KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY

COLLEGE OF AGRICULTURE AND NATURAL RESOURCES

DEPARTMENT OF AGRICULTURAL ECONOMICS AGRIBUSINESS AND EXTENSION

IMPLICATIONS OF INFORMAL ECONOMIC GROUPS' RESPONSES TO FORMAL REGULATION: A CASE STUDY OF STREET FOOD VENDORS IN THE KUMASI METROPOLIS.

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OCTOBER, 2015

Implications of Informal Economic Groups' Responses to Formal Regulation: A Case Study of Street Food Vendors in the Kumasi Metropolis.

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A Thesis Submitted to the Department of Agricultural Economics, Agribusiness and Extension, KNUST, in Partial Fulfilment of the Requirements for the Degree

of

Master of Philosophy in Agricultural Economics

Faculty of Agriculture

College of Agriculture and Natural Resources

October, 2015

DECLARATION

I, Ibrahim Latif Apaassongo, hereby declare that this submission is my own work towards the MPhil (Agricultural Economics) degree and that, to the best of my knowledge, it contains no material previously published by another or material which has been accepted for the award of any other degree of the university, except where acknowledgement has been made in the text.

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ABSTRACT

Unaddressed food needs resulting from urbanisation, work pressures and increasing cost of time has fostered an unchecked growth of private informal food retail referred to as street food vending. To protect diverging interests of consumers and investors, formal regulation of SFT has emerged paramount. Unconstructive and burdensome regulations, however, is a disincentive to the growth of these enterprises. This study measures compliance burden, determinants of extent of compliance to regulations and preference for varying regulatory aspects and regimes. Within urban Kumasi, 309 SFVs were sampled across 8 sub-metros for data collection using a structured questionnaire and observations. Data was analysed using descriptive statistics, income statement and regression analysis. Compliance to regulations is found below average among SFVs in urban Kumasi and does not necessarily follow awareness. Most aspects of SFT regulation were negatively perceived. Whereas time cost of compliance is significantly higher non-compliance, money cost of the latter is higher but with smaller difference. Compliance cost is significantly high among users of prohibited sites, improved equipment and undeveloped vending structures. Same is the case among smaller and less viable enterprises subjected to lesser advisory and more regulatory visits as well as punitive enforcement methods. Distance to regulator, cost of compliance, perception of training programmes and daily length of trade activity have major influences on extent of compliance to food safety regulations. Whereas financially viable enterprises favour a massive overhaul of current regulatory regime, members of vendor associations support subtle changes in some/all aspects of SFT regulation. SFVs prefer improved siting regulations the most and improved medical certification the least. Regulatory compliance among SFVs can be made more preferred and less costly by among other things using siting regulations as major entry point while formally working with vendor associations and identifiable third parties to improve perceptions of regulations.

ACKNOWLEDGEMENT

My utmost gratitude and appreciation goes to Allah (SWT) for the undeserved and boundless mercy, guidance and provisions; and for bringing me this far in all spheres of life.

My sincerest gratitude goes to the management of the Street Foods Ghana Project, for making this work possible. Your contributions in financial support, intellectual guidance and administrative directions are most onerous forces that drove my motivation for a higher degree beyond an empty passion.

I wish to declare also, my unreserved appreciation to Dr. K. Ohene-Yankyera, Dr. Robert Aidoo and Dr. S. C. Fialor; my supervisors during the span of this study. The depth of insights offered and loop-holes you meticulously identified in the conceptualisation and subsequent development of this write-up is enormous. I am very grateful to have benefitted from your dedicated supervisory roles. To faculty of Department of Agricultural Economics Agribusiness and Extension, I am glad to have found several favours from you. The inspirational and fatherly words of wisdom I received from you at social and academic fronts cannot be exchanged for anything.

Mr. Richard Yin and the health inspectors at the Suame-Sub Metro of KMA, I owe you everything. You gave me the opportunity to learn when several others turned me down. It's my prayer that you will be elevated to higher heights in all your endeavours.

My friends and family, I must say, are the unsung heroes in all this. Your multi-faceted support has carried me through calm and turbulent times. You have provided me the impetus to forge ahead when I have found no internal resolve to do such. I must indicate that, this piece remains incomplete without special mention of you, who aided the data collection and entry and you, who have in diverse ways made this study a reality. Thank you very much.

DEDICATION

This piece is dedicated to the three (3) dearest, most loved and most outstanding individuals in my life; my grand mum, my mum and my wife.

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LIST OF ACRONYMS

ASC	Alternative Specific Constant
BOP	Business Operating Permit
CAC	Codex Alimentarius Commission
CBD	Central Business District
CPM	Compliance Process Model
CSIR	Council for Scientific and Industrial Report
CV	Compensating Variation
CVM	Contingent Valuation Method
DCE	Discrete Choice Experiment
DFID	Department for International Development
EHSU	Environmental Health and Sanitation Unit
EPA	Environmental Protection Agency
EPOC	Equity Policy Centre
ESD	Environmental Sanitation Department
FAO	Food and Agriculture Organisation
FDA	Food and Drugs Authority
FIFO	First In First Out
FRI	Food Research Institute
FSO	Food Safety Objective
FSR	Food Safety Regulation
GHPs	General Handling Practices
GMP	General Manufactory Practices
GNA	Ghana News Agency
GSA	Ghana Standards Authority
GTA	Ghana Tourism Authority
GTCA	Ghana Traditional Caterers Association
HACCP	Hazard Analyses and Critical Control Points
IFC	International Finance Corporation
IHS	Inverse Hyperbolic Sine
IIA	Independence of Irrelevant Alternatives
IMR	Inverse Mills Ratio
ITD	International Tax Dialogue
KMA	Kumasi Metropolitan Assembly
LM	Lagrange Multiplier
MLE	Maximum Likelihood Estimation
MLG	Ministry of Local Government
MMDAs	Metropolitan Municipal and District Assemblies
MoH	Ministry of Health
NBSSI	National Board

NGOs	Non-Governmental Organisations
NRI	Natural Resources Institute
OECD	Organisation for Economic Co-Operation and Development
OLS	Ordinary Least Square
PNDCL	Provincial National Defence Council Law
PPRS	Plant Protection and Regulatory Services
RIA	Regulatory Impact Assessment
RS	Regulatory scenarios
RUT	Random Utility Theory
SAP	Structural Adjustment Programme
SBP	Small Businesses Project
SEWA	Self Employed Women's Association
SFE	Street Food Enterprise
SFSIG	Street Food Safety in Ghana
SFT	Street Food Trade
SFV	Street Food Vendors
SMEs	Small and Medium Enterprises
SMMML	Suame Magazine Market Management Service Limited
UK	United Kingdom
USAID	United States Agency for International Development
UNIDO	United Nations Industrial Development Organization
VAT	Value Added Tax
VSD	Veterinary Services Department
WHO	World Health Organisation
WIEGO	Women in Informal Employment: Globalising and Organising
WTP	Willingness To Pay

CHAPTER ONE

INTRODUCTION

1.0 Background to the Study

Urbanisation, diversified livelihoods from farming and petty trade and migration have widened the gap between people and their homes with unaddressed food needs (MacArthur, 2007). The street food sector then emerged to fill this void. Street food trade is pervasive across the globe (Tinker, 1997).

