 4 (4), 397–409.

Hoogendoorn, B., 2014. What drive s environmental practices of SMEs ? A research report. Available from: www.entrepreneurship-sme.eu [Accessed 12 November 2014].

Horisch, J., Freeman, R. E., and Schaltegger, S., 2014. Applying stakeholder theory in sustainability management: Links, similarities, dissimilarities, and a conceptual framework. Organisation and Environment, 27 (4), 328–346.

Horváthová, E., 2012. The impact of environmental performance on firm performance: Short term costs and long-term benefits? Ecological Economics, 84, 91–97.

Horváthová, E., 2010. Does environmental performance affect financial performance ? A meta- analysis. Ecological Economics, 70 (1), 52–59.

Hossain, M., Rowe, A. and Quaddus, M., 2012. Drivers and barriers of corporate social and environmental reporting (CSER) practices in a developing country: Evidence from Bangladesh. In the 10th Interdisciplinary Perspectives on Accounting Conference, Cardiff University, UK.

Humber, J., 2002. 'Beyond stockholders and stakeholders: A plea for corporate moral autonomy', Journal of Business Ethics, 36, 207-21.

Hunt, S. D., 1993. Objectivity in marketing theory and research. Marketing Theory, 57, 76-91.

Hussey, J. and Husey, R., 1997. Business research. A practical guide for undergraduate and postgraduate students, Palgrave, Basingstoke.

Husted, B. W. and Allen, D. B., 2006. Corporate social responsibility in the multinational enterprise: Strategic and institutional approaches. Journal of International Business Studies, 37 (6), 838–849.

Husted, B. W. and Salazar, J. D. J., 2006. Taking Friedman Seriously: Maximizing profits and social performance, Journal of Management Studies, 43, 0022-2380.

Ilinitch, A. Y., Soderstrom, N. S. and Thomas, T. E. 1998. Measuring corporate environmental performance. Journal of Accounting and Public Policy, 17 (4), 383-408.

Ikediashi, D. I., Ogunlana, S. O., Oladokun, M. G., and Adewuyi, T., 2012. Assessing the level of commitment and barriers to sustainable facilities management practice: A case of Nigeria. International Journal of Sustainable Built Environment, 1 (2), 167-176.

International Council on Mining and Metals, 2006. Good practice guidance for mining and biodiversity. Available from: https://www.cbd.int/development/doc/Minining-and-Biodiversity.pdf [Accessed 21 January 2015].

International Marine and Dredging Consultants, 2012. Rehabilitation of Korle Lagoon and its river system in Accra, Ghana. Available from: http://www.imdc.be/products/tender documents [Accessed 21 August 2017]

International Trade Centre, 2016. SME competitiveness in GHANA. Available from: http://www.intracen.org/SMEOutlook [Accessed 21 August 2017].

Iraldo, F., Testa, F., Frey, M., and Anna, S., 2010. Environmental management system and SMEs: EU experience, barriers and perspectives, Sciyo, Italy.

Isaga, N., 2015. Owner-managers' demographic characteristics and the growth of Tanzanian Small and Medium Enterprises. International Journal of Business and Management, 10(5), 168–181.

Islam, M. A., Khan, M. A., Obaidullah, A. Z. M., and Alam, M. S., 2011. Effect of entrepreneur and firm characteristics on the business success of Small and Medium Enterprises (SMEs) in Bangladesh. International Journal of Business and Management, 6 (3), 289–299.

Jabbour, C. J. C. and Puppim-de-Oliveira, J. A., 2012. Barriers to environmental management in clusters of small businesses in Brazil and Japan: from a lack of knowledge to a decline in traditional knowledge. International Journal of Sustainable Development and World Ecology, 19 (3), 247–257.

Jackson, L. A. and Singh, D., 2015. Environmental rankings and financial performance: An analysis of firms in the US food and beverage supply chain. Tourism Management Perspectives, 14, 25–33.

Jaggi, B. and Freedman, M., 1992. An examination of the impact of pollution performance on economic and market performance: Pulp and paper firms. Journal of Business Finance and Accounting, 19(5), 697-713**.**

Jamali, D., Lund-Thomsen, P., and Jeppesen, S., 2017. SMEs and CSR in Developing Countries, Business and Society, 56(1) 11–22.

Jamali, D. and Sidani, Y. (2012). CSR in the Middle East: Fresh perspectives. In D. Jamali & Y. Sidani (Eds.), CSR in the Middle East: Fresh perspectives (pp. 1-11). Basingstoke, UK: Palgrave MacMillan.

Jamali, D., 2008. A stakeholder approach to corporate social responsibility: A fresh perspective into theory and practice. Journal of Business Ethics, 82 (1), 213–231.

Jawahar, I. M. and Mclaughlin, G.L., 2001. Toward a descriptive stakeholder theory: An organisational life cycle approach. Academy of Management Review, 26, 397-414.

Jensen, M. C., 2002. Value maximization, stakeholder theory, and the corporate objective function. Business Ethics Quarterly, 12 (2), 235–256.

Jensen, M. C. and Meckling, W. H., 1976. Theory of the firm: Managerial behavior, agency costs and ownership structure. Journal of Financial Economics, 3 (4), 305–360.

Jeppesen, S., Kothuis, B., and Tran, an, 2012. Corporate social responsibility and competitiveness for SMEs in developing countries: South Africa and Vietnam. Focales series. Available from: http://recherche.afd.fr [Accessed 20 November 2014].

Jo, H., Kim, H., and Park, K., 2014. Corporate environmental responsibility and firm performance in the financial services sector. Journal of Business Ethics, 131 (2), 257–284.

Jones, T. 1995. Instrumental stakeholder theory: Synthesis of ethics and economics perspective. Academy of Management Review, 20, 404-437

Johnsen, G. J. and Mcmahon, R. G. P., 2005. Owner-manager gender, financial performance and business growth amongst SMEs from Australia's business longitudinal survey. International Small Business Journal, 23 (2), 115–142.

Johnson, P., Conway, C., and Kattuman, P., 1999. Small business growth in the short run. Small Business Economics, 12 (2), 103–112.

Johnson, R. B. and Onwuegbuzie, J. A., 2004. Mixed methods research: A research paradigm whose time has come. Educational Researcher, 33(7), 14–26.

Judge, W. Q. J. and Douglas, T. J., 1998. Performance implications of incorporating natural environmental issues into the strategic planning process: An empirical assessment. Journal of Management Studies, 35 (2), 241–262.

Junquera, B., Ángel, J., and Brío, D., 2016. Preventive Command and Control Regulation: A Case Analysis, Sustainability, 8 (99), 1–17.

Kaplowitz, M. D., Hadlock, T. D., and Levine, R., 2004. A comparison of web and mail survey response rates. Public Opinion Quarterly, 68 (1), 94–101.

Kamande, M.W., 2011. Clean production and profitability. An eco-efficiency analysis of Kenyan manufacturing firms. Department of Economics, School of Finance and Banking, Kigali, Rwanda.

Kang, J., 2017. Unobservable CEO characteristics and CEO compensation as correlated determinants of CSP. Business and Society, 56(3) 419-453.

Karami, A., Rowley, J., and Analoui, F., 2006. Research and knowledge building in management studies: An analysis of methodological preferences. International Journal of Management, 23 (1), 43–52.

Kasim, A., 2009. Managerial attitudes towards environmental management among small and medium hotels in Kuala Lumpur. Journal of Sustainable Tourism, 17 (6), 709–725.

Kasim, A. and Ismail, A., 2012. Environmentally friendly practices among restaurants: drivers and barriers to change. Journal of Sustainable Tourism, 20 (4), 551–570.

Kasseeah, H., 2012. Small and Medium-Sized Enterprises in Mauritius and their owner managers: Does education matter? International Journal of Business and Social Science, 3 (17), 83–94.

Katsoulakos, P., Koutsodimou, M. and Matraga, A. and Williams, L. 2004. A historical perspective of CSR. White paper SFAID

Kawulich, B. B., 2004. Data analysis techniques in qualitative research. state University of West Georgia, USA.

Kay, G.B., 1972. The political economy of colonialism in Ghana. Cambridge.

Kayanula, D. and Quartey, P., 2000. The Policy environment for promoting small and medium sized enterprises in Ghana and Malawi. University of Manchester, Finance and Development Research programme Working Paper Series, (15), 1–30.

Kaynak, H., 2003. The relationship between total quality management practices and their effects on firm performance, Journal of Operations Management, 21, 405–435.

Keitany, J. P., Wanyoike, M. D. and Richu, S., 2014. Assessment of the role of materials management on organisational performance: A case of new Kenya cooperative creameries limited. European Journal of Material Sciences, 1(1), 1-10.

Kelley, K., Clark, B., Brown, V. and Sitzia, J., 2003. Methodology matters: Good practices in the conduct and reporting of survey research. International Journal of Quality in Health Care, 15(3), 261-266.

Kessler, J. J., Ginniken, P. Van, Kessler, J. J., Ginniken, P. Van, Cornelissen, W., and Romijn, B., 2001. Towards a Conceptual Framework for Environmental Governance Towards a Conceptual Framework for Environmental Governance. Working paper, Washington.

Key, P.J., 1997. Module R14, Qualitative research. Research design in occupational education. Oklahoma State University.

Key, S., 1999. Toward a new theory of the firm: A critique of stakeholder `` theory'' Management Decision, 317–328.

Khan, A.W. and Vieito, P.J., 2013. Ceo gender and firm performance, Journal of Economics and Business, 67, 55– 66.

King, A. and Lenox, M. J., 2001. Does it really pay to be green? An empirical study of firm environmental and financial performance. Journal of Industrial Ecology, 5 (1), 105–116.

King, A. and Lenox, M., 2002. Exploring the locus of profitable pollution reduction. Management Science, 48 (2), 289–299.

Kirk, D., 1995. Environmental management in hotels. International Journal of Contemporary Hospitality Management,7(6), 3–8.

Klassen, R. D. and Mclaughlin, C. P., 1996. The impact on of environmental management firm performance, 42 (8), 1199–1214.

Klassen, R. D. and Whybark, D. C., 1999. Environmental management in operations: The selection of environmental technologies. Decision Sciences, 30 (3), 601–631.

Koleva, P., 2014. Transport and sustainable development in communication and in practice: A comparative analysis of the strategies of three French firms, Journal of Economics and Business XVII (1), 19–37.

Kollman, K. and Prakash, A., 2002. EMS-based environmental regimes as club goods: Examining variations in firm-level adoption of ISO 14001 and EMAS in U.K., U.S. and Germany. Policy Sciences, 35, 43–67.

Konar, S. and Cohen, M., 2001. Does the market value environmental performance? Review of economics and statistics, 83 (2), 281–289.

Koralun-Bereznicka, J., 2015. Does industrial classification of firms reflect corporate performance? Evidence from the European Union. European Scientific Journal, 153–165.

KPMG, 2012. Raw material scarcity and its impact on business. Available from: http://www.supplychainmovement.com/tag/kpmg/page/2/ [Accessed 6 April 2015].

Kuada, J. and Hinson, R. E., 2012. Corporate social responsibility practices of foreign and local companies in Ghana by, 10, 521–536.

Kulatunga, K. J., Amaratunga, R. D. G., and Haigh, R. P., 2007. Researching construction client and innovation: Methodological perspective. The Research Institute for the Built and Human Environment, University of Salford, Salford.

Labonne, J., 2006. A Comparative Analysis of the environmental management, performance and innovation of SMEs and larger firms, European Commission, Directorate General Environment Report. Available from: ec.europa.eu/environment/sme/pdf/final_ report _sme_ en.pd [Accessed 13 January 2015].

Lannelongue, G., Gonzalez-Benito, J. and Quiroz, I.2017. Environmental management and labour productivity: The moderating role of capital intensity. Journal of Environmental Management, 190 (2017), 158-169.

Lantos, P. G. 2001. The boundaries of strategic corporate social responsibility. Stonehill College, North Easton.

Lappalainen, J. and Niskanen, M., 2012. Financial performance of SMEs: Impact of ownership structure and board composition. Management Research Review, 35 (11), 1088–1108.

Letza, S., Sun, X. and Kirkbride, J., 2004. 'Shareholding versus stakeholding: A critical review of corporate governance. Corporate Governance: An International Review, 12(2), 242-262.

Lawrence, S. R., Collins, E., Pavlovich, K., and Arunachalam, M., 2006. Sustainability practices of SMEs: The case of NZ. Business Strategy and the Environment, 15, 242–257.

Lefebvre, E., Lefebvre, L. A., and Talbot, S., 2003. Determinants and impacts of environmental performance in SMEs. R and D Management, 33 (514), 263–283.

Lepoutre, J. and Heene, A., 2006. Investigating the impact of firm size on small business social responsibility: A critical review. Journal of Business Ethics, 67, 257–273.

Leung, W., 2001. How to design a questionnaire. Student British Medical Journal, 9, 187-189.

Lieberman, M. B. and Demeester, L., 1999. Inventory reduction and productivity growth: Linkages in the Japanese automotive industry. Management Science, 45 (4), 466–484.

Lindblom, C. K., 1983. 'The concept of organisational legitimacy and its implications for corporate social responsibility disclosure'. American Accounting Association Public Interest Section, Working paper.

Lin, R. and Sheu, C., 2012. Why do firms adopt/implement green practices? –an institutional theory perspective. Procedia - Social and Behavioral Sciences, 57, 533–540.

Lippitt, M., Reese Masterson, A., Sierra, A., Davis, A. B., and White, M. A, 2014. An exploration of social desirability bias in measurement of attitudes toward breastfeeding in public. Journal of Human Lactation, 30 (3), 358–366.