Trade on the street is often the major livelihood strategy for resource-poor urban dwellers who are entrepreneurially oriented; mostly women, young people and migrants (Mitullah, 2004). Street food trade's (SFT) low investment and skill demands and reasons such as widespread availability of raw materials and rising demand ensure that persons who otherwise could not start a business, have a livelihood alternative. The provision of food for the urban poor, market for small-scale farmers and an avenue for value addition to primary agricultural produce are its noted socioeconomic roles (Fellows & Hilmi, 2012; Mitullah, 2004). The trade has been found to employ about 60,000 people in Accra alone with a turnover of about US$ 100 million per annum and US$ 24 million profits in an assessment of the socioeconomic impact of the trade (Johnson & Yawson, 2000:Tomlins, et al., 2001).

The shift in consumption pattern with urbanisation, from eating home-prepared food to consumption of ready-to-eat street foods impacts positively on growth and sustainability of SFT. Due to ever rising opportunity cost of time and work pressures, street foods are increasingly relevant in urban diets in terms of energy intake and food expenditure. Street foods account for 25% of food budgets in Indonesia and the Philippines, 16% in Bangladesh, 50% in

Nigeria (Tinker, 1997) and 40% in Ghana (Maxwell, *et al.*, 2000). Consumers of such foods include workers, shoppers, travellers, schoolchildren and people on low incomes (Tinker, 1997). Production and processing of food in the street food arena are informal private sector activities that leave much to be desired of the food safety implications.

From the perspective of public health security, order in the use of public space and protection of urban livelihoods, regulation of this trade is imperative. The Food and Drugs Authority (FDA) has constitutional mandate to oversee and coordinate all institutions in food control in Ghana. It works very closely with Street Food Division of the Environmental Sanitation Department (ESD) of the Local Assembly (Laryea, 2001).

1.1 Problem statement

The contributions of SFT to the urban economy are not contestable but its manner of usage of public space and hygiene implications are a major concern for both consumers and food control officers. Evidence of outbreaks of food borne disease traced to street foods due to non-compliance with food handling etiquettes abound (Mitullah, 2004; FAO, 2000). In Ghana this includes the annual ritual of cholera outbreak in Accra (GNA, 2012). From 1983 to 1992 in one Chinese province, street foods caused 691 cases of food poisoning outbreaks and 49 deaths (Rane, 2011). This gives street food trade a public health dimension.

World Health Organisation (WHO) and Food and Agriculture Organisation (FAO) of the United Nations assert this hinges on microbial contamination due to limited knowledge and resources as well as high cost of food protection among street food enterprises (SFEs). It is also due to limited access to collective facilities like clean water and waste disposal systems (Draper, 1996; Cohen, 1984). These are aggravated by unethical street food vendor (SFV)

behaviour such as product adulteration, use of impermissible food additives,, siting of enterprises, production and marketing process, type of equipment, facilities and utensils adopted, as well as level of cleaning among others (Asiedu, 2000; Laryea, 2000; Tinker, 1997; Frimpong, 2007). Hygienic storage and food handling practices are thus difficult to ensure on the street.

Specifications of acceptable practices in preparation and sale of street foods as well as siting of commercial operations in urban space, however, exist in Ghana but are often treated with varying compliance without consistent action from regulators. These regulations have a wide span of application (siting, permits and licenses, support services and taxes among others) on different actors (producers, intermediate processors and traders). Lack of personnel, unavailability of utilities and uncooperative attitude of vendors and consumers are key bottlenecks of implementation (Fenteng, 2000; FAO, 2000). Compliance is further stifled by absence of SFVs' inputs in these regulations which SFVs described as either unknown or out-dated (Mitullah, 2004; Ntifori, 2000).

Street traders are periodically cleared from the streets after establishment in costly decongestion exercises. This is because, settlement into these areas are spontaneous and without active involvement of local authorities but neighbouring yard owners (Frimpong, 2007). Consequently, Kumasi Metropolitan Assembly (KMA) and owners of yards are seen as recipients of siting fees (Solomon-Ayeh, et al., 2011) contrary to bye-laws on Control of Hawkers where all tolls are to be paid to the KMA. This suggests conflicts among a number of interest groups.

Crisis management rather than urban planning principles are widely in use in regulating SFT. For example outbreak of cholera caused eviction of SFVs in Tanzania and registration,

licensing and enforcement of byelaws in Accra. Preparation for Ghana's 50th anniversary celebrations caused decongestion of most commercial areas in Ghana with severe effects on vendors (Solomon-Ayeh *et al.,* 2011). Vending and hawking on the street are viewed illegal by KMA especially for the generation of unplanned traffic congestion and waste (Frimpong, 2007; Tinker, 1997). Decongestion exercises by the Local Assembly are therefore, often confrontational resulting in the loss of property worth fortunes. This approach is described as 'unconstructive' (Cohen, Bhatt, & Horn, 2000) and builds a notion of vulnerability and insecurity among SFVs. The consequence is low level of investment in the trade and hence production of food with questionable safety status.

Most street food traders operate unlicensed, unregistered and in a hostile regulatory environment (Cohen, 1984). The actions from the regulatory mechanism are consistent with the modernisation theory (Draper, 1996) where informal economic activity is seen as marginal and transient in nature and thus not sufficiently planned for. Bribes, strikes and demonstrations are among SFV reactions to regulatory regime in Ghana. The potential of conciliatory approaches remain unexamined. The role of effective regulation in ensuring safety and economic viability of street food trade cannot be overemphasized (Ndiaye, 2005; Tinker, 1997). This hostile mode of engagements between vendors and regulators in turn implies loss of vendor livelihoods by limiting access to facilitating services and political representation (Mitullah, 2004; Tinker, 1997), disorderliness public space usage, huge revenue losses to local authorities and a much bigger food safety threat to consumers. This study provides empirical evidence to guide the use of regulation to in securing the economic growth potential of the street food vending sector of the Ghanaian economy.

1.2 Research questions

The main research question addressed in this study is:

How do regulations affect investment in SFT and how do SFVs behave towards regulations?

The following specific research questions are addressed in this study.

1. How do SFVs in Kumasi perceive SFT regulatory practices?
2. What is the extent of compliance to SFT regulations by SFVs in KMA?
3. How much does it cost SFVs KMA to be in compliance with SFT regulations and how does compliance cost vary with SFEs features, performance and regulatory effort?
4. What determines the extent of compliance to SFT regulations?
5. Which regulatory scenarios and aspects do SFVs prefer and how is preference affected by SFVs socioeconomic factors?

1.3 Research objectives

The overall objective is:

To assess how regulations affect investment in SFT and SFV responses to regulations

To address the central research objective, the following specific objectives are set

1. To assess SFVs perception of SFT regulatory practices in Kumasi Metropolis
2. To assess extent of compliance to SFT regulations by SFVs in Kumasi Metropolis
3. To estimate cost of compliance to SFT regulations by SFVs and how it varies with SFE features, performance and regulatory effort.
4. To evaluate the determinants of extent of compliance to SFT regulations

5. To examine SFVs preferences for various regulatory scenarios and the effect of socioeconomic factors on preference

1.4 Hypotheses

Below are the hypotheses to be tested arising from literature reviewed.