Littunen, H. and Virtanen, M., 2006. Differentiating growing ventures from non-growth. The International Entrepreneurship and Management Journal, 2(1), 93-109.

Loderer, C.F. and Waelchli, U., 2010. Firm age and performance. MPRA paper No. 26450. Available from: http://mpra.ub.uni-muenchen.de/26450/ [1 October 2014].

López-Gamero, M. D., Molina-Azorín, J. F., and Claver-Cortés, E., 2009. The whole relationship between environmental variables and firm performance: Competitive advantage and firm resources as mediator variables. Journal of Environmental Management, 90 (10), 3110–3121.

Lucas, M. T. and Noordewier, T. G., 2016. Environmental management practices and firm financial performance: The moderating effect of industry pollution-related factors. International Journal of Production Economics, 175, 24–34.

Lucas, M. T. and Wilson, M. A., 2008. Tracking the relationship between environmental management and financial performance in the service industry. Service Business, 2 (3), 203–218.

Lund, P. J. and Miner, D. A., 1975. The nature of the error term in distributed lag models. Applied Economics, 7(3), 185-194.

Lynch-Wood, G. and Williamson, D., 2013. Understanding SME responses to environmental regulation. Journal of Environmental Planning and Management, 57(8), 1220-1239.

Lynch-Wood, G. and Williamson, D., 2014. Understanding SME responses to environmental regulation. Journal of Environmental Planning and Management, 57 (8), 1220–1239.

Lynch-Wood, G. and Williamson, D., 2011. The receptive capacity of firms—why differences matter. Journal of Environmental Law, 23(3), 383-413.

Lynch-Wood, G. and Williamson, D., 2010. Regulatory compliance: Organisational strategies and regulatory capacities in G. Smith, H. Quirk and T. Seddon (eds.), regulation and criminal justice: Developing a new framework for research and policy development, Cambridge, UK, Cambridge University Press.

Lynch-Wood, G., Williamson, D., and Jenkins, W., 2009. The over-reliance on self-regulation in CSR policy. Business Ethics: A European Review, 18 (1), 52–65.

Lynch-Wood, G. and Williamson, D., 2005. Why we need to support the environmental compliance needs of European SMEs. Centre for Research into Corporate Responsibility and the Environment.

Lysons, K. and Farrington, B., 2006. Purchasing and supply chain management, 7th ed. London: Prentice Hall.

Mackenzie, N. and Knipe, S., 2006. Research dilemmas: Paradigms, methods and methodology. Issues in Educational Research, 16(2), 193-205.

Madueño, J. H., Larrán Jorge, M., Martínez Conesa, I., and Martínez-Martínez, D., 2016. Relationship between corporate social responsibility and competitive performance in Spanish SMEs: Empirical evidence from a stakeholders' perspective. Business Research Quarterly, 19 (1), 55–72.

Majumdar, S. K., 1997. The impact of size and age on firm-level performance: Some evidence from India, 231–241.

Manner, M. H., 2010. The impact of CEO characteristics on corporate social performance, 53–72.

Margolis, J. D. and Walsh, J. R., 2003. Misery loves rethinking companies: Social Initiatives by Business. Administrative Science Quarterly, 48 (2), 268–305.

Margolis, J. D. and Walsh. J.P., 2001. People and profits? The search for a link between a company's social and financial performance. New York, Psychology Press.

Marin, G., Marzucchi, A. and Zoboli, R., 2014. SMEs and barriers to eco-innovation in EU: A diverse palette of greens. INGENIO (CSIC-UPV) Working Paper Series 2014-04.

Marshall, G., 2005. The purpose, design and administration of a questionnaire for data collection. Radiography, 11 (2), 131–136.

Martin, R., Muûls, M., Preux, L. B. De, and Wagner, U. J., 2010. Anatomy of a paradox: Management practices , organisational structure and energy efficiency, cep discussion paper no. 1039, Centre for Economc Performance.

Martín-de Castro, G., Amores-Salvadó, J., and Navas-López, J. E., 2015. Environmental management systems and firm performance: Improving firm environmental policy through stakeholder engagement. Corporate Social Responsibility and Environmental Management, 23, 243–256.

Massoud, M. A., Makarem, N., Ramadan, W., and Nakkash, R., 2015. Environmental management practices in the Lebanese pharmaceutical industries: Implementation strategies and challenges. Environmental Monitoring and Assessment, 187:107, 1-10.

Mathers, N., Fox, N. and Hunn, A., 2007. Surveys and questionnaires. The NIHR RDS for the East Midlands / Yorkshire and the Humber.

Matta, E. and Beamish, P. W., 2008. The accentuated CEO career horizon problem: Evidence from international acquisitions. Strategic Management Journal, 29 (7), 683-700.

Matten, D. and Moon, J. 2004. Corporate Social Responsibility Education in Europe, Journal of Business Ethics, 54(4), 323–37.

Mauri, A. J. and Michaels, M. P., 1998. Firm and industry effects within strategic management: An empirical examination. Strategic Management Journal,19, 211-219.

McAdam, T. W. 1973. How to put corporate social responsibility into practice. Business and Society Review/Innovation, 6, 8-16.

McGahan A.M. and Porter M.E., 1997. How much does industry matter, really? Strategic Management Journal, Summer Special Issue 18, 15–30.

McKeiver, C. and Gadenne, D., 2005. Environmental management systems in Small and Medium Businesses. International Small Business Journal, 23 (5), 513–537.

McManus, O., 2009. Environmental Regulation, Elsevier Ltd. Sidneat, Australia.

McNamee, R., 2005. Regression modelling and other methods to control confounding. Occupational and Environmental Medicine, 62 (7), 500–506, 472.

McWilliams, A., Siegel, S. D. and Wright, M.P. 2005. Corporate Social Responsibility: Strategic Implications. Rensselaer Working Papers in Economics no.0506.

McWilliams, A. and Siegel, D., 2001. Corporate social responsibility: A theory of the firm perspective. Academy of Management Review, 26 (1), 117–127.

McWilliams, A, Siegel, D. and Teoh, S. H 1999. Issues in the use of the event study methodology: A critical analysis of corporate social responsibility studies. Organizational Research Methods, 2(4), 340–65.

Melnyk, S. A., Sroufe, R. P., and Calantone, R., 2003. Assessing the impact of environmental management systems on corporate and environmental performance, Journal of Operations Management, 21(3), 329-351.

Mensah, I., 2014. Stakeholder pressure and hotel environmental performance in Accra, Ghana. Management of Environmental Quality: An International Journal, 25 (2), 227-243.

Mensah, I. and Blankson, E. J., 2013. Determinants of hotels' environmental performance: Evidence from the hotel industry in Accra, Ghana. Journal of Sustainable Tourism, 21 (8), 1212–1231.

Mensah, I., 2006. Environmental management practices among hotels in the greater Accra region. International Journal of Hospitality Management, 25 (3), 414–431.

Meyer, J. and Rowan, B., 1977. 'Institutional Organizations: Formal Structures as Myth and Ceremony,' American Journal of Sociology, 83, 340-63.

Meyer, J. W. and Rowan, B., 1991. Institutionalized organisations: Formal structure as myth and ceremony, in W. W. Powell and P. J. DiMaggio (Eds.), The new institutionalism in organisational analysis: 41-62. Chicago, University of Chicago Press.

Miller, C. C. and Cardinal, L. B., 1994. Strategic planning and firm performance: A synthesis of more than two decades of research. Academy of Management Journal, 37, 1649-1665.

Miles, M.P. and Covin, J. G., 2000. Environmental marketing: A source of reputational, competitive and financial advantage. Journal of Business Ethics. 23, 299–311.

Ministry of Environment Science and Technology (MESTI), 2012. National assessment report on achievement of sustainable development goals and targets for Rio+20 conference, Accra.

Mir, D. F. and Feitelson, E., 2007. Factors affecting environmental behavior in micro enterprises: laundry and motor vehicle repair firms in Jerusalem. International Small Business Journal, 25 (4), 383–415.

Mirvis, P. and Googins, B. 2006. Stages of corporate citizenship. California Management Review, 48 (2), 104-126.

Mitchell, R. K., Agle, B. R., and Wood, D. J., 1997. Toward a theory of stakeholder identification and salience: Defining the principle of who and what really counts. Academy of Management Review, 22 (4), 853–886.

Mohanty, C.R.C., 2011. Reduce, reuse and recycle (the 3Rs) and resource efficiency as the basis for sustainable waste management, UNCRD and UN HABITAT, New York.

Molina-Azorín, J. F., Claver-Cortés, E., Pereira-Moliner, J., and Tarí, J. J., 2009. Environmental practices and firm performance: An empirical analysis in the Spanish hotel industry. Journal of Cleaner Production, 17 (5), 516–524.

Moneva, J. M. and Ortas, E., 2010. Corporate environmental and financial performance: a multivariate approach. Industrial Management and Data Systems, 110 (2), 193–210.

Montabon, F., Sroufe, R., and Narasimhan, R., 2007. An examination of corporate reporting, environmental management practices and firm performance. Journal of Operations Management, 25 (5), 998–1014.

Moors, E. H. M., Mulder, K. F., and Vergragt, P. J., 2005. Towards cleaner production: Barriers and strategies in the base metals producing industry. Journal of Cleaner Production, 13(7), 657–668.

Mulvihill, R. P. and Ali, S. 2016. Environmental Management: Critical Thinking and Emerging Practices, Canada, Routledge.

Murden, L. 2012. The Board and the CEO relationship. Available from: http://betterboards.net/relationships/the-board-and-the-ceo-relationship [2 February 2015].

Munyao, R. M., 2015. 'Role of inventory management practices on performance of production department', International Journal of Economics, Commerce and Management, III (5), 1625–1656.

Musamali, M. M. and Tarus, K. D., 2013. Does firm profile influence financial access among small and medium enterprises in Kenya? Asian Economic and Financial Review, 3 (6), 714–723.

Myers, M., 1997. Qualitative research in information systems. Management Information Systems Quarterly, 21 (June), 1–18.

Naila, D. L., 2013. The effect of environmental regulations on financial performance in Tanzania: A survey of manufacturing companies quoted on the Dar Es Salaam Stock Exchange. International Journal of Economics and Financial Issues, 3 (1), 99–112.

Nakao, Y., Amano, A., Matsumura, K., Genba, K., and Nakano, M., 2007. Relationship between environmental performance and financial performance: An empirical analysis of Japanese corporations. Business Strategy and the Environment, 16 (2), 106–118.

Narain, D., 2011. A Case for biodiversity offsets in India: From Biodiversity Risk to Competitive Advantage. available from: http://www.forest-trends.org/ documents/ files/doc_ 3155.pdf [Access 2 May 2015].

Nath, P. and Ramanathan, R., 2016. Environmental management practices, environmental technology portfolio, and environmental commitment: A content analytic approach for UK manufacturing firms. International Journal of Production Economics, 171, 427–437.

Nederhof, A. J., 1985. Methods of coping with social desirability bias: A review. European Journal of Social Psychology, 15, 265–280.

Neeley, S. M. and Cronley, M. L., 2004. When research participants don't tell it like it is : Pinpointing the effects of social desirability bias using self vs indirect-questioning. Advances in Consumer Research, 31, 432–433.

NetRegs, 2007. SME-nvironment. Available from: http://www.netregs.org.uk/about netregs/surveys.aspx [23 September 2015].

NetRegs, 2003. SME-nvironment 2003: A survey to assess environmental behaviours among smaller UK Businesses. Available from: http://www.bitc.org.uk/docs/ SMEnvironmentUK20031.pdf [Accessed 3 December 2014].

NetRegs, 2002. How green are small businesses?" Netregs benchmarking survey of environmental awareness 2002. Available from :http://search.netregs.org.uk/ environment/How-Green-Are-Small-Businesses [Accessed 1 December 2014].

Neuman, L.W., 2003. Social research methods: qualitative and quantitative approache, 5th ed. Boston, Allyn and Bacon.

Newton, T. and Harte, G., 1997. Green business: Technicist Kitsch? Journal of Management Studies, 34(1), 75–98.

Ngwakwe, C. C., 2008. Environmental responsibility and firm performance : Evidence from Nigeria, International Journal of Social, Behavioral, Educational, Economic, Business and Industrial Engineering, 2 (10), 1055–1062.

Nollet, J., Filis, G. and Mitrokotas, E. 2016. Corporate social responsibility and financial performance: A non-linear and disaggregated approach. Economic Modelling, 52, 400-407.

Nukpezah, D., 2010. Corporate environmental governance in Ghana: Studies on industrial level environmental performance in manufacturing and mining in Ghana. PhD thesis, Brandenburg University of Technology, Cottbus, Germany.

Nulty, D. D., 2008. The adequacy of response rates to online and paper surveys: What can be done? Assessment and Evaluation in Higher Education, 33 (3), 301–314.

Nyirenda, G., Ngwakwe, C. C., and Ambe, C. M., 2013. Performance in a South African mining firm. Managing Global Transitions, 11 (3), 243–260.

Ochiri, G., Wario, G., Odhiambo, R., and Arasa, R., 2015. Effects of waste reduction strategy on firm performance: A survey of publishing firms in Kenya. International Journal of Economics, Commerce and Management United Kingdom, III (5), 1228–1241.

Oduro-Kwarten, S., Anarfi, K.P., and Essandoh, H. M. K., 2016. Source separation and recycling potential of municipal solid waste in Ghana". Management of Environmental Quality: An International Journal, 27 (2), 210–226.

O'Donohue, W. and Torugsa, N., 2015. The moderating effect of 'Green' HRM on the association between proactive environmental management and financial performance in small firms. The International Journal of Human Resource Management, DOI: 10.1080/09585192.2015.1063078.

Ofori, D. F. and Hinson, R. E., 2007. Corporate social responsibility (CSR) perspectives of leading firms in Ghana. Corporate Governance: The International Journal Of Business In Society, 7 (2), 178–193.

Okudzeto, E., Mariki, W. A., Paepe, G. De, and Sedegah, K., 2014. Ghana 2014. Africa Economic Outlook.

Oliver, C., 1991. Strategic responses to processes institutional. Academy of Management Review, 16 (1), 145–179.

Olusegun, M. V. 2012. The impact of corporate environmental responsibility on financial performance: Perspective from the multinational extractive sector. PhD thesis. Brunel University.

Oppong, M., Owiredu, A., and Ransford, C., 2014. Micro and Small Scale Enterprises development in Ghana. European Journal of Accounting, Auditing and Finance Research, 2 (6), 84–97.

Oppong-Boakye, P. K., Ahinful, G. S., and Danquah, J. B., 2012. Micro-loans and micro enterprises in Ghana: Players, roles and challenges. European Journal of Business and Management, 4 (20), 89–98.

Ortas, E., Gallego-alvarez, I., and Etxeberria, I. Á., 2015. Financial factors influencing the quality of corporate social responsibility and environmental management disclosure: A Quantile Regression Approach, 380, 362–380.

Osborne, J. and Waters, E., 2002. Four assumptions of multiple regression that researchers should always test. Practical Assessment, Research and Evaluation, 8 (2), 1- 5.

Overbeek, G., Harms, B., and Van Den Burg, S., 2013. Biodiversity and the corporate social responsibility agenda. Journal of Sustainable Development, 6 (9), 1–11.

Pallant, J., 2007. SPSS survival manual, A step by step guide to data analysis using SPSS for Windows, 3rd ed. Berkshire England, McGraw-Hill House.

Parker, C. M., Redmond, J., and Simpson, M., 2009. A review of interventions to encourage SMEs to make environmental improvements. Environment and Planning C: Government and Policy, 27 (2), 279–301.

Paton, B., 2000. Voluntary environmental initiatives and sustainable industry. Business Strategy and the Environment, 9(5), 328-38.

Pawson, R. and Tilley, N., 1997. Realistic evaluation, London, Sage.

Penrose, E.T., 1959. The theory of the growth of the firm. Oxford, Basil Blackwell.

Pereira-Moliner, J., Font, X., Tarí, J. J., Molina-Azorin, F. J., Lopez-Gamero, D.M., and Pertusa-Ortega, M. E., 2015."The holy grail", International Journal of Contemporary Hospitality Management, 27(5), 714 – 738.

Petts, J., 2000. 'The regulator: regulated relationship and environmental protection: Perceptions in Small and Medium-sized Enterprises'. Environment and Planning C: Government and Policy, 18(2), 191–206.

Pham, T. H. H., 2015. Energy management systems and market value: Is there a link? Economic Modelling, 46, 70–78.

Pickett, J. and Shaeeldin, E., 1990. Comparative advantage in agriculture in Ghana. OECD Development Centre.

Pi, L. and Timme, S G., 1993. Corporate control and bank efficiency. Journal of Banking Finance, 17, 515-530.

Pinget, A., Bocquet, R., and Mothe, C., 2015. Barriers to environmental innovation in SMEs: Empirical Evidence from French Firms, 18 (2), 132–155.

Pintea, M., Stanca, L., Achim, S., and Pop, I., 2014. Is there a connection among environmental and financial performance of a company in developing countries? Evidence from Romania. Procedia Economics and Finance, 15 (14), 822–829.

Plambeck, E. L., 2012. Reducing greenhouse gas emissions through operations and supply chain management. Energy Economics, 34, 64–74.

Podsakoff, P. M. and Organ, D. W., 1986. Self-reports in organisational research: Problems and prospects. Journal of Management, 12(4), 531–544.

Podsakoff, P. M., MacKenzie, S. B., Lee, J.-Y., and Podsakoff, N. P., 2003. Common method biases in behavioral research: A critical review of the literature and recommended remedies. The Journal of Applied Psychology, 88 (5), 879–903.

Ponzi, J., 2014. St. Louis businesses use biodiversity to improve their footprint. Available from: www.greenbiz.com/article/how-st-louis-businesses-use-biodiversity-grow [3 November 2014].

Porter, M. E., 1980. Competitive strategy, techniques for analyzing industries and competitors. New York, The Free Press.

Porter, M. E., 1991. "America's green strategy." Scientific American, 264 (4).

Porter, M. E. and van der Linde, C., 1995. Green and competitive: ending the stalemate. Harvard Business Review, 28 (6), 128–129.

Post, J. E. and Altman, B. W., 1994. Managing the environmental change process: Barriers and Opportunities, Journal of Organizational Change Management, 7, 64–81.

Prendergast, C. and Lars Stole, L.,1996. Impetuous youngsters and jaded old-timers: Acquiring a reputation for learning. The Journal of Political Economy, 104(6), 1105-1134.

PricewaterhouseCoopers, 2010. Biodiversity offsets and the mitigation hierarchy: a review of current application in the banking sector. Available from: http://www. unepfi.org /fileadmin/documents/biodiversityoffsets.pdf [Accessed 21 March 2015].

PricewaterhouseCoopers, 2013. 2013 Ghana banking survey harnessing the SMEpotential. Available from: https://www.pwc.com/gh/en/pdf/ghana-banking-survey-2013-pwc .pdf [Accessed 11 January 2015]

PricewaterhouseCoopers, 2016. 2016 Ghana banking survey how to win in an era of mobile money. Available from: http://www.pwc.com/gh/en/assets/pdf/2016-banking-survey-report.pdf [Accessed 9 January 2017]

Przychodzen, J. and Przychodzen, W., 2015. Relationships between eco-innovation and financial performance – evidence from publicly traded companies in Poland and Hungary. Journal of Cleaner Production, 90, 253–263.

Public Utility Regulatory Commission (PURC), 2015. Approved utility and water tariffs. Press Release. Accra, Ghana.

PUMA, 2012. PUMA's environmental profit and loss account for the year ended 31 December 2010. Available from: http://about.puma .com/en/ sustainability /enviro nment/environmental-profit-andloss account [Accessed 24 January 2015].

Qian, W., 2012. "Revisiting the link between environmental performance and financial performance: who cares about private companies?" 11th ACSEAR Conference. UOW's Social Accounting and Accountability Research Centre (SAARC) and the School of Accounting and Finance, Australia, 2012.

Qian, W. and Xing, K., 2016. Linking environmental and financial performance for privately owned firms: Some evidence from Australia. Journal of Small Business Management, doi: 10.1111/jsbm.12261

Quan, X., 2012. Prior experience, social network, and levels of entrepreneurial intentions. Management Research Review, 35, 945-957.

Quazi, A. M. and O'Brien, D. O., 2000. An empirical test of a cross-national model of corporate social responsibility. Journal of Business Ethics 25, 33–51.

Radipere, S. and Dhliwayo, S., 2014. The role of gender and education on small business performance in the South African small enterprise sector. Mediterranean Journal of Social Sciences, 5 (9), 104–110.

Raj, R. . and Seetharaman, A., 2013. Role of waste and performance management in the construction industry. Journal of Environmental Science and Technology, 6 (3), 119–129.

Rajput, N., Arora, S. and Khanna, A., 2013. An empirical study of impact of environmental performance on financial performance in Indian banking sector. International Journal of Business and Management Invention, 2(9), 19-24.

Ramanathan, R., 2016. Understanding complexity: The curvilinear relationship between environmental performance and firm performance. Journal of Business Ethics,1–11, DOI 10.1007/s10551-016-3088-8.

Ramasamy, B., Ong, D., and Yeung, M. C. H., 2005. Firm size, ownership and performance in the Malaysian palm oil industry, Asian Academy of Management Journal of Accounting and Finance, 1, 81–104.

Rasi, R. Z., Abdekhodaee, A., and Nagarajah, R., 2010. Environmental initiatives: An exploration of Small and Medium Enterprise (SMEs) responses toward green technologies, International Conference on Logistics and Transport, December 16-18, Queenstown.

Rathje, L.W. and Murphy, C., 2001. Rubbish! The archaeology of garbage. Tucson, University of Arizona Press.

Ray, G., Barney, J. B., and Muhanna, W. A., 2004. Capabilities, business processes, and competitive advantage: Choosing the dependent variable in empirical tests of the resource-based view. Strategic Management Journal, 25 (1), 23–37.

Razafsha, M., Behforuzi, H., Azari, H., Zhang, Z., Wang, K.K., Kobeissy, H.F. and Gold, S.M., 2011. Qualitative versus quantitative methods in psychiatric research. Psychiatric Disorders Methods in Molecular Biology, 829, 49-62.

Reed S., M., Graves, A., Dandy, N., Posthumus, H., Hubacek, K., Morris, J., Prell, C., Quinn, C., and Stringer, L. C., 2009. Who's in and why? A typology of stakeholder analysis methods for natural resource management. Journal of Environmental Management, 90, 1933–1949.

Resource Efficient Scotland, 2014. Legal office reduces business overheads through improved resource efficiency and waste management. Available from: http://www. resource efficientscotland.com/ sites/default/ files/Murgitroyd %20 Case %20StudyMarch2014fial.pdf [Accessed 14 November 2015].

Revell, A., Stokes, D., and Chen, H., 2010. Small Businesses and the Environment: Turning Over a New Leaf? Business Strategy and the Environment, 19, 273–288.

Revell, A. and Blackburn, R., 2007. The Business Case for Sustainability in the UK's construction and restaurant Sectors. Business Strategy and the Environment, 16, 404 420.

Revell, A. and Blackburn, R., 2004. SMEs and their response to environmental issues in the UK. Small Business Research Centre Monograph, Kingston University.

Revell, A., 2003. The ecological modernisation of small firms in the UK. Paper presented at the Business Strategy and Environment Conference, September 6, Leicester.

Richardson, J., 2005. Design and conduct a survey. Complementary Therapies in Medicine, 13(1), 47–53.

Rivera, J. and Leon, P. De., 2005. Chief Executive Officers and Voluntary Environmental Performance: Costa Rica's Certification for Sustainable Tourism. Policy Sciences2, 38(202), 107–127.

Rooney, C., 1993. Economics of pollution prevention: How wmte reduction pays. Pollution Prevention Review /Summer, 261-276.

Rothenberg, S., Maxwell, J., and Marcus, A., 1992. Issues in the implementation of proactive environmental strategies. Business strategy and the environment, 1(4), 1-12.

Roquebert, J.A, Phillips, R. L. and Westfall P.A., 1996. Markets vs management: What 'drives' profitability? Strategic Management Journal, 17(8), 653–664.

Roumiantsev, S. and Netessine, S. 2007. What can be learned from classical inventory models? A cross-industry exploratory investigation. Manufacturing and Service Operations Management, 1-33.

Roy, M. and Thérin, F., 2008. Knowledge acquisition and environmental. Corporate Social Responsibility and Environmental Management, 15, 249–259.

Rumelt, R. P., 1991. How much does industry matter? Strategic Management Journal, 12 (3), 167–185.

Russo, A. and Perrini, F., 2010. Investigating stakeholder theory and social capital: CSR in large firms and SMEs. Journal of Business Ethics, 91 (2), 207–221.

Russo, M. V. and Fouts, P. A., 1997. A resource-based perspective on corporate environmental performance and profitability. Academy of Management Journal, 40 (3), 534–559.

Saeidi, S., So, S., and Saeidi, P., 2015. How does corporate social responsibility contribute to firm financial performance? The mediating role of competitive advantage , reputation, and customer satisfaction. Journal of Business Research, 68, 341–350.

Sahari, S., Tinggi, M., and Kadri, N., 2012. Inventory management in Malaysian construction firms: Impact on performance, SIU Journal of Management 2 (1), 2229-0044.

Sahu, S. K., 2014. Energy use patterns and firm performance: Evidence from Indian industries, Working paper 92/2014, Madras School of Economics.

Sale, J. E. M., Lohfeld, L. H., and Brazil, K., 2002. Revisiting the quantitative-qualitative debate: Implications for mixed-methods research. Quality and Quantity, 43–53.

Salman, A. K. and Yazdanfar, D., 2012. Profitability in Swedish micro firms: A quantile regression approach. International Business Research, 5 (8), 94–106.

Sampaio, A.R., Thomas, R. and Font, X., 2012. Why are some engaged and not others? Explaining environmental engagement among small firms in tourism. International Journal of Tourism Research, 14(3), 235-249.

Santos, M., 2011. CSR in SMEs: strategies, practices, motivations and obstacles. Social Responsibility Journal, 7 (3), 490–508.

Sarkis, J., 2001. Manufacturing's role in corporate environmental sustainability: Concerns for the new millennium. International Journal of Operations and Production Management 21(5/6), 666–686.

Sarkis, J. and Cordeiro, J. J., 2001. An empirical evaluation of environmental efficiencies and firm performance : Pollution prevention versus end-of-pipe practice, European Journal of Operational Research,135, 102–113.

Sarkis, J., Gonzalez-Torre, P., and Adenso-Diaz, B., 2010. Stakeholder pressure and the adoption of environmental practices: The mediating effect of training. Journal of Operations Management, 28 (2), 163–176.

Sarumpaet, S. 2005. The relationship between environmental performance and financial performance of Indonesian companies. Jurnal Akuntansi and Keuangan,7(2), 89- 98.