1. Street food vendors perceive regulated aspects of SFT negatively.
2. Compliance cost to street food trade regulation is higher than cost of non-compliance.
3. Compliance cost is lower for street food vendors with access to designated trade sites and also for those with access to developed structures.
4. Among regulatory environment and information factors as well as enterprise specific features, vendor associations enhance extent of compliance the most.
5. Regulations on safe food handling are the least preferred among SFT regulations.
6. Regulatory scenarios with improved siting regulations are the most preferred.

1.6 Justification of the study

There exist a comparison of the negative and positive impacts of street trade and street food trade in the literature. The socioeconomic significance of street food vending makes it imperative for policy makers to plan for its orderly development. The need to support the trade at policy level through participatory regulation has been highlighted. This contributes empirical evidence to guide this process of using regulation to aid harmonious growth of the sector. With the nature of the Ghanaian informal economy, it is justifiable to employ street food trade in a quest to understand response of informal groups to regulation.

Most studies focused on SMEs in general (suggesting homogeneity) with earlier ones restricting the scope of regulation to tax regulations. This approach provides a quick baseline data to guide the debate on compliance costs, but comes with some limitations. Though cross sectorial comparisons are permitted under such situations, differences in regulations and hence methodological demands of each sector cannot be fully catered for. Street food enterprises are very heterogeneous. Sector specific compliance costs are more likely to be underestimated in a general study of SMEs. Restricting regulation to taxes also leads to similar outcomes as regulations are known to be multi-faceted. This study overcomes these shortcomings.

The literature suggests paucity of data on compliance process and associated costs in informal street food trade. An appreciable collection of studies tie the effect of regulation to the cost of compliance (but fail to estimate the quantum) and business performance. Qualitative studies on small-medium food enterprise and street trade in general, passively considered regulatory compliance cost. They not only fall short of estimating the quantum of compliance cost but reveal conflicts in perception of traders on the matter. Some found monetary and time cost to hinder compliance but subservient to the attitudes and relationships between traders and regulatory agents among small and medium–sized food enterprises whereas others report time and monetary costs most significant.

The methodology of compliance cost study was adopted. The variation of compliance cost across regulatory activities and firm attributes were also analysed. The use of compliance cost approach in estimation of regulatory burden from street food vendors' perspective add to the contributions of this study.

1.7 Organisation of the study

Chapter one is a brief introduction focusing on the origin, importance and challenges posed by street food trade. The economic and research problems were subsequently outlined to reveal the purpose of the study was outlined. The rest of the work is comprised of 4 chapters.

Chapter two is a literature review on street food trade and street food regulation. Three large segments can be made of the ten (10) sections of the literature review. The first segment positions street food trade in urban market. It addresses the character of informal sector and structure of urban markets, carving out a niche for street food trade in the process. The second section highlights issues regarding regulatory institutions, tools and mechanisms adopted and the extent of compliance among street food vendors. The third section is inspired by the fact that several regulatory demands are often made. Street food vendors through a process of choice select among the specific demands given their knowledge, ability and will as well as other socio-cultural parameters. The literature on the study of preferences is therefore reviewed in the third section.

In chapter three, motivations for selection of the study area, population, sampling methods and size are presented. Also presented here are conceptual and empirical frameworks adopted to study costs and determinants of regulatory compliance as well preference for aspects and scenarios of regulation.

The focus of chapter four is on result and discussions. It is sectioned to cover the main objectives of the study. The first section concerns itself with descriptive analysis of the characteristics of SFVs and regulatory situation. The section sets the stage for estimation of the regulatory compliance burden for street food vendors in monetary terms.

What determines the behaviour of street food vendors in the face of regulations is assessed in the next section. It goes beyond the usual rhetoric of a binary variable for compliance (yes/no) to study extent of compliance as influenced by internal, external factors and information factors.

The last section of chapter four is dedicated to an assessment of preferences for regulatory attributes and for regulation as a whole using choice experiment in the valuation process.

Chapter five, the last chapter presents a summary of findings and recommendations emanating from the study.

CHAPTER TWO:

LITERATURE REVIEW

Three key concepts establish the premise for this study. They include *informality*, s*treet food trade* and *regulation*. This chapter reviews their antecedents and current perspectives together with their bearings on the study.

2.1 The informal economy: An overview

The informal economy is a dualistic economy coexisting with the main stream economy (Becker, 2004; International Labour Organisation (ILO), 1972). Absence of opportunity in the formal (Becker, 2004; ILO, 1972), changes in the structure of the formal economy (Castells & Portes, 1989) and hostile reception from especially the legal system have been the prior causes of its emergence. More recently it has been observed that small scale entrepreneurs may choose informality based on a comparative analysis of the costs and benefits (Becker, 2004).

In the literature it is observed that the production unit, employment, the place of work, and income and employment generation potential have been employed in the definition of the informal economy (Losby, *et. al.*, 2001). These have also been used in classification of informal economic activities. The classification reveals that disadvantaged groups and menial jobs are respectively, the usual participants and activities in informal economies. The definition on the other hand exposes that the informal economy comprise family and all unregistered micro enterprise with participants as self-employed, wageworkers or employees. They work from permanent or temporal places between homes and streets and along roads and construction sites. Key reasons for participation include survival, profit maximisation and complementation

of income. Street food trade is found characterised by all four points of definitions, a character which qualifies the trade as an informal sector activity (Becker, 2004; Cohen, Bhatt, & Horn, 2000; Ninsin, 1991).

These variations in definition cause confusion over what the informal sector is about. The identification of its key characteristics (four in number), however, have been reported to salvage the situation when explored. They include the manner of production of goods or delivery of services, the medium of exchange, the conditions of labour and the unreported nature of incomes and wages. This exploration makes it clearer that beyond the mainstream economy (the primary (agriculture and heavy industry) and secondary (service) sectors), there exist at least three other economies viz; informal economy, illegal economy and care economy. According to anti-informal work activists, this exploration also points out that it is socially, legally and economically unacceptable to allow informal operations without regulation especially because it cannot be scrapped.

The origin of informality in the Ghanaian economy is traced to the onset of colonial rule and aggravated by the Structural Adjustment Programme (SAP) (Adu-Amankwah, 1999; Ninsin, 1991). A small formal sector engaged in capital investment in mining, transportation, infrastructure, commerce, social services and administration existed. Labour then existed either as self-employed or hired under traditional arrangements. Informal economy however operated relatively unnoticed. Following the shrinking of the formal sector due to the SAP, diversification of income sources and '*informalisation'* of work became the responses of individuals and households to emerging problems (Maxwell, 1999). Responsibility for household food security shifted from the state to individual/household.

Smallholder farming, fishing and fish processing and rural agro-based processing activities with diverse kinds of labour types and employment arrangements dominate in rural informal economy (Ninsin, 1991). The urban informal workers are in services such as urban food processing and trade, health and sanitation, domestic services, car mechanics and hairdressing and some illegal activities, among others. These activities gained prominence with a remarkable 'crowding-in' though with low productivity. There is thus a wide diversity of activities and vulnerable participants in informal economy of Ghana.