Saunders, M. Lewis, P. and Thornhill, A., 2009. Research methods for business students. 5th ed. Harlow, Pearson Education Ltd.

Saunders, M., Lewis, P. and Thornhill, A., 2007, Research methods for business students 4th ed. Harlow, Prentice Hall Financial Times.

Saunders, M., Lewis, P. and Thomhill, A., 2003. Research methods for business students. Essex: Pearson Education Ltd.

Schaper, M., 2002. Small firms and environmental management. International Small Business Journal, 20 (3), 235–251.

Schmalensee, R., 1985. Do markets differ much? American Economic Review, 75 (3), 341–351.

Schmidheiny, S., 1992. Changing course: A global business perspective on development and the environment. MIT Press, Cambridge, MA.

Schneider, A., Hommel, G., and Blettner, M., 2010. Linear regression analysis: Part 14 of a series on evaluation of scientific publications. Deutsches Ärzteblatt international, 107 (44), 776–82.

Schneiberg, M. and Clemens, E. S. 2006. The typical tools for the job: Research strategies in institutional analysis. Sociological Theory, 3, 195-227.

Schot, J., 1992. Credibility and markets as greening forces for the chemical industry. Business strategy and the Environment, 1 (1), 35–44.

Scotland, J., 2012. Exploring the philosophical underpinnings of research: Relating ontology and epistemology to the methodology and methods of the scientific, interpretive, and critical research paradigms. English Language Teaching, 5 (9), 9–16.

Scott, W. R. 2001. Institutions and organizations (2nd ed.). Thousand Oaks, CA: Sage.

Segarra, A. and Teruel, M., 2014. High-growth firms and innovation: An empirical analysis for Spanish firms. Small Business Economics, 43, 805–821.

Sen, S. and Cowley, J., 2013. The relevance of stakeholder theory and social capital theory in the context of CSR in SMEs: An Australian perspective. Journal of Business Ethics, 118 (2), 413–427.

Serfling, A.M. 2014. CEO age and the riskiness of corporate policies. Journal of Corporate Finance, 25, 251–273.

Seroka-Stolka, O. and Jelonek, D., 2013. Environmental awareness and the best environmental practices in SMEs of the food industry in the Częstochowa Region. Available from: https://vua.uniag.sk/sites/default/files/Seroka34-37.pdf [Accessed 4 August, 2015].

Setthasakko, W., 2010. Barriers to the development of environmental management accounting. EuroMed Journal of Business, 5 (3), 315–331.

Sharma, S., Vredenburg, H., 1998. Proactive corporate environmental strategy and the development of competitively valuable organizational capabilities. Strategic Management Journal 19 (8), 729–753.

Shepherd, W. G., 1986. On the Core Concepts of Industrial Economics, in De Jong, H.W., and Shepherd, W. G., (Eds). Mainstreams in industrial organisation. Dordrecht: Martinus Nijhoff Publishers.

Shergill, G. . and Sarkaria, M. ., 1999. Impact of industry type and firm characteristics on firm level financial performance-evidence from Indian industry. The Journal of Entrepreneurship, 8 (1), 25-44.

Shocker, A. D. and Sethi. S. P., 1974. 'An approach to incorporating social preferences in developing corporate action strategies', in Sethi. S. P. (Eds.) The Unstahlr Gruund: Curpo- White, T. (1973). The making of the president 1972. New York: Rate Social Policy in a Dynamic Society, Melville, 67-80.

Shrivastava, P., 1995. Environmental technologies and competitive advantage, Strategic Management Journal, 16 (1), 183–200.

Schultze, W. and Trommer, R., 2012. The concept of environmental performance and its measurement in empirical studies. Journal of Management Control 22(4), 375-412.

Sim, J. and Arnell, P., 1993. Measurement validity in physical therapy research. Physical Therapy, 73 (2), 102–10.

Simpson, M., Taylor, N., and Barker, K., 2004. Environmental responsibility in SMEs: Does it deliver competitive advantage? Business Strategy and the Environment, 13 (3), 156– 171.

Sinclair, D., 1997. Self-regulation versus command and control? Beyond false dichotomies. Law and Policy, 19 (4),529-559.

Singh, N., Jain, S., and Sharma, P., 2015. Motivations for implementing environmental management practices in Indian industries. Ecological Economics, 109, 1–8.

Slater, D. J. and Dixon-fowler, H. R., 2009. CEO international assignment experience and corporate social performance. Journal of Business Ethics, 89, 473–489.

Smale, R., Hartley, M., Hepburn, C., Ward, J., and Grubb, M., 2006. The impact of emissions trading on firm profits and market prices. Climate Policy, 6 (1), 31–48.

Smith-Asante, E., 2013. Big mining companies fail 'Akoben' rating. Available from: http://environmentalwatchman.blogspot.co.uk/2013/09/big-mining-companies-fail akoben-rating.htm [Accessed 30 December 2015].

Sobh, R. and Perry, C., 2006. Research design and data analysis in realism research. European Journal of Marketing, 40 (11/12), 1194–1209.

Soiferman, K. L., 2010. Inductive and deductive research approaches: Compare and contrast inductive and deductive research approaches, Research approach, University of Manitoba.

Song, H., Zhao, C., and Zeng, J., 2017. Can environmental management improve financial performance: An empirical study of A-shares listed companies in China. Journal of Cleaner Production, 141, 1051–1056.

Sowa, N. K., Baah-Nuakoh, A., Tutu, K. A. and Osei, B., 1992. "Small enterprise and adjustment, the impact of Ghana's economic recovery programme on small-scale industrial enterprises". Research reports, Overseas Development Institute, London.

Spekman, R., Kamauff Jr, J. and Myhr, N., 1998. An empirical investigation into supply chain management: A perspective on partnerships, supply chain management. An International Journal, 3 (2), 53-67.

Spence, L. J. and Rutherfoord, R., 2001. Social responsibility, profit maximisation and the small firm owner-manager. Journal of Small Business and Enterprise Development, 8, 126–139.

Srivastava, S.K. and Srivastava, R.K., 2006. Managing product returns for reverse logistics. International Journal of Physical Distribution and Logistics Management, 36 (7), 524-546.

Sroufe, R., 2003. Effects of environmental management systems on environmental management practices and operations. Production and Operations Management, 12 (3), 416–431.

Steel, W. F. and Webster, L. M., 1992. How small enterprises in Ghana have responded to adjustment. World Bank Economic Review, 6, 423–438.

Steijvers, T., Wim Voordeckers, W. and Vandemaele, S., 2006. Ownership, governance and financial performance in small and medium-sized family firms. Available from: https://doclib.uhasselt.be/dspace/bitstream/1942/7862/2/Ownership.pdf [3 February 2015].

Stern, D. I., 2004. The rise and fall of the environmental Kuznets curve. World Development, 32 (8), 1419–1439.

Stern, D. I., Common, M. S. and Barbier, E. B., 1996. Economic growth and environmental degradation: The environmental Kuznets curve and sustainable development. World Development, 24, 1151-1160.

Stevens, P. A, Batty, W. J., Longhurst, P. J., and Drew, G. H., 2012. A critical review of classification of organisations in relation to the voluntary implementation of environmental management systems. Journal of Environmental Management, 113, 206–212.

Stierwald, A., 2010. Determinants of profitability: An analysis of large Australian firms. Intellectual Property Research Institute of Australia Working paper no. 1/10.

Stone, H.D., 1993. How to do it: Design a questionnaire. British Medical Journal, 307(6914), 1264–1266.

Storey, D., 1994. “Understanding the small business sector”, London, Routledge.

Strandberg, C. and Robinson, A., 2009. Small- and Medium-Sized business environmental road map. Report for industry Canada.

Suchman, M. C., 1995. Managing legitimacy: Strategic and institutional approaches. Academy of Management Review, 20 (3), 571–610.

Suddaby, R. 2010. Challenges for Institutional Theory. Journal of Management Inquiry, 19(1): 14-20.

Szolnoki, G. and Hoffmann, D., 2013. Online, face-to-face and telephone surveys-comparing different sampling methods in wine consumer research. Wine Economics and Policy, 2, 57-66.

Tabachnick, G.B. and Fidell, S. L., 2013. Using multivariate statistics, 6th ed. Boston, Pearson Education Ltd.

Takahashi, S.I.Y., 2009. Entrepreneurs as decisive human resources and business performance for the Lao SMEs. Chinese Business Review 8(7), 29-47.

Tanriverdi, H. and Lee, C., 2008. Within-industry diversification and firm performance in the presence of network externalities: Evidence from the software industry. Academy of Management Journal, 51 (2), 381–397.

Tarziján, J. and Ramirez, C., 2010. Firm, industry and corporation effects revisited: a mixed multilevel analysis for Chilean companies. Applied Economics Letters, 18 (1), 95-100.

Tauringana, V., Radicic, D., Kirkpatrick, A., and Konadu, R., 2017. Corporate boards and environmental offence conviction: Evidence from the United Kingdom. Corporate Governance: The International Journal of Business in Society, 17(2), 341-362.

Teal, F., 2002. "Background information on use of dataset: Regional Project on Enterprise Development (RPED) Ghana manufacturing sector survey waves I-V (1992-98)", Centre for the study of African Economies, Institute of Economics and Statistics, University of Oxford, Oxford, UK.

Teles, C. D., Ribeiro, J. L. D., Tinoco, M. A. C., and Ten Caten, C. S., 2015. Characterization of the adoption of environmental management practices in large Brazilian companies. Journal of Cleaner Production, 86, 256–264.

Tewksbury, R., 2009. Qualitative versus quantitative methods: Understanding why qualitative methods are superior for criminology and criminal justice. Journal of Theoretical and Philosophical Criminology, 1 (1), 38–58.

Thanasegaran, G., 2009. Reliability and validity issues in research. Integration and Dissemination, 4, 35–40.

The European Network of Ecodesign Centres (ENEC), 2013. Motivations for and barriers to ecodesign in industry.Available from: http://edcw.org/sites/default/files/ resources/ ENEC%20Motivations%20%26%20Barriers%202013.pdf [Accessed 10 November 2014].

The Economics of Ecosystem and Biodiversity (2010). The economics of ecosystem and biodiversity for business report. Available from: www.teebweb.org/media /2012 /01/TEEB-For-Business.pdf [Accessed 3 February 2016].

The World Law Guide (Laxadin), 2009.Legislation Ghana. Available from: http:// www. lexadin.nl/wlg [Accessed 12 October 2015].

Thollander, P. and Ottosson, M., 2010. Energy management practices in Swedish energy-intensive industries Energy management practices in Swedish energy-intensive industries. Journal of Cleaner Production, (18), 1125–1133.

Thornton, D., Kagan, R. A., and Gunningham, N., 2009. When social norms and pressures are not enough: Environmental performance in the trucking industry. Law and Society Review, 43 (2), 405–436.

Tilley, F., 1999. Small-firm environmental strategy. International Journal of Conflict Management, 10 (2), 130–153.

Tilley, F., 2000. Small firm environmental ethics how deep do they go ? Business Ethics: An European Review, 9(1), 31–42.

Tilling, M.V. and Tilt, C.A., 2010. The edge of legitimacy: Voluntary social and environmental reporting in Rothmans' 1956-1999 annual reports. Accounting, Auditing and journal, 23(1), 55-81.

Tolbert, P. S. and Zucker, L. G., 1996. The institutionalization of institutional theory the institutionalization of institutional theory. ILR Collection

Toohey, G., 2009. Experience and new venture performance: An exploration of founder perceptions. New Castle Upon Tyne, UK, Cambridge Scholars Publishing.

Torugsa, N. A., O'Donohue, W., and Hecker, R., 2012. Capabilities, proactive CSR and financial performance in SMEs: Empirical evidence from an Australian manufacturing industry sector. Journal of Business Ethics, 109 (4), 483–500.

Tregidga, D. H., Milne, P. M. and Kearins, P. K., 2006. Organisational legitimacy and social and environmental reporting research: The potential of disclosure analysis. Paper was presented at the 5th Australasian conference on social and environmental accounting research, Wellington.

Trochim, M.K.W., 2006. Convergent and discriminant validity: Research methods knowledge base. Available from: http://www.socialresearchmethods. net/kb/ convdisc.php [Accessed on 3 April 2015].

Trumpp, C., Endrikat, J., Zopf, C., and Guenther, E., 2015. Definition, conceptualization, and measurement of corporate environmental performance: A critical examination of a multidimensional construct. Journal of Business Ethics, 126(2), 185–204.

Trumpp, C. and Guenther, T., 2015. Too Little or too much? Exploring U-shaped relationships between corporate environmental performance and corporate financial performance. Business Strategy and the Environment, DOI: 10.1002/bse.1900.

Tuli, F., 2010. Review article the basis of distinction between qualitative and quantitative research in social science: Reflection on ontological, epistemological and methodological perspectives. Journal of Education and Science, 6 (1), 97–108.

Tutu, K., 2011. "Trade for sustainable development: A story of Ghana's cocoa, gold and timber" Institute of Economic Affairs, Accra.

Tsoutsoura, M., 2004. Corporate social responsibility and financial performance. Center for responsible business, Working paper series, no.7, University of California, Berkeley

Tzschentke, N., Kirk, D., Lynch, P. A., Tzschentke, N., Kirk, D., and Lynch, P. A., 2004. Reasons for going green in serviced accommodation establishments. International Journal of Contemporary Hospitality Management, 16(2), 116-124.

Uhlaner, L. M., Berent-Braun, M. M., Jeurissen, R. J. M., and de Wit, G., 2012. Beyond Size: Predicting Engagement in Environmental Management Practices of Dutch SMEs. Journal of Business Ethics, 109 (4), 411–429.

Unam, J. M., 2012. Materials management for business success. International Jornal of Economics and Management Sciences, 1 (7), 50–56.

UNDP, 2015. Ghana Millennium Development Goal Report 2015. Available from: http://www.gh.undp.org/content/ghana/en/home/library/poverty/2015-ghanamillenniu m -development-goals-report.html [23 October 2017].

UNEP, 2012. Green Economy Advisory Services: Ghana, Available from: http://staging.unep.org/greeneconomy/Portals/88/documents/advisory_services/count ies/Ghana%20final.pdf1–2[Accessed 10 February 2015].

UNDP, 2006. Human development report. 2006. New York: UNDP. Available from: http://hdr.undp.org [2 March 2015].

UNEP, 2003. Big challenge for small business: sustainability and SMEs. Industry and Environment, 26(4), 3-4.

UNCED, 1992. Agenda 21, United Nations Conference on Environment and Development. New York, UN.

U.S.A. Environmental Protection Agency, 2009. Opportunities to reduce greenhouse gas emissions through materials and land management practices. Available from: https://www.epa.gov/region-9-documents/opportunities-reduce-greenhouse-gas emissions-through-materials-and-land [Accessed 24 February 2015].

Van Roosbroeck, P. and Amlalo, S.D., 2006. Country environmental profile of Ghana. Draft Final Report.

Vickers, I. 2010. Social enterprise and the environment: a review of the literature. Working Paper 22.

Vickers, I., Vaze, P., Corr, L., Kasparova, E., and Lyon, F., 2009. SMEs in a low carbon economy: Final report for BERR Enterprise Directorate.

Vichit-Vadakan, N., Nitaya Vajanapoom, N. and Ostro, B., 2008. The public health and air pollution in Asia (papa) project: Estimating the mortality effects of particulate matter in Bangkok, Thailand. Environmental Health Perspectives, 116 (9), 179-1182.

Vieira, A. L., 2011. Interactive LISREL in practice: Getting started with a SIMPLIS approach. New York: Springer.

Vijfvinkel, S., Bouman, N., and Hessels, J., 2011. Environmental sustainability and financial performance of SMEs. Available from: www.entrepreneurship-sme.eu [Accessed 18 November 2015].

Vikhanskiy, O., Churkina, N., and Zaverskiy, S., 2012. Business response to environmental challenges: Three cases of Russian industrial companies, Oñati Socio-Legal Series 2(3), 68–88.

Visser, W., 2008. Corporate social responsibility in developing countries. The Oxford Handbook of Corporate Social Responsibility, Oxford, Oxford University Press.

Visser, W., 2006. Revisiting Carroll's CSR pyramid: an African perspective. In M. Huniche and E. P. Rahbek (Eds.), Corporate citizenship in developing countries—new partnership perspectives

Visser, W., McIntosh, M., and Middleton, C., 2006. Corporate citizenship in Africa: lessons from the past; paths to the future. Saltaire, UK, Greenleaf Publication.

Vogel, D. 1992. The globalization of business ethics: Why America remains distinctive. California Management Review, 35(1),30–49.

Waddock, S. A. and Graves, S. B. 1997. The corporate social performance-financial performance link. Strategic Management Journal, 18 (4), 303-319.

Wagner-Tsukamoto, S. 2015. What Ethics? Economizing the Carroll Pyramid of Corporate Social Responsibilities (CSR). Available from: https://lra.le .ac.uk/handle/ 2381 /32950 [Accessed 18 August 2017].

Walley, N. and Whitehead, B., 1994. It's not easy being green. Harvard Business Review, 72(3), 46–52.

Walker, B., Janice, R., Lynnaire, S., Calvin, W., and Ute, G., 2008. Small and Medium Enterprises and the environment: Barriers, drivers, innovation and best practice. A review of the literature. Edith Cowan University, Australia.

Walter, C. H., 1975. The effective use of raw material. Retail and Distribution Management, 3(1), 42–44.

Walters, A.B., Kroll, J.M. and Wright, P., 2007. CEO tenure, boards of directors, and acquisition performance. Journal of Business Research, 60, 331–338.

WaterAid, 2016. A tale of clean cities: Insights for planning urban sanitation from Kumasi, Ghana. Kumasi case study report by Partnerships in Practice

Watson, J. (2002) 'Comparing the performance of male and female-controlled businesses: relating outputs to inputs'. Entrepreneurship Theory and Practice 26(3), 91–101.

Watson, K., Klingenberg, B., Polito, T., and Geurts, T. G., 2004. Impact of environmental management system implementation on financial performance. Management of Environmental Quality: An International Journal, 15 (6), 622–628.

WBCSD, 2001. Sustainability through the market-seven keys to success. World Business Council for Sustainable Development.

Weaver, K. and Olson, J., 2006. Understanding paradigms for nursing research. Journal of Advanced Nursing, 53 (4), 459–469.

Webster, J. S., 2012. Challenges in waste management facing the offshore oil and gas sector. 1st Civil and Environmental Engineering Student Conference, Imperial College London.

Weiss, A.: 1995, 'Cracks in the foundations of stakeholder theory'. Available from: http://www.mgnt.waikato.ac.nz/research/ejrot:11/weiss.pdf [Accessed 2 March 2015].

Wernerfelt, B., Cynthia, A. and Montgomery, A. C., 1988. Tobin's q and the importance of focus in firm performance. The American Economic Review, 78(1), 246-250.

Williams, S. and Schaefer, A., 2013. Small and Medium-Sized Enterprises and sustainability: Managers' values and engagement with environmental and climate change issues. Business Strategy and the Environment, 22 (3), 173–186.

Williamson, D., Lynch-Wood, G., and Ramsay, J., 2006. Drivers of environmental behaviour in manufacturing SMEs and the implications for CSR. Journal of Business Ethics, 67 (3), 317–330.

Williamson, D. and Lynch-Wood, G., 2005. Enviro help: A support package for EU member states. Business Strategy and the Environment Conference, 5-6 September, 2005 in Leeds, Yorkshire, UK

Wilson, C. D. H., Williams, I. D., and Kemp, S., 2011. Compliance with environmental command and control legislation: Experiences from UK Small and Medium-Sized Enterprises, Business Strategy and the Environment, 330, 310–330.

Wingard, H. C. and Vorster, Q., 2001. Financial performance of environmentally responsible South African listed companies. Meditari Accountancy Research, 9, 313–332.

Winn, M. I. and Pogutz, S., 2013. Business, ecosystems, and biodiversity: New horizons for management research. Organisation and Environment, 26 (2), 203–229.

Windsor, D., 2006. Corporate Social Responsibility: Three Key Approaches. Journal of Management Studies, 43(1), 0022-2380.

Wisner, P. S., Epstein, M. J., and Bagozzi, R. P. 2006. Organizational antecedents and consequences of environmental performance. Advances in Environmental Accounting and Management, 3, 143–167.

Woldie, A., Leighton, P., and Adesua, A., 2008. Factors influencing small and medium enterprises (SMEs): An exploratory study of owner/manager and firm characteristics. Bank and Bank Systems, 3 (3), 5–13.

Worrell, E., Levine, M., Price, L., Martin, N., van den Broek, R. and Block, K. 1997. Potentials and policy implications of energy and material efficiency improvement, New York, United Nations Publications.

Worrell, E., Faaij, A. P. C., Phylipsen, G. J. M., and Blok, K., 1995. An approach for analysing the potential for material efficiency improvement. Resources, conservation and recycling, 13 (3-4), 215–232.

Wu, L.-Y., 2010. Applicability of the resource-based and dynamic-capability views under environmental volatility. Journal of Business Research, 63 (1), 27–31.

Xie, S., and Hayase K., 2007. Corporate environmental performance evaluation: A measurement model and new concept. Business Strategy and Environment, 16(2),148-168.

Yamane, T., 1973. “Statistics: an introductory analysis.” New York: Harper and Row.

Yang, C., and Chen K., 2009. Are small firms less efficient? Small Business Economics, 32(4), 375-395.

Yale University.2016. 2016 Environmental performance index. Available from: http: // epi . yale.edu/epi.[Accessed on 1 January 2017].

Yale University. 2014. 2014 Environmental performance index. Available from http://epi. yale.edu/epi [Accessed on 1 October 2015].

Yalley, P. P., Opintan-Baah, E., and Darko, O. J., 2013. Evaluating the performance of environmental protection agency (EPA) in the Ghanaian building constructional industries, International Refereed Journal of Engineering and Science 2 (1), 1–8.

Yazdanfar, D., 2013. Profitability determinants among micro firms: Evidence from Swedish data. International Journal of Managerial Finance, 9, 151–160.

Yu, H., 2011. The EU ETS and Firm profits: An ex-post analysis for Swedish energy firms. Working paper 2011:2, Department of Economics, Uppsala Univertet.

Zeng, S. X., Meng, X. H., Zeng, R. C., Tam, C. M., Tam, V. W. Y., and Jin, T., 2011. How environmental management driving forces affect environmental and economic performance of SMEs: A study in the Northern China district. Journal of Cleaner Production, 19 (13), 1426–1437.

Zhu, Q., Cordeiro, J., and Sarkis, J., 2013. Institutional pressures, dynamic capabilities and environmental management systems: Investigating the ISO 9000 – Environmental management system implementation linkage. Journal of Environmental Management, 114, 232–242.

Zhu, Q. and Sarkis, J., 2007. The moderating effects of institutional pressures on emergent green supply chain practices and performance. International Journal of Production Research, 45 (18–19), 4333–4355.

Zilahy, G., 2004. Organisational factors determining the implementation of cleaner production measures in the corporate sector. Journal of Cleaner Production, 12 (4), 311–319.

Zohrabi, M., 2013. Mixed method research: Instruments, validity, reliability and reporting findings. Theory and Practice in Language Studies, 3 (2), 254–262.

Zou, K. H., Tuncali, K., and Silverman, S. G., 2003. Correlation and simple linear regression. Radiology, 227 (3), 617–622.

APPENDICES

APPENDIX 1A-INTRODUCTION LETTER

To the Owner/Manager

The relationship between environmental management practices and financial performance of Ghanaian SMEs

I am a PhD student of University of Bournemouth, UK conducting research into the relationship between environmental management and financial performance of Ghanaian SMEs. The aim of this research is to document the environmental management practices of Ghanaian SMEs and its impact on their financial performance

I would be very grateful if you could take some time of your busy schedules to participate in this study and help provide valuable information which will aid the general understanding and policy guidelines on business and the environment.

In line with academic research, all information provided will be strictly treated confidential and will be used solely for academic purpose.
Additional space has provided for any information relating to the subject that you would like to provide.

Thank you in advance for your participation

Yours sincerely,
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APPENDIX 1B-QUESTIONNAIRE

QUESTIONNAIRE

General instructions and information

This survey questionnaire is for academic purposes only. Therefore, all responses will be held in strict confidence. No individual institution will be identified.

PART 1: BACKGROUND INFORMATION

SECTION A: OWNER-MANAGER INFORMATION (please if you are not the owner-manager, relate this to the owner-manager)

1. What is your age (in years)? [ ] 15-25 [ ] 26-45 [ ] 46-55 [ ] 56+

2. Please indicate your gender [ ] Male [ ] Female

3. What is your current position in the firm? (answer if you are not owner-manager) [ ] Owner-Manager [ ] General Manager [ ] Other, please indicate……..

4. How long have you held your current position? …….....Years

5. Please state your highest educational qualification or level completed successfully.

[ ] Junior/Senior High school [ ] Bachelor [ ] Master's degree

[ ] PhD [ ] Other (any professional qualification)

SECTION B: FIRM CHARACTERISTICS

1. How many people are full-time employees of your firm presently? ……..……

2. How many years has your firm been in operation? ……..……

3. How will you describe the ownership of your firm?

[ ] Sole proprietorship [ ] Partnership [ ] Company

[ ] Others, please specify……...