In Ghana and some parts of Africa, the case for street traders, especially food vendors recline on absence of employment opportunity for both rural and urban dwellers, dominant participation of disadvantaged groups, failure of urban agriculture and food insecurity among urban poor (Mitullah, 2004; Tomlins, et al., 2001; Cohen, et al., 2000). The Ghanaian informal sector is characterised by the four identifiable features of informal activity. Street trade dominates informal work and women are the most in food processing (Becker 2004; Mitullah, 2004). According to Maxwell (1999), street food trade stands out among informal works as one whose contribution to livelihoods, food consumption and coping strategies will continue to rise. But, confrontations with the business community, food control officials and city authorities are major setbacks to its growth.

The role of street food trade to economic development is more significant if the sector is supported to formalize rather being stifled. Without formalization, the impact of such support efforts could be derailed (Bettcher & Islam, 2009). The conduct of street food vendors often necessitates regulation as private and public goals are often at variance. The regulations are multi-faceted with the involvement of multiple institutions with a net burden on SFEs. Whereas

the benefit of multiple regulations is in synergy, the burden makes accentors choose and pick among regulations, thus displaying a preference pattern in compliance.

The Bellagio International Declaration in 1996, acting as the torchbearer, articulates the plight of street trader and prescribes the way forward (Cohen, et al., 2000). It proposed the creation of room within policy to address the constraints faced by entrepreneurs on the street. It mentioned legalising the trade by providing registration and licensing services, provision of a zone within the urban space for the activity, encouraging their representation in policy deliberations, provision of support in terms of training and access to productive resources in order to safeguard and expand livelihoods. A convergence of thoughts on this typology of regulations aiming at improving street food vending emerges when one reviews the largest survey in the sector by the FAO/WHO (Cohen, et al., 2000) and also Six Sub Saharan African countries survey (Mitullah, 2004) as well as the DFID/NRI/FRI project in Ghana (Tomlins, 2001).

2.2 Street Food Trade

The major concepts underpinning street food trade are the foods, the vendors and the trade. Exploring street food arenas of Africa, Latin America and Asia, Tinker (1997) makes a number of observations.

- Food can *be eaten at home or offices* without further processing having been *purchased from the street* and other similar locations.
- Besides purchasing from the street, *preparers (on the street or nearby homes) may deliver* foods to homes and work places such that sale is *not from any visible structures* on the street. These foods were labelled *'invisible street food'* (Tinker, 1997, p. 15).
- It was also observed that individual/household consumers or ceremonies like weddings, parties, funerals etc. may pick-up or have *food prepared by some caterer* delivered to

them. This system of serving food is neither categorised as street food nor formal food service.

- *All or some or even none* of the food may be prepared by street food vendors/hawkers themselves. In this case street food vendors sell westernized snacks (toffees, biscuits, bottled and canned drinks, and potato and plantain chips) at times for a commission.

The emphasis on location/place of sale and facility or structure used enabled foods normally offered for sale by the formal food sector (fruits, vegetables, fish and meat) to be captured as street food when sold on the street. Rented places in open-air markets, stalls outside these markets and positions along the streets are the usual spots street food vendors can be found (Tinker, 1997). The initial definition proffered '…any minimally processed food sold on the street for immediate consumption' (Tinker, 1997, p. 15) then remained open for modifications.

FAO (1989) defines street food with emphasis on the location of trade (being on the street) agreeing with Tinker (1997). Any ready-to-eat food or beverage offered (prepared and or sold) by vendors and hawkers on the street and other similar public places is classified as street food. This definition makes a difference between street food vendors and more formal food service operations; cafés, 'takeaways', 'chop bars' and restaurants (Fellows & Hilmi, 2012, p. 2). This difference is a point of divergence between the opinions of Tinker (1997) and the FAO (1986). It would be seen that whereas Tinker (1997) is not willing to include food served to ceremonies as street foods, Fellows and Hilmi (2012) not only differ on this but also indicates that 'chop bars' and 'takeaway' differ from street foods as they are more formal. Yet 'chop bar' operators and street food vendors are indistinguishable in Ghana (MacArthur, 2007).

Street foods are thus foods that have been minimally to highly processed by vendors/hawkers/catering services or other third parties that are sold on streets and other public

places, capable of on-the-spot consumption and delivery to the individuals/households at work place/homes and celebrations such as weddings. The foods traded comprised of meat, fish, fruits, vegetables, grains, cereals, frozen produce and beverages. Types of preparation included foods without any preparation (65%), ready-to-eat food (97%) and food cooked on site (82%). Products of cereals, root and tubers, dried fish and kebab are the three most important prepared meals by street vendors in Ghana (FAO, 2005).

The urban food distribution system in developing countries stretches from on-farm production through a series of intermediaries to consumption with street food traders closer to the end of the chain (Ortiz, *et al.*, 2010). Street food trade is the selling (retail) of ready-to-eat food by small scale and micro enterprises from places with not more than 3 or 4 walls (Tinker, 1997; Draper, 1996). The trade is occurs diurnally or nocturnally on production sites. Other sales points include areas around offices, schools, factories or construction sites or in lorry stations, commercials centres and markets or even along the roads (Laryea, 2000; Tinker, 1997). The enterprises can be mobile (basins, baskets and balancing poles, tricycles and pushcarts), semi-mobile (table tops, collapsible tents and temporal wooden structures) or permanent (using permanent wood, metal or mud/cement walled structures). Labour intensive processes and low level of technology usage is typical of street food trade. There is restricted access to portable water (47%), toilets (15%), refrigeration (43%) and washing and waste disposal facilities (FAO, 2005). Food is carried and sold either as a head load or located on or in some form of a wooden or walled structure reflecting varying degrees of mobility of activities (Tinker, 1997).

The activity may be legal or illegal (Ortiz, *et al.*, 2010). Street food markets are often overlooked in market reforms. Urbanization and population growth however, have, made informal sector market activities worth re-consideration. Local Assemblies establish new

market infrastructure and decide permissible activities as well as institute regulations and mobilise revenue (Porter, et al., 2007). A frontline issue in the growth of the trade is fragmented and weak regulation with arbitrary enforcement on the trade (Cohen & Garrett, 2009), rampant harassment by city authorities (Cohen, Bhatt, & Horn, 2000)and over burgeoning regulations (Cohen, 1984).

Street vendors may include market place vendors, pavement sellers, mobile hawkers and home-based vendors (Cohen & Garrett, 2009; Tinker, 1997). Though dominated by women, there is an emerging phenomenon where young men are joining the trade mainly vending fast food called "check check" especially in Accra and Kumasi (FSN, 2009). Street food vendors are classified based on the degree of mobility of their enterprises (Tinker, 1997; Draper, 1996). Vendor associations and market queens evolved as informal micro-authorities in urban market. They are often involved in price fixing and granting access to markets to new entrants (Ortiz, *et al.,* 2010; Porter, et al., 2007). Informal micro authorities are powerful, however, market management partnerships with them are difficult to establish.

2.2.1 Global research effort in street food trade

On the international front three large studies on street foods are documented. The Equity Policy Centre (EPOC) pioneered international research in the area followed by the Bogor street food project and then FAO/WHO international workshops. Research interest in the street food sector is about 3 decades old. The EPOC's seven country *Streetfood Project* in Latin America, Asia and Africa had two phases (1982-1984 funded by the USAID Office of Women in Development and 1984-1986 funded by the Ford Foundation). These have been collated into a text book by Tinker (1997). Wholesomeness of Common People's Food Project in Indonesia

(Bogor Street Food Project-1989-1982) is the second internationally commissioned project on street food trade (Draper, 1996). These projects focused on production, distribution and consumption of street foods across the globe.

The food safety and regulatory aspects of the trade have been the focus of the FAO/ WHO which also involved series of regional workshops in Africa, Asia, Latin America, the Caribbean, and the Pacific. These culminated into a global consultation in Indonesia in 1988. The Codex Alimentarius Commission's (CAC) codes of practices for safe food handling across the globe were discussed. Benchmarks for regulation and roles of National Policy and Local Authorities were subsequently proposed. The latter was at the *FAO Technical Meeting on Street Foods* in Calcutta in 1995. The WHO also conducted the largest ever survey of street food vendors in 1996 where 100 countries were studied. Street foods were characterised in terms of food type and facilities used among others and the implications for food safety.

The FAO/WHO has shown a lot of interest in the street food situation in Ghana (Ntifori, 2000). The FAO sponsored both the Inter-country Workshop on Street Foods in Africa, held in Accra, (27th April - 1st May 1992) and the SFSIG study (January 1995 – December 1996). Whereas the FAO surveyed street food situation with focus on safety implication of the production and delivery of street foods, the WHO's aimed at creating awareness and documenting the socioeconomic relevance of street food (Tomlins et al, 2001).

The Food Research Institute of the CSIR (FRI-CSIR), in collaboration with the Natural Resources Institute (NRI) of the University of Greenwich conducted a study christened DFID/NRI/FRI Project. This is funded by the Department for International Development (DFID) of UK. Its focus was on safety, quality and economics of street vended foods in Accra. It was conducted in November 1999 to October 2000 (Tomlins et al, 2001). The study not only

recounts the role of street food in food and nutritional security of a very populated city with men and women working, but mentions also the employment it provides as well as the potential threat to public health. The findings of the socioeconomic survey were that the trade employs 60,000 (15,600 vendors, each employing 3 additional workers/hands) with an estimated annual turnover of over US$100 million and an annual sector profit of US$24 million. Majority 94% were women, minimally educated and do not pay tax. 'Wakye', 'kenkey' and 'fufu' sellers were selected based on perceived health risk, volume traded and importance to consumers of street vended foods (Tomlins, Mahara, & Johnson, 2001). Limited access to clean portable water, good toilet facilities operating close to garbage heaps accounts for the deterioration in hygiene levels of street foods (ibid).

The latter study also summoned a conference for all stakeholders in street trade from government to street food vendors. It also addressed a wide range of issues from regulation, through raw material acquisition to consumer concerns. Advocates of the regulator and street food vendors provided contrasting reports. The former judges the regulatory mechanism as conciliatory (Laryea, 2000). The street food vendors report of harassment in the use of public space (Apraku, 2000). This is due to adoption of a police-styled enforcement of unknown or out-dated regulations.

To ensure economic benefits of regulation are not lost, the regulatory space need to be investigated along lines of compliance cost, valuation of characteristics of regulations and extent of compliance.

2.3 Potentials and importance of street food trade

Like other informal economic activities it provides an avenue whereby income sources are diversified in order to insulate poor urban household from shocks in food security. Farm household can break the harvest-sale cycle of income generation by taking to street food trade. The trade then becomes a value addition mechanism, increasing prices per unit of harvested produce (Fellows & Hilmi, 2012).

Street food trade provides employment for owners of street enterprises and their employers (Otoo, et al., 2008). In a study in Accra, Ghana, the street food sector had 15,000 vendors and employed 60,000 people. This resulted in a sector turnover of US$100 million and a sector profit of US$24 million (Draper, 1996; FAO, 1989; Tinker, 1997).Whereas it was found that 3 people were employed per emtreprise in Accra, 4 persons were found in Nigeria. In cities including Kumasi, Accra, Niamey, and in the Philippines incomes earned were found to be above the going minimum wages (Fellows & Hilmi, 2012; Tinker, 1997).

Equity objectives of a nation could be pursued by identifying and reducing the survival threats to the trade. The flexible timing, low skills and low resource requirements enable women to enter into street food trade relatively easier. This enhances their socioeconomic status both at family and community levels. According to Fellows and Hilmi (2012) this was the situation in Kumasi, and Niamey in Niger. Gender, household poverty and local agricultural development can be addressed through street food trade.

Distribution of food using street food vendors is more predominant compared to formal retail stores in urban areas in developing countries (Ortiz, et al., 2010). Consumers are able to pay bearable prices for regular supply of nutritious food obtained in small quantities at convenient locations. Street foods account for 25% of food budgets in Indonesia and the Philippines, 16%

in Bangladesh, 50% in Nigeria (Tinker, 1997) and 40% in Ghana (Maxwell, *et al.*, 2000). Both high and low income earners consume street foods in Ghana.

2.4 Formal institutions in regulation of street food trade

Formally, the MMDAs via their Environmental Sanitation Department (ESD), Revenue and Business Operating Permit (BOP) Divisions, are the regulatory outfits extensively involved in street food processing and trade regulation. The Food and Drugs Board is the body mandated to enforce the Food and Drugs Act [P.N.D.C.L. 3058 Food and Drugs Act, 1992]. The Metropolitan Municipal and District Assemblies (MMDAs) under the Ministry of Local Government (MLG) have instituted regulations on food trade via the Street Food Division under the Environmental Sanitation Department (ESD) that governs the trade. This is in response to the Local Government Act of 1993, Act 462 and the National Environmental Sanitation Policy launched in May 1999. Street food regulation is captured under hospitality industry regulation together with hotels, hostels, restaurants, chop bars and entertainment spots among others. Regulation is enforced via a close collaboration of the FDA, MMDA and Ghana Tourist Authority among others (EHSU, 2002)

Health inspection teams of the MMDA's ESD regularly act to ensure compliance with environmental and food safety regulations. Revenue division oversee all revenue mobilisations from street trade. It also requires all businesses, occupation or professions within the remits of the Assembly to pay annual license fee and obtain a business license (KMA, 2006). Application for a BOP and business licenses are made at the BOP Division of the Local Assembly (KMA). Business Operating Permit (BOP) is the authorization to start a business and allows individuals or companies to conduct business within the government's geographical jurisdiction (KMA,

2006). First time issue and subsequent annual renewal is dependent on compliance with zoning regulations. Zoning is the process by which local governments enforce land-use planning so as to maintain orderliness in cities. It is the practice of designating permitted uses of land based on mapped zones e.g. residential, commercial, industrial and agricultural activities.

The Suame Magazine Market Management Service Limited (SMMML) and Freko FD Limited (FREKO), the erstwhile managers of Kejetia Bus Terminal (Ayebila, 2012; FREKO, 2012) are some public private partnerships in the revenue mobilisation and management of urban space. Within the last decade, the involvement of private partners though contested, have proven useful to the management of urban space, revenue mobilisation, street trade, waste management and security among others (Ayebila, 2012; FREKO, 2012). Other institutions like Ghana Standards Authority (GSA), Ministry of Health (MoH), Veterinary Services Department (VSD), Food Research Institute (FRI), Plant Protection and Regulatory Services (PPRS) and Environmental Protection Agency (EPA) are somehow involved food control (Laryea, 2001).