4. Which industry does your firm best fit in?

[ ] Manufacturing [ ] Service

PART 2: ENVIRONMENTAL MANAGEMENT PRACTICES

Using a 5-point scale 5 from **"1=not at all" to "5=to a great extent**" *kindly indicate the extent to which your firm is involved in the following practices:*

Energy efficiency

Measures taken:	**1**	**2**	**3**	**4**	**5**
1. Energy efficient lights/bulbs	[ ]	[ ]	[ ]	[ ]	[ ]
2. Employee education and training	[ ]	[ ]	[ ]	[ ]	[ ]
3. Motion detectors	[ ]	[ ]	[ ]	[ ]	[ ]
4. Proper maintenance and replacement of old equipment	[ ]	[ ]	[ ]	[ ]	[ ]
5. Use of solar light	[ ]	[ ]	[ ]	[ ]	[ ]
6. Turning off lights and equipment not in use	[ ]	[ ]	[ ]	[ ]	[ ]
7. Energy champion (someone in charge of energy issues)	[ ]	[ ]	[ ]	[ ]	[ ]
8. Cleaning light fittings	[ ]	[ ]	[ ]	[ ]	[ ]
9. Energy efficient procurement	[ ]	[ ]	[ ]	[ ]	[ ]

Water management

Measures taken:	**1**	**2**	**3**	**4**	**5**
1. Conduct water walk rounds	[ ]	[ ]	[ ]	[ ]	[ ]
2. Stop leaks and spills	[ ]	[ ]	[ ]	[ ]	[ ]
3. Eliminate unnecessary water usage	[ ]	[ ]	[ ]	[ ]	[ ]
4. Use technological devices to check water flow	[ ]	[ ]	[ ]	[ ]	[ ]
5. Water taps not in use are always well closed	[ ]	[ ]	[ ]	[ ]	[ ]
6. Staff training in water management	[ ]	[ ]	[ ]	[ ]	[ ]
7. Metering	[ ]	[ ]	[ ]	[ ]	[ ]
8. Recycling of waste water for other uses	[ ]	[ ]	[ ]	[ ]	[ ]

Waste management

Measures taken:	**1**	**2**	**3**	**4**	**5**
1. Environmentally friendly (biodegradable) packaging	[ ]	[ ]	[ ]	[ ]	[ ]
2. Waste recycling	[ ]	[ ]	[ ]	[ ]	[ ]
3. Waste separation at source (into different kinds)	[ ]	[ ]	[ ]	[ ]	[ ]
4. Proper waste disposal (professionally)	[ ]	[ ]	[ ]	[ ]	[ ]
5. Staff are made aware of good waste handling procedures	[ ]	[ ]	[ ]	[ ]	[ ]
6. Purchase materials with recyclable future	[ ]	[ ]	[ ]	[ ]	[ ]

Material management

Measures taken:	**1**	**2**	**3**	**4**	**5**
1. Environmentally friendly (biodegradable) materials	[ ]	[ ]	[ ]	[ ]	[ ]
2. Use of alternate material with lesser waste	[ ]	[ ]	[ ]	[ ]	[ ]
3. Conducive storage of all materials	[ ]	[ ]	[ ]	[ ]	[ ]
4. Stock taking	[ ]	[ ]	[ ]	[ ]	[ ]

5. Quality material	[ ]	[ ]	[ ]	[ ]	[ ]
6. Professional handling of material	[ ]	[ ]	[ ]	[ ]	[ ]
7. Avoidance of overstocking	[ ]	[ ]	[ ]	[ ]	[ ]
8. Check material for damages /dents before acceptance	[ ]	[ ]	[ ]	[ ]	[ ]
9. Remind staff to follow good practices by putting up posters	[ ]	[ ]	[ ]	[ ]	[ ]

Pollution (to air, land and water)

Measures taken:	**1**	**2**	**3**	**4**	**5**
1. Avoid open burning of biomass/waste	[ ]	[ ]	[ ]	[ ]	[ ]
2. Substituting toxic materials with non-toxic materials	[ ]	[ ]	[ ]	[ ]	[ ]
3. Avoid leakage from equipment	[ ]	[ ]	[ ]	[ ]	[ ]
4. Use of local materials	[ ]	[ ]	[ ]	[ ]	[ ]
5. Taking advantage of e-commerce opportunities	[ ]	[ ]	[ ]	[ ]	[ ]
6. Improved route planning for visits and deliveries	[ ]	[ ]	[ ]	[ ]	[ ]
7. Encourage use of mass transport by staff/tourist	[ ]	[ ]	[ ]	[ ]	[ ]
8. Use of environmentally friendly fuel	[ ]	[ ]	[ ]	[ ]	[ ]
9. Emission reduction technologies on existing vehicles/equipment	[ ]	[ ]	[ ]	[ ]	[ ]
10. Fuel and emission efficiency vehicles/equipment	[ ]	[ ]	[ ]	[ ]	[ ]

Biodiversity

Measures taken:	**1**	**2**	**3**	**4**	**5**
1. Treatment of waste water to avoid the impact of effluents on wetlands	[ ]	[ ]	[ ]	[ ]	[ ]
2. Soil and vegetation protection	[ ]	[ ]	[ ]	[ ]	[ ]
3. Restoration of contaminated areas	[ ]	[ ]	[ ]	[ ]	[ ]
4. Sponsorship for nature organisations	[ ]	[ ]	[ ]	[ ]	[ ]
5. Providing staff/guests with ecosystem services information	[ ]	[ ]	[ ]	[ ]	[ ]

PART 3: BARRIERS OF ENVIRONMENTAL MANAGEMENT PRACTICES

SECTION A: GENERAL BARRIERS

To what extent to do you agree or disagree to each of the following as being a barrier to your firm's environmental management practices?

Barriers:	**Strongly disagree**				**Strongly agree**
	1	**2**	**3**	**4**	**5**
1. Lack of Knowledge and Ownership Attitude	[ ]	[ ]	[ ]	[ ]	[ ]
2. Regulatory Constraints	[ ]	[ ]	[ ]	[ ]	[ ]
3. Lack of Support Services	[ ]	[ ]	[ ]	[ ]	[ ]
4. Limitation of resources	[ ]	[ ]	[ ]	[ ]	[ ]
5. Lack of stakeholders' pressure	[ ]	[ ]	[ ]	[ ]	[ ]

6. Lack of formal environmental education	[ ]	[ ]	[ ]	[ ]	[ ]

SECTION B: SPECIFICS OF THE BARRIERS

Knowledge and ownership attitude as constraints

Kindly indicate the extent to which you agree or disagree to each of the following:	**Strongly disagree**				**Strongly agree**
	1	**2**	**3**	**4**	**5**
1. We belief that our environmental impact is insignificant	[ ]	[ ]	[ ]	[ ]	[ ]
2. The firm is commitment to tackle its environmental impact	[ ]	[ ]	[ ]	[ ]	[ ]
3. The level of knowledge about environmental impact of the firm's activities is very high	[ ]	[ ]	[ ]	[ ]	[ ]
4. We belief that our environmental management is beneficial to our business	[ ]	[ ]	[ ]	[ ]	[ ]
5. Management/ownership attitude influences investment in environmental management practices	[ ]	[ ]	[ ]	[ ]	[ ]
6. We have attended workshops and seminars on environmental management practices to update our knowledge	[ ]	[ ]	[ ]	[ ]	[ ]
7. We lack knowledge on how to incorporate environmental management practices in our business plan	[ ]	[ ]	[ ]	[ ]	[ ]
8. We lack knowledge on how to manage the environmental impact of the firm's activities	[ ]	[ ]	[ ]	[ ]	[ ]
9. We are more concern about competition and profitability than management of the environmental impact of the firm's activities	[ ]	[ ]	[ ]	[ ]	[ ]

Regulatory constraints

1. There are regulations on environment which affect the firm's activities
   [ ] Yes [ ] No

If your response to the above is "YES", answer the following:

	Yes	**No**
1. Management is familiar with environmental regulations applicable to our operations	[ ]	[ ]
2. The environmental regulations are too complex	[ ]	[ ]
3. Weak enforcement of environmental regulations by authorities has resulted in poor SMEs' compliance	[ ]	[ ]

Kindly indicate the extent to which you agree or disagree to each of the following:

	Strongly disagree				**Strongly agree**
	1	**2**	**3**	**4**	**5**
1. Environmental regulations encourage environmental management practices/reform	[ ]	[ ]	[ ]	[ ]	[ ]
2. The root cause of environmental uptake is environmental behavioral change and not regulation	[ ]	[ ]	[ ]	[ ]	[ ]

Support services constraints

1. Does your firm receive external support services in environmental management practices?
   [ ] Yes [ ] No

If your response to the above is "YES", answer the following:

	Strongly disagree				**Strongly agree**
	1	**2**	**3**	**4**	**5**
1. Responsible state institutions provide us with relevant environment information	[ ]	[ ]	[ ]	[ ]	[ ]
2. Environmental information is easily accessible from support institutions	[ ]	[ ]	[ ]	[ ]	[ ]
3. Supporting institutions are very knowledgeable on environmental issues	[ ]	[ ]	[ ]	[ ]	[ ]
4. Overall, less attention has been paid to SMEs environmental management activities by responsible state institutions	[ ]	[ ]	[ ]	[ ]	[ ]

Resources constraints

1. To what extent is each of the following types of resource serve as a barrier to the firm's environmental management practices?

	Not at all				**To a great extent**
	1	**2**	**3**	**4**	**5**
1. Lack of money/finance	[ ]	[ ]	[ ]	[ ]	[ ]
2. Lack of human resources	[ ]	[ ]	[ ]	[ ]	[ ]
3. Lack of time	[ ]	[ ]	[ ]	[ ]	[ ]

2. To what extent do you agree or disagree with the following statements on resources for environmental management practices?

	Strongly disagree				**Strongly agree**
	1	**2**	**3**	**4**	**5**
1. Environmental management is costly in terms of resources without significant benefit	[ ]	[ ]	[ ]	[ ]	[ ]
2. Resources constraint affect training and expertise in	[ ]	[ ]	[ ]	[ ]	[ ]

environmental management					
3. The firm will embark on environmental impact minimisation if the resource required are minimal.	[ ]	[ ]	[ ]	[ ]	[ ]

Stakeholder pressure (Influence) as a constraint

To what extent does each of the following stakeholders influence your firm's environmental management practices?	**Not at all**				**To a great extent**
	1	**2**	**3**	**4**	**5**
1. Local customers	[ ]	[ ]	[ ]	[ ]	[ ]
2. International customers	[ ]	[ ]	[ ]	[ ]	[ ]
3. Local community	[ ]	[ ]	[ ]	[ ]	[ ]
4. Suppliers	[ ]	[ ]	[ ]	[ ]	[ ]
5. State institutions	[ ]	[ ]	[ ]	[ ]	[ ]
6. Industry/Trade associations	[ ]	[ ]	[ ]	[ ]	[ ]
7. Lenders(Banks/others)	[ ]	[ ]	[ ]	[ ]	[ ]
8. Management/Employees	[ ]	[ ]	[ ]	[ ]	[ ]
9. NGOs	[ ]	[ ]	[ ]	[ ]	[ ]
10. Media	[ ]	[ ]	[ ]	[ ]	[ ]

Formal environmental education as a constraint

1. Environmental education was part of your school curriculum
   [ ] Yes [ ] No

If your response to the above is "YES", respond to the following:

2. You have benefited from environmental education from school in the business environment management practices
   [ ] Strongly disagree [ ] Disagree [ ] Neither agree nor disagree [ ] Agree [ ] Strongly agree

PART 4: FIRM FINANCIAL PERFORMANCE

As compared to similar firms within your industry, how will you please rate your firm's performance on the following financial indicators for last year?	**Much worse**	**Worse**	**Similar**	**Better**	**Much better**
1. Growth in profit	[ ]	[ ]	[ ]	[ ]	[ ]
2. Growth in revenue/sales	[ ]	[ ]	[ ]	[ ]	[ ]
3. Return on sales/receipts	[ ]	[ ]	[ ]	[ ]	[ ]
4. Return on assets	[ ]	[ ]	[ ]	[ ]	[ ]
5. Return on equity	[ ]	[ ]	[ ]	[ ]	[ ]

Please use this space to provide any additional information.

……..……..……
……..……
……..……

Thank you

APPENDIX 2-EXPLORATORY FACTOR ANALYSIS RESULTS

Table 1. EFA results – Energy efficiency (EE)

Measures	Component	
	1	2
10. Energy efficient lights/bulbs	**.804**	.176
11. Employee education and training	**.713**	.420
12. Motion detectors	.257	**.814**
13. Proper maintenance and replacement of old equipment	**.803**	.163
14. Use of natural light	.072	**.556**
15. Turning off lights and equipment, not in use	**.837**	.099
16. Energy champion (someone in charge of energy issues)	.468	.439
17. Cleaning light fittings	.217	**.807**
18. Energy efficient procurement	.190	**.798**
Eigenvalues	4.222	1.346
% of variance explained	46.909	14.957
KMO = .852 Bartlett's test of Sphericity: χ^2(DF)= 673.273 (36); p = .0001		

Table 2. EFA results – Water management (WMC)

Measures	Component	
	1	2
9. Conduct water walk rounds	**.712**	.346
10. Stop leaks and spills	**.872**	.137
11. Eliminate unnecessary water usage	**.796**	.241
12. Use technological devices to check water flow	.234	**.788**
13. Water taps not in use are always well closed	**.839**	.067
14. Staff training in water management	**.739**	.454
15. Metering	.376	**.655**
16. Recycling of wastewater for other uses	.049	**.868**
Eigenvalues	4.311	1.247
% of variance explained	53.884	15.586
KMO = .876 Bartlett's test of Sphericity: χ^2(DF)= 773.874 (28); p = .0001		

Table 3. EFA results – Waste management (WM)

Measures	Component
	1
7. Environmentally friendly (biodegradable) packaging	.788
8. Waste recycling	.824
9. Waste separation at source (into different kinds)	.815
10. Proper waste disposal (professionally)	.824

11. Staff are made aware of good waste handling procedures	.838
12. Purchase materials with recyclable future	.834
Eigenvalues	4.039
% of variance explained	67.325
KMO = .853 Bartlett's test of Sphericity: χ^2(DF)= 849.603 (15); p = .0001	

Table 4. EFA results – Material management (MM)

Measures	Component	
	1	2
1. Environmentally friendly (biodegradable) materials	.318	**.782**
2. Use of alternate material with lesser waste	.121	**.895**
3. Conducive storage of all materials	**.728**	.416
4. Stock taking	**.763**	.317
5. Quality material	**.822**	.132
6. Professional handling of material	**.826**	.176
7. Avoidance of overstocking	**.789**	.239
8. Check material for damages /dents before acceptance	**.834**	.192
9. Remind staff to follow good practices by putting up posters	**.581**	.442
Eigenvalues	5.212	1.052
% of variance explained	57.916	11.686
KMO = .903 Bartlett's test of Sphericity: χ^2(DF)= 1055.457 (36); *p* = .0001		

Table 5. EFA results – Pollution management (POL)

Measures	Component	
	1	2
11. Avoid open burning of biomass/waste	.230	**.705**
12. Substituting toxic materials with non-toxic materials	.504	.601
13. Avoid leakage from equipment	.262	**.808**
14. Use of local materials	.086	**.755**
15. Taking advantage of e-commerce opportunities	**.706**	.252
16. Improved route planning for visits and deliveries	**.687**	.322
17. Encourage use of mass transport by staff/tourist	**.687**	.293
18. Use of environmentally friendly fuel	**.728**	.418
19. Emission reduction technologies on existing vehicles/equipment	**.827**	.064
20. Fuel and emission efficiency vehicles/equipment	**.777**	.134
Eigenvalues	4.972	1.199
% of variance explained	49.722	11.987
KMO = .873 Bartlett's test of Sphericity: χ^2(DF)= 803.362 (45); *p* = .0001		

Table 7. EFA results – Biodiversity management (BD)

Measures	Component
	1
6. Treatment of wastewater to avoid the impact of effluents on wetlands	.825
7. Soil and vegetation protection	.833
8. Restoration of contaminated areas	.788
9. Sponsorship for nature organisations	.849
10. Providing staff/guests with ecosystem services information	.821
Eigenvalues	3.391
% of variance explained	67.829
KMO = .873 Bartlett's test of Sphericity: χ^2(DF)= 519.337 (10); p = .0001	

Table 8. EFA results – Financial performance (FP)

Measures	Component
	1
6. Growth in profit	.881
7. Growth in revenue/sales	.858
8. Return on sales/receipts	.846
9. Return on assets	.839
10. Return on equity	.828
Eigenvalues	3.3618
% of variance explained	72.368
KMO = .874 Bartlett's test of Sphericity: χ^2(DF)= 719.348 (10); p = .0001	

APPENDIX 3 – Regression Diagnostics

3A. Main Regression Analysis

Main (composite)

Outliers

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Mahal. Distance	2.918	22.190	8.962	3.395	238
Cook's Distance	.000	.072	.005	.008	238

a. Dependent Variable: Perf

Test of residual

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
Unstandardized Residual	238	0E-7	.66535843	.04312878

One-Sample Test

	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Unstandardized Residual	.000	237	1.000	0E-8	-.0849647	.0849647

Individual dimensions

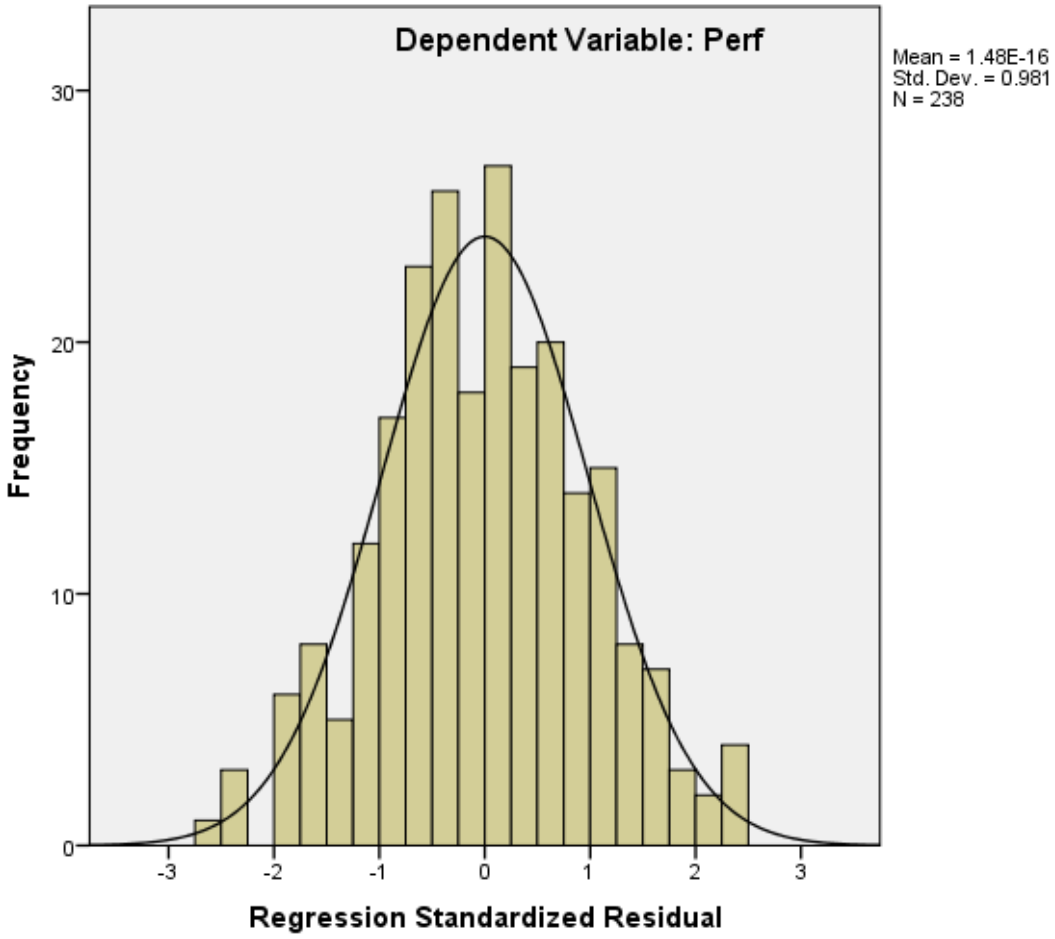
Outliers

Residuals Statistics[a]

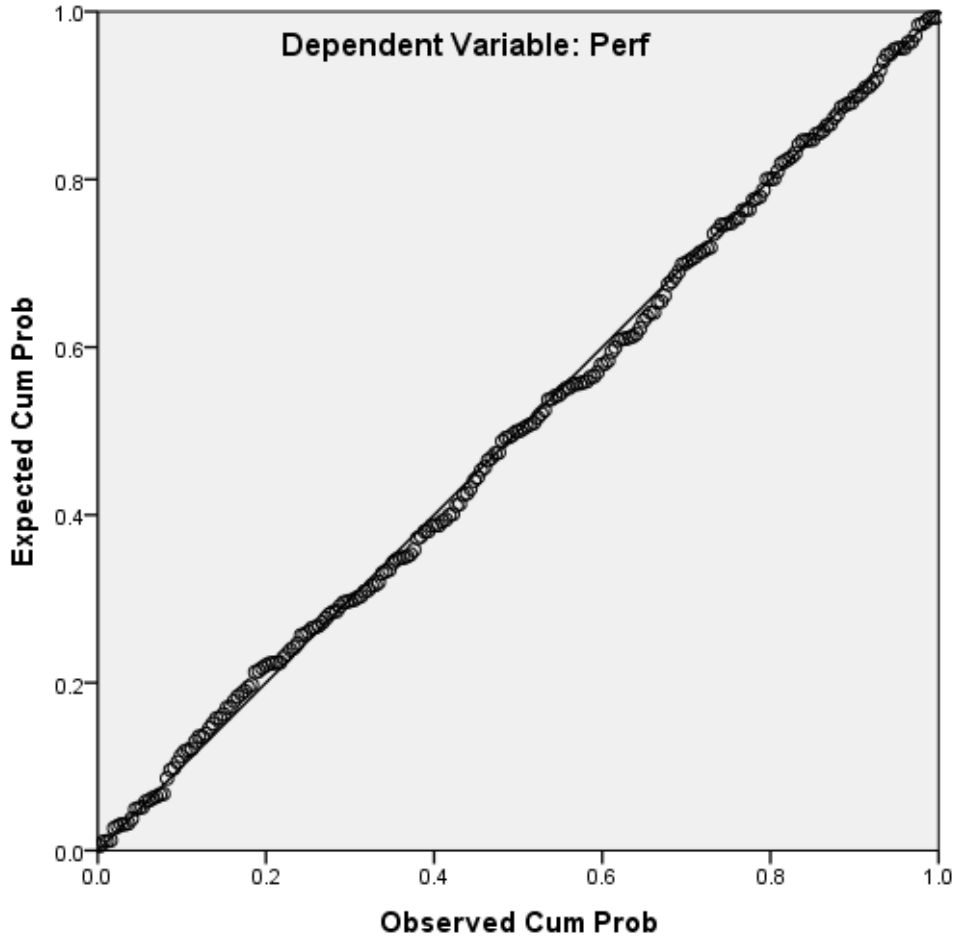
	Minimum	Maximum	Mean	Std. Deviation	N
Mahal. Distance	5.132	32.080	13.941	5.442	238
Cook's Distance	.000	.058	.005	.008	238

a. Dependent Variable: Perf

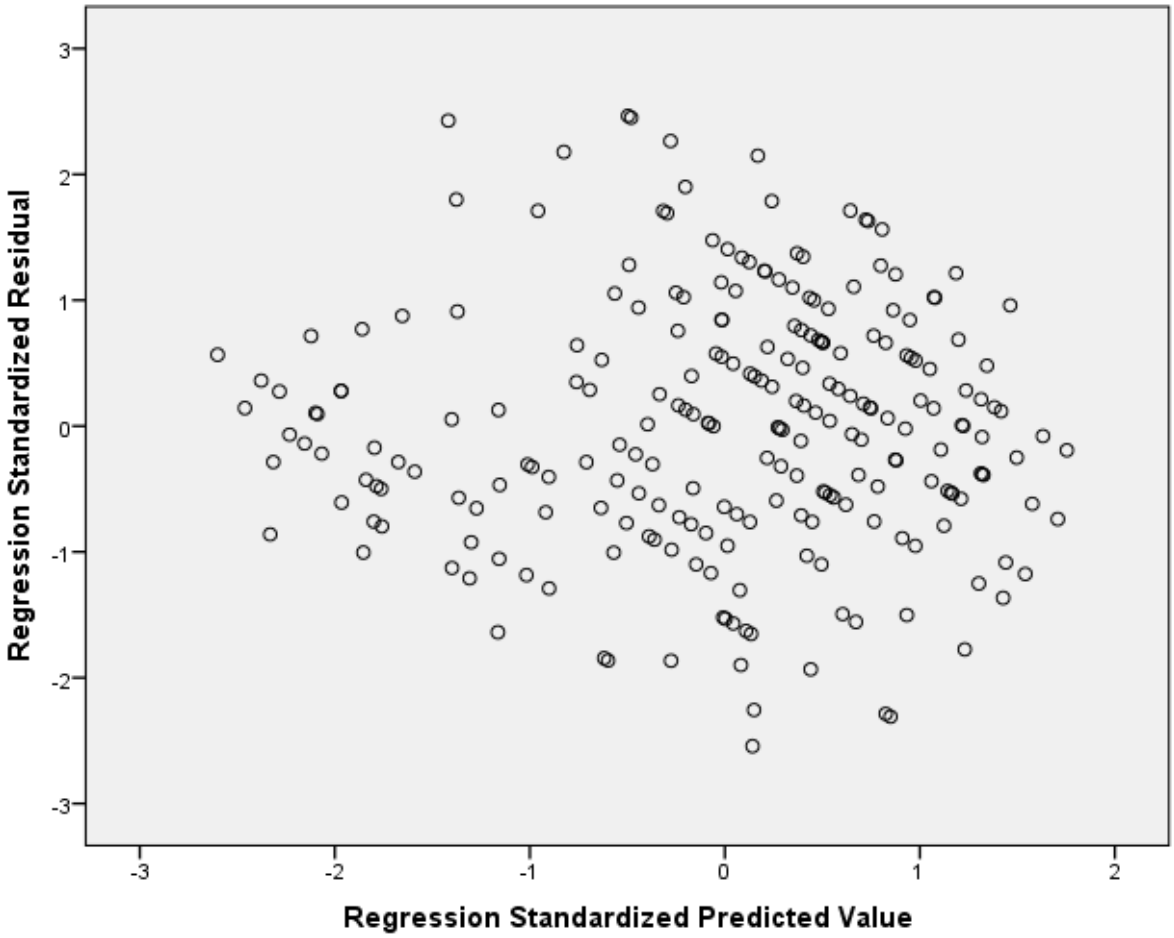
3B. Environment management practices (composite)



A histogram of residuals



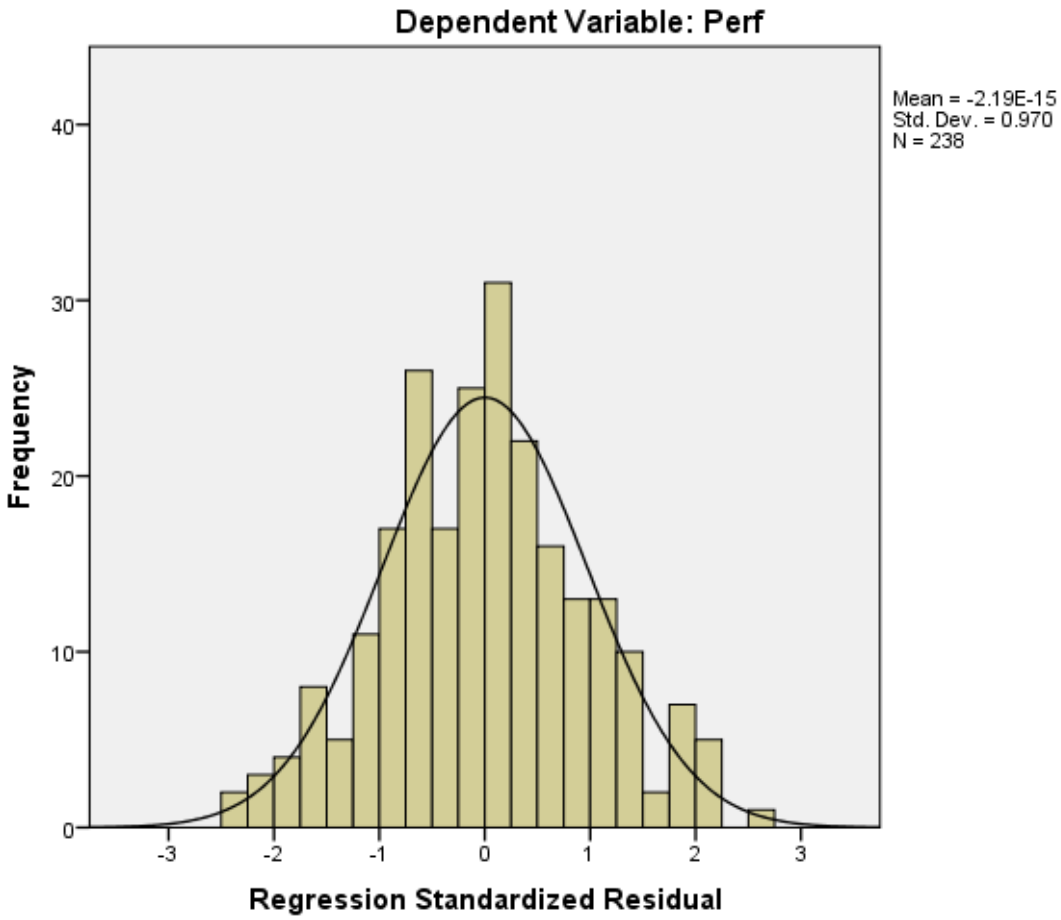
Normal P-P Plot of Regression Standardized Residual