2.5 Frameworks for SFT regulations

Whereas street food regulations span from urban space usage through taxation and labour regulations to food safety, the latter has the most currency in the literature. The Hazard Analysis and Critical Control Points (HACCP) is the first framework for securing and assessing food safety. It is inspired the Codex Alimentarius Commission (CAC) of the FAO. It depends on food handlers to secure food safety. It therefore sets codes of standard practice for the enterprise with the assumption that they are known and will be complied with as enterprises are positively intended towards food safety. The HACCP approach is embodied in Food Safety Objective (FSO) and codified to various extents to ensure effective inspections.

FSO operates by simply applying the CAC recommendations at each of the 8 stage of the production chain. It therefore systematically assemblies and analyses data to reveal the safety assurance level of street vended food. In Ghana, safety of street food is under the jurisdiction of the Environmental Health and Sanitation Unit (EHSU) of the Local Assemblies working in close collaboration with the FDA and the GTA. Street food falls under the hospitality industry whose inspections are based on some 11 checkpoints (including 5 places and 6 facilities and processes). The specifics of the 11 checkpoints reveal all 8 stages in the production chain of the FSO are covered with specific demands similar to codes of practices. The HACCP, FSO and the Inspections guide of the EHSU have therefore aided in identifying the food safety practices to capture. About 23 codes of practices have been gleaned out of this process for assessment.

Food Safety Objectives (FSO) was developed by the FAO's CAC in 2004 and promoted to address food safety issues Barro, et al., (2007). Barro, et al., (2007) used the codes of FSOs to assess street food sectors of 10 West African countries including Ghana, Burkina Faso, Togo, Cote d'Ivoire, Benin, Niger, Nigeria, Guinea, Mali and Senegal and reports apalling standards of food handling. Patrons however, value convenience ahead of safety, quality and hygiene in choosing where to dine (Rheinländer, et al., 2008). Low level of knowledge and skills and other factors undermine compliance even in the presence of awareness (Yapp & Fairman, 2006; Mitullah, 2004; Tinker, 1997; Barro, et al., 2007; Johnson & Yawson, 2000). Food retailers are thus, less likely to use HACCP. The Compliance Process Model (CPM), the second framework for assessing food safety, salvages HACCP framework from its limitations. Per this model, food safety is safeguarded by responsible processes and activities of food traders/handlers as well as the enforcement mechanism of a regulator. In the originality of the CPM, the behaviour

(decision making) of companies facing legislative requirements was modelled (Fairman & Yapp, 2004).

There are 8 processes in the CPM but in order to identify the role of the actors in the process of compliance decision making of SMEs Fairman and Yapp (2004) adopted the CPM to the case of SMEs using small food traders. The modified model consisted of five stages. MacArthur (2007) satisfactorily adopted the modified framework for SMEs to the case of traditional caterers in Cape Coast-Ghana. In the modified framework the first 3 stages of the original model are found within the 1st stage.

2.5 Strategies for implementing regulation

Two primary approaches to enforcing regulations exist punitive methods and accommodative methods (Amodu, 2008). Coercive methods also referred to as 'sanctioning', 'deterrence' or 'prosecution' are more formal in nature with a notion of law enforcement. The objectives are to prohibit some activities or seek-out and punish offenders (i.e. it is a police-style approach)

The accommodative methods favour cooperation and conciliation by persuasion, education, and negotiations in implementing regulations (ibid). The objectives of this approach are to secure voluntary compliance and reverse offences. Punishment is treated as a secondary issue reserved for unusually serious or persistent intentional misconduct. Ordinarily, the approach is an informal interrelationship between regulators and the regulated. It is focused on education and assistance.

In food safety regulations, cooperative strategy is the commonest, using conciliatory approaches when faced with non-compliance. Frequency of inspection and enforcement tools to deploy are directly related to wilfulness of violation, likelihood of recurrence, past behaviour of agent and

likely consequence of violation (Hawkins, 1984; Yapp & Fairman, 2006). Inspections serve both as a means of creating awareness and assessing compliance and therefore, can build trust and encourage compliance. The approach also makes regulatory implementation prone to negotiated non-compliance and abuse. Food regulatory authorities in Ghana view their enforcement mechanisms as conciliatory (Laryea, 2001) but advocates of street food vendors report policing attitudes and harassments by inspectors (Mitullah, 2004; Cohen, et al., 2000; Apraku, 2000).

2.6 Regulations, compliance and businesses

2.61 Definition of compliance to regulation

Amodu (2008) observes that compliance is a simple term used in understanding regulatory effectiveness. It is defined from the perspective of regulators' and the assenters and these did not have to fit into one another. The assenters view regulatory compliance as adherence to what is being instructed, advised, cautioned or enshrined in the legal documents. The regulator on the other hand considers it a malleable process that is used to reach objectives outside the legal provisions (Amodu, 2008). These include the act of enforcement of the law, process of securing underlying objectives of regulations and negotiation of regulatory outcomes.

Compliance reclines on the reasons for compliance and the enforcement styles used (Amodu, 2008). It hardly reaches 100% and does not necessarily follow enforcement. Though higher level of enforcement activity turns to yield higher levels of compliance and higher level of compliance reduces the frequency of enforcement activity (Gupta & Saksena, 2002). From the economic perspective, compliance behaviour due to profiteering motives is largely a cost-

benefit analysis between cost of compliance and probability of detection and its related cost of non-compliance (Amodu, 2008; Gupta & Saksena, 2002). Enterprises in financial distress are more likely to be in non-compliance and hence attract more regulatory attention.

Socio-legal scholars approach compliance dwelling on regulation itself, its effect and the enforcement mechanism. This separates regulation from criminal law per se and thus views regulation more like the management of activity as opposed to its absolute prohibition (Amodu, 2008).

Regulation of commercial activity exists to discourage unfair competition and mitigate adverse effects of private commercial activity on the public. Earlier studies deemphasized monitoring and enforcement having posited that moral obligation is enough to engender compliance and suggest trust in legal and commercial regimes to supply safe food (Knowles, 2002). Such a laissez-faire regime is criticised as empirically, different individuals and enterprises comply/respond differently to even the same regulations (Amodu, 2008; Yapp & Fairman, 2006; Vickers, et al., 2005)

Where regulations are reduced to codes of practice as in the HACCP, FSO and EHSU inspections guide, extent of compliance is captured as a relative measure; the gap between observed practice and expected practice (MacArthur, 2007). This is especially necessary for small scale food enterprises among which compliance is usually partial (Fairman & Yapp, 2004). Most quantitative studies capture compliance as a dichotomous variable with regulation presented in a manner akin to an innovation for adoption.

The phenomena variable compliance wide spread that Vickers, *et al.,* (2006), developed a categorisation for firms in terms of their responses to regulation. In this light enterprises are found in one of three identifiable classes; Avoiders/Outsiders, Reactors and Proactive learners

(Vickers, *et al.*, 2005). This is determined by the enterprises' orientation of what determines compliance. Two diametrically opposed groups of enterprises are encountered in terms of response to regulation. The first group comprises of those who are well intended towards regulation and the others are the 'rogue traders'. This understanding prescribes metering of regulatory and compliance pressure in terms of greater regulatory activity (frequent inspections with punitive retribution for violation) or better education.