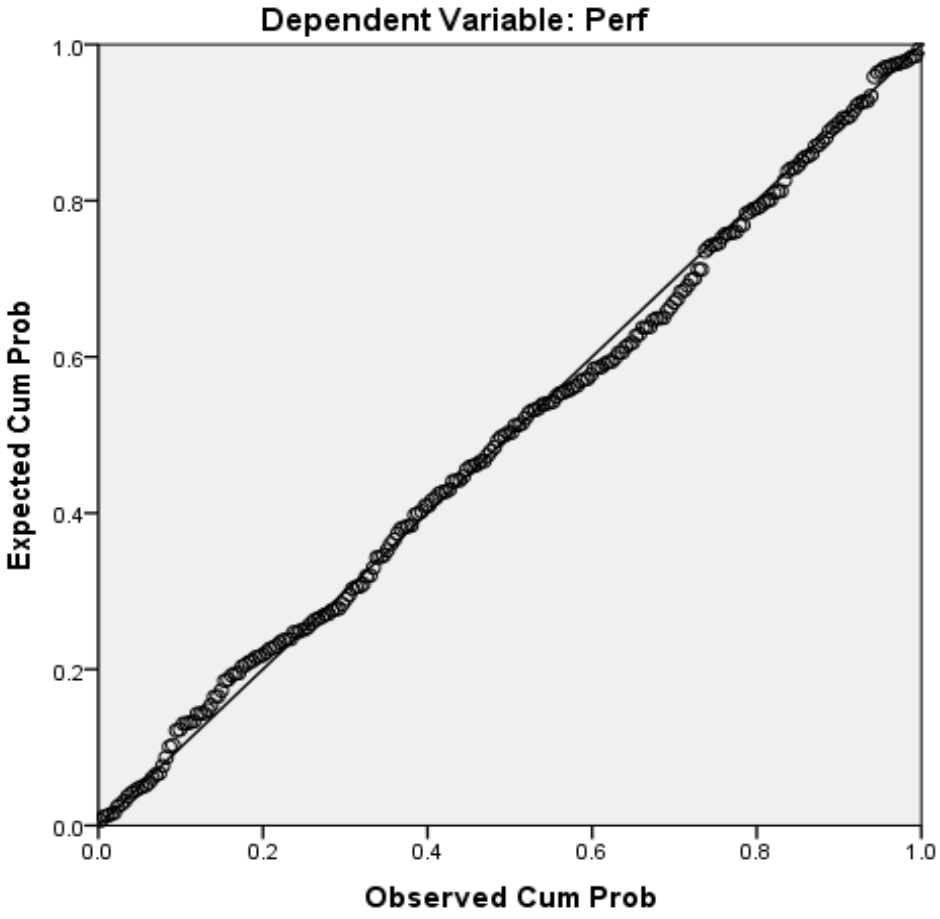
Dependent variable: perf

Scatterplot of regression standardized residual

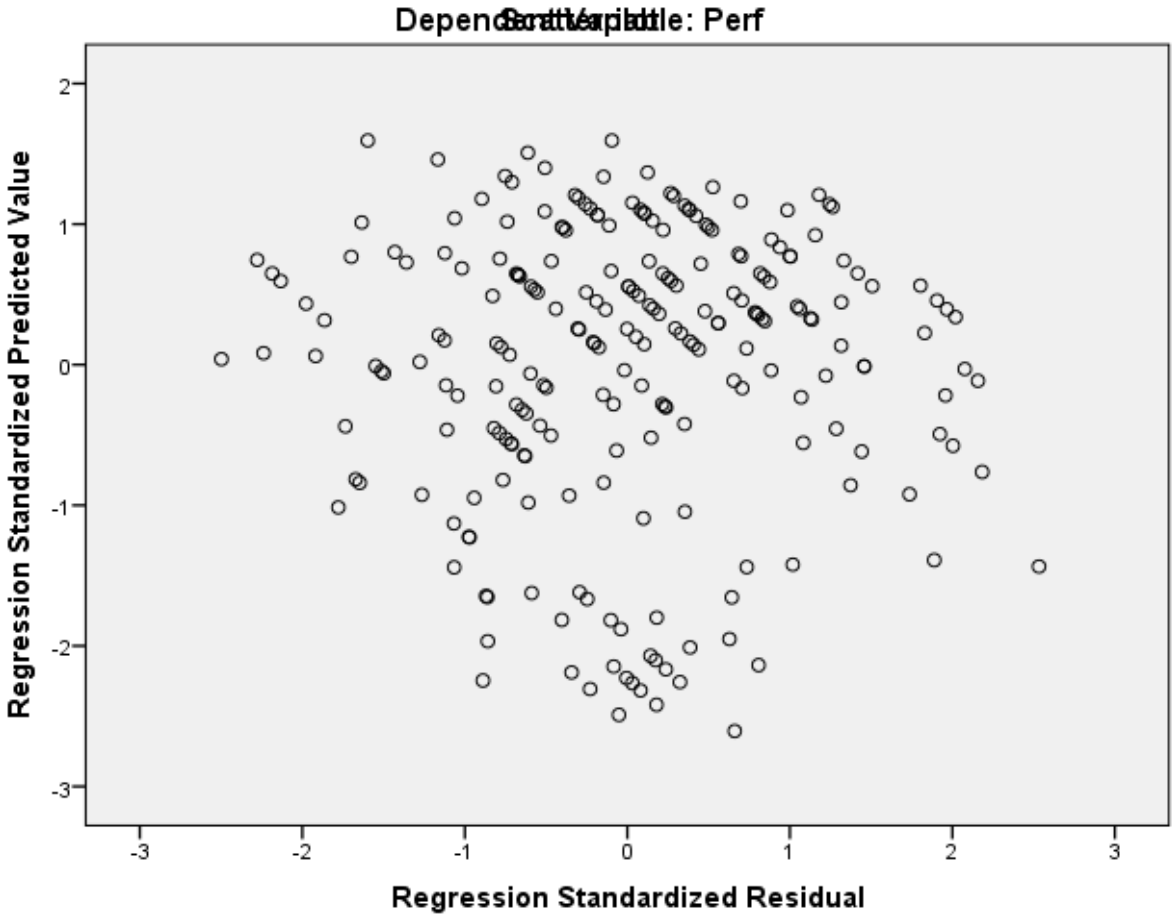
Individual Dimensions



A histogram of residuals

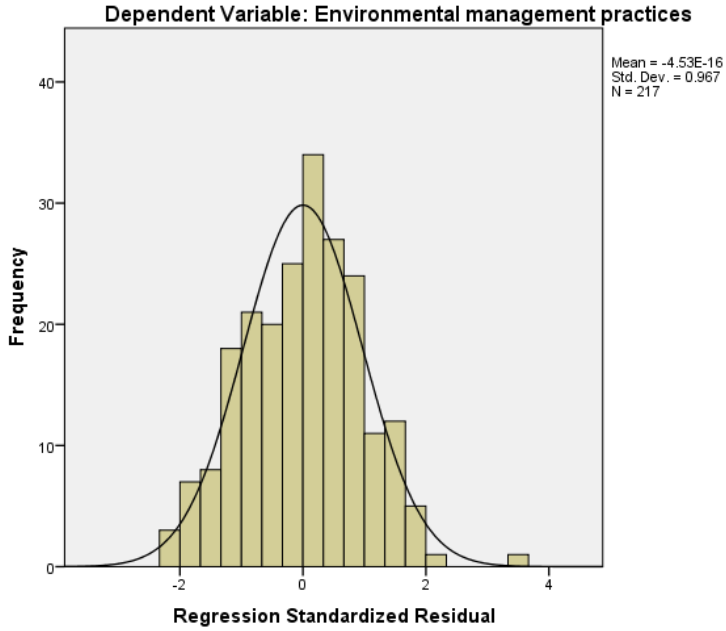


Normal P-P Plot of Regression Standardized Residual

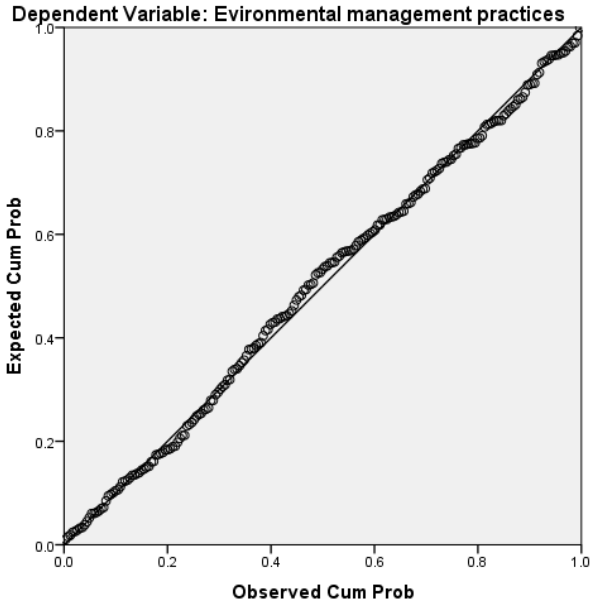


Scatterplot of regression standardized residual

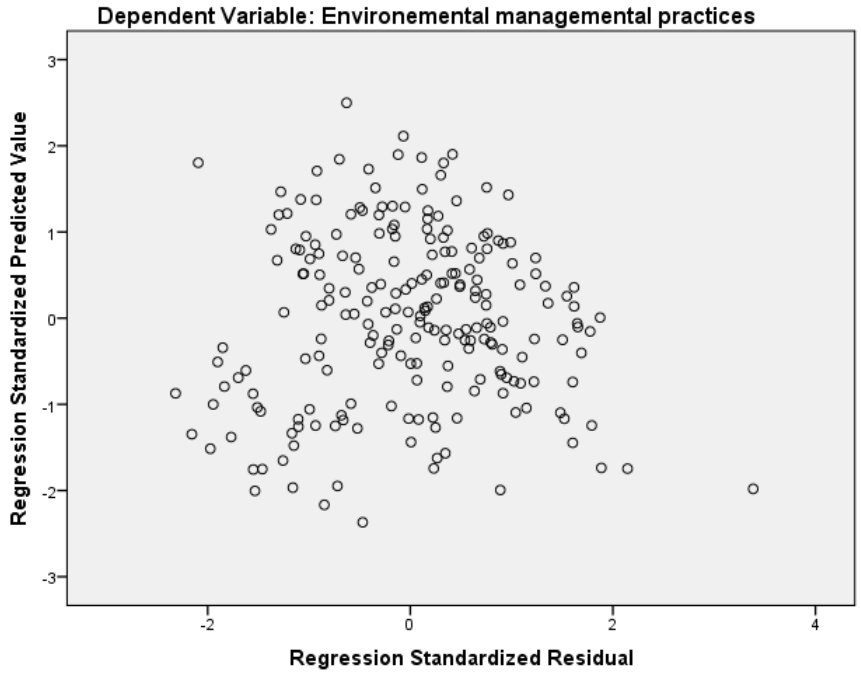
3C. Effects of environment management barriers on environment management practices



A histogram of residuals (environment management practices)



Normal P-P Plot of Regression Standardized Residual (environment management practices)



Scatterplot of regression standardized residual (environment management practices)

3D. Check for outliers

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Mahal. Distance	5.083	29.814	13.935	5.020	217
Cook's Distance	.000	.062	.005	.008	217

a. Dependent Variable: Environmental management

Test of residual

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
Unstandardized Residual	238	0E-7	1.03012978	.06677340
Unstandardized Residual	217	0E-7	.61374120	.04166347

One-Sample Test

	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Unstandardized Residual	.000	237	1.000	0E-8	-.1315452	.1315452
Unstandardized Residual	.000	216	1.000	0E-8	-.0821190	.0821190

3E. Differences in Mean

Group A = composite score of Energy, Water, Waste, and Material

Group B = composite score of Pollution and Biodiversity

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Group A	3.6546	238	.86269	.05592
	Group B	3.1533	238	1.07676	.06980

Paired Samples Test

		Paired Differences					t	df	p
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Group A – Group B	.50128	.91850	.05954	.38399	.61857	8.419	237	.000