2.6.2 Determinants of extent of compliance to food safety regulation

Food safety is singled out for study as it is most topical and remains the aspect of regulation with most tangible negative implication. Studies on factors determining regulatory compliance among small businesses have suggested factors affecting compliance are largely grouped as external factors and those endemic to the regulated community (Amodu, 2008; Jayasinghe-Mudalige and Henson, 2007; Yapp and Fairman, 2006; Vickers, et al., 2005).

a) External determinants of compliance to food safety regulations

Actors in a market are rational and do make strategic calculation based on the local context in making choices (Amoah, 2010) including those of compliance. The context is defined by environmental/external factors which are mainly, incentives for compliance. They include legal design of regulations, political environment, and task environment factors. Kagan (1994) characterised the legal design of regulation using; its origin, its underlying specification, situations in which it applies, form of its enforcement and level of deliberation prior to implementation. These become necessary in a comparative analysis of various regulations in street food trade.

Political environment refers to formal and informal rules that structure behaviour (Amoah, 2010). The latter include customs, norms, allegiance (personal networks) and practices in the

market. Empirical observations point to a situation where interactions of formal and informal institutions lead either to reinforcement or substitution of formal institutions (Helmke & Levitsky, 2003). Informal actors in the urban markets where street food traders are, include trader associations, traditional authorities and 'faceless' local bureaucrats (Ortiz, et al., 2010; Etzold, 2011). Modern approaches in ensuring compliance prescribe coordinated effort of all institutions. Collective effort from consumers, civic society, media and other social forces yields positive compliance behaviour (Amodu, 2008).

Atieno (2009) found associations as the major form of interaction among small scale businesses consolidation of which among other things enhances bargaining power and procures benefits for members. Solomon-Ayeh, et. al., (2011) and Frimpong, (2007) found that street trade associations in KMA promote compliance to formal regulations by playing both mediating and gatekeeping roles. They not only represent the views of vendors by spearheading demonstrations against unlawful evictions (Mitullah, 2004) but also practice self-regulation. Nicolo'and Bendech, (2012) found that in Ghana, the indigenous catering association is in pursuit of improved street food in terms of safety and quality. In Accra vendor associations have lobbied for member exemptions in VAT payments and negotiated reinstatement of displaced members (Nicolo'and Bendech, 2012). Trader associations educate and supply regulatory information to members, mediate in member conflicts with regulator and exact punishments (seizure of goods, suspensions from trade) in cases of violation of formal regulations (Solomon-Ayeh, et. al., 2011).

An attempt is being made to create an apex body of street vendor associations in North America following heavy levies and fines and an over bearing regulatory regime (Berg, 2012). Berg (2012) observes that leadership of vendor associations are positive the move will not only help

grow vendor businesses but will promote compliance with rules. Kok & Balkaran (2014) concede that vendor associations are a major way to ensure good hygiene practices among street food vendors. Nicolo'and Bendech (2012) reveals vendor associations are not successful organisations though positively perceived among a majority of vendors (74% in Ghana). More than 90% of SFVs in Ghana and Cote d'Ivoire do not belong to any association. Funding and lukewarm attitudes to meetings on the part of members are the major constraints.

Local government regulates all aspects of street food vending, and enforces of food hygiene and safety via health officers. Regulation mandates environmental health officers to organize periodic trainings of food handlers. On small firms, Fairman and Yapp (2004) reveals that, compliance is equated to doing what one is told at inspections, advisory visit and other intervention. Small firms are found to prefer command and control regulations and hence clarity of food safety regulations is found to be salient among such enterprises (Hutter & Amodu, 2008). The task environment is thus dominated by field inspectors who are mandated to operationalize regulatory objectives, identify and pursue regulatory infraction, interpret broadly defined regulatory provisions and negotiate with the regulated to make regulation effective (Amodu, 2008). Okojie & Isah (2014), however, report that inadequate and improper monitoring and supervision by food safety officers and a weak of food safety regulations is prevalent in street food. According to Hutter and Amodu, (2008), nature of relationship between food inspectors and food vending enterprises may compromise compliance by affecting choice of enforcement style.

Physical and social proximity to regulated community exposes food control officers to impacts of legal action. This makes inspectors adopt conciliatory approaches though such vendors will otherwise have higher risk of detection (Hutter & Amodu, 2008). The possibility of applying

grace period laws also enhance compliance my making infraction management more conciliatory (Pollution Prevention Resource Centre (PPRC), 2004). Increasing vendor displacement from regulatory institution in terms of time and distance reduces extent of compliance by lowering the quality of received regulatory information and intensity of regulatory effort (Okello-Obura et al., 2007; Gupta & Saksena, 2002).

Though vendors may suspect unfair treatment, nature of infractions, potential impacts and vendor's past behaviour are considered in inspectors' choice of formal and informal enforcement (Hutter & Amodu, 2008).The approach, attitude and moral stance of the inspector, thus, influence compliance levels and same is vendor perceptions of fairness and trust. When enforcement measures are coercive and costly, businesses may negotiate non-compliance with field officials or other authorities by paying less than the formal compliances cost in bribes.

a) Enterprise specific determinants of compliance to food safety regulations

Whereas the external factors incentivise compliance, extent of compliance is shaped by internal factors (Jayasinghe-Mudalige & Henson, 2007). Street food vendor ignorance and inability to meet set standards may stifle positive response to regulation (Yapp & Fairman, 2006; Rankin, 2006; Vickers, *et. al.*, 2005).

Hutter and Amodu (2008) found that smaller producers are more likely to be less aware of risks of business practices. Contrary to the above, Kok and Balkaran (2014) report street food vendors display high knowledge of food safety and hygiene. Rheinländer, et al., (2008) identified the back and front stages of street food vending. They observe that awareness of safe

food handling practices maybe observed in the latter but is often overridden in the former due to practicalities like time, space and convenience.

Credibility of information are essential elements in compliance decision to SMEs in food services (Amodu, 2010: Okello-Obura, et. al., 2008 Yapp and Fairman, 2006). Business/regulatory information may come from formal and/or informal sources either of which might be internal or external (Okello-Obura, et al., 2008). In the absence of formal information, informal inter-vendor contacts supersede other sources of information providing business information. Little knowledge exists regarding the demands and flow of information among the stakeholders in the Ghanaian street food sector (Tomlins et al, 2001).

Enterprise perceptions of trust, cooperation and procedural fairness in implementation of regulations influence compliance (Kagan, 1994). Vendors' perceptions of enforcement strategy, its intensity and cost feed into deciding the ultimate response to regulation. Formal and informal sanctions function as reminders and deterrents. Sanctions per se might not be what firms fear the effects of adverse publicity on reputation (Amodu, 2008).

The most important aspect of regulation to SMEs like street food vendors is that on siting of operations (Nicolas, et al., 2007; Steel & Webster, 1991). Relatively resourceful and powerful street food vendors alone access urban areas with higher customer patronage (Nicolo' & Bendech, 2012; Etzold, 2011). Coupled with a higher financial viability, such vendors are more likely to view regulations on food safety positively. Vendor location relative to city resources like road and waste disposal sites (Nicholas et al., 2007) also affect compliance food safety regulation.

Increasing vendor displacement from regulatory institution in terms of time and distance on the other hand, reduces extent of compliance by lowering the quality of received regulatory

information and intensity of regulatory effort (Okello-Obura et al., 2007; Gupta & Saksena, 2002; McPherson & Carl Liedholm, 1996).).

Enterprise specific factors affecting compliance costs such as the vending structure, technology, facilities and ability of human resources, do so via its effect on the extent of compliance. Increased enterprise of compliance this increases the fixed cost per unit of production and decreases enterprise compliance (Alves & Graham, 1995; Quartey, 2001). The liabilities of regulatory compliance entail not only money but also, time costs. Small businesses in Ghana take approximately 127 days and 16 procedures to address issues of licensing (Abor & Quartey, 2010). Complex filling procedures is a major factors causing low compliance to tax regulation in Nigeria (Atawodi & Ojeka, (2012).

2.6.3 Regulations and performance of small enterprises

Small and Medium Enterprises (SMEs) are defined in the literature by the Bolton Committee, European Commission and United Nations Industrial Development Organization (UNIDO). Three indicators emerge relevant in defining SMEs across countries and sectors; number of employees, total asset and total turnover. Number of employees (employment threshold) has the highest and universal relevance as an indicator of enterprise size and is thus the mandatory indicator. Annual sale is more applicable to enterprises in trade and distribution whereas total asset is to manufacturing enterprises (Dababneh & Tukan, 2007).

Per the mandatory indicator, an SME is defined as one employing 10-99 people. According to Quartey, (2001), the UNIDO's categorization of enterprises in developing countries based on employment threshold is as follows: Over 100 employees for large enterprises, between 20-99 for medium, 5-19 for small and less than 5 for micro enterprises.

The National Board for Small Scale Industries (NBSSI) in Ghana classifies businesses using employment and fixed asset. Micro-enterprise employ between 1-5 workers. They are usually lumped-up with Small Scale Enterprises whose maximum employment is 29 workers with fixed assets valued under GH¢10 million (Abor & Quartey, 2010). Medium Scale Enterprises employ between 29-99 workers and their fixed asset is worth $100,000. Large Scale Enterprises employ more than 100 workers with a value of fixed assets amounting to less than $100,000.

According to Abor and Quartey (2010) a more recent classification in Ghana, proposes the following boundaries based on employment:

1. Micro enterprise, less than 5 employees
2. Small enterprise, 5-29 employees
3. Medium enterprise, 30–99 employees
4. Large enterprise, 100 and more employees

In Ghana, some researchers have fixed 30 as the maximum employee number for small scale enterprises (Abor & Quartey, 2010). These enterprises are further classified into micro enterprises where they employed less than 6 people, very small if employing between 6-9 people and small if working with between 10 and 29 employees.

An enterprises ability to improve on employment threshold, total asset and total turnover indicates better performance. Enterprise performance is operationalized as profitability as profit maximization is the cornerstone of enterprise success (Akande, Adewoye, Oladejo, & Ademola, 2011). Capability of street trade enterprises in complementing the formal economy is indicated by growth in income generation and employment creation (Adhikari, 2011). The number of employees and level of investment impacts positively on income generated from street trade (ibid). Economic efficiency and thus performance is increased through increase in number of

workers (Adekunle, 2008). Traditional assessment of enterprise development focused on enterprise endowments of physical and human capital (Adekunle, 2008).

SMEs see burdens of regulation as a major obstacle to performance (Small Business Project (SBP), 2008). Completed studies on the impacts of regulation on SMEs tie the effect to that of cost of compliance (Quartey, 2001). SMEs may resort to informal remedial measures often described as non-compliance. Regulatory compliance costs have economy wide effects. At the firm level, delays and unnecessary administrative bureaucracy add to operations cost. Businesses may thus stay small or go underground to avoid regulatory attention. Regulations may result in mild or dramatic changes in the setup of trading establishments. Outputs and employment figures could be kept low affecting the economy as a whole (SBP, 2008). Whereas large enterprises are more able to both manage regulatory costs, same cannot be said of micro-enterprises like street food enterprises (ibid); the cost is disproportionately distributed.

These costs will also be passed on to consumers where it is possible to do so (SBP, 2008; Amodu, 2008; Yapp & Fairman, 2006). Producers and retailers compensate increases in production cost with increases in prices in a fashion similar to the result of tax increases. But unlike taxes the spatial and temporal distribution of the effects occur without regard to wealth and incomes, leaving the poor as affected as the rich if not more (SBP, 2008).

2.6.4 Regulatory compliance costs

In an attempt to correct market failure due to the departure of private and public interests, regulations have often gotten too stringent to be economically efficient (SBP, 2004). There is a widespread notion that SMEs in developing countries are found in an overbearing regulatory environment with multiple agencies, multiple taxes and cumbersome/inappropriate regulatory

systems (Atawodi & Ojeka, 2012; Bickerdyke & Lattimore, 1997). It has provoked research into estimating cost of compliance to regulation across the globe with initial focus on tax regulation. Numerical valuation of tax administration burden on businesses in Uzbekistan estimated its monetary and time costs separate from tax burden (International Finance Corporation (IFC), 2010). Tax compliance cost was also estimated for SMEs in South Africa (Coolidge, et al., 2008). Regulatory authority efficiency was found to be the key reason for significant variation in time and money cost of compliance across states for different taxes and procedures. Atawodi & Ojeka, (2012) report almost 49% of SMEs surveyed in Nigeria assert tax rates in private sector are too high for SMEs with 66% paying out 20-70% of their profits as tax.

Estimation of regulatory compliance costs for businesses is a relatively new discipline in the developing world with pioneering works in South Africa in 2004. Following the ground breaking research, regulatory compliance costs for Rwanda were also estimated (SBP, 2008; SBP, 2004). In South Africa and Rwanda respectively individual firm regulatory compliance cost per annum account for an average of R105,000.00 and RwF 2 million. Tax compliance represents the largest respectively reaching 26% and 39% of regulatory compliance cost per firm per annum. Alves and Graham (1995) also found regulatory cost too high for micro-firms in the Latin America. A review of SMEs and regulation in Ghana reveal compliance costs of regulations (tax and others) add to cost of factors of production and loss of valuable production time with related transaction cost accounting for larger proportion (Quartey, 2001).

Whereas documentation are most beneficial to the informal sector if conducted along lines of specific products or economic activities (Skinner, 2008), the studies above are generalised to SMEs and restricted to taxes. Qualitative studies on small-medium food enterprise fail to

estimate the quantum of compliance cost and report conflicting perceptions of traders on the matter (Yapp and Fairman, 2006; Mitullah 2004)

Benefits of regulations are more easily appreciated (Bickerdyke & Lattimore, 1997). Costs, are however, not so obvious but are valued quite satisfactorily. Cost benefit analyses of regulations, therefore, focus on compliance costs. Compliance, efficiency and administrative costs are the key costs of regulation for regulator and regulated (SBP, 2008). Non-compliance costs also exist for detected operatives of the informal economy or non-compliant enterprises.

Compliance costs are due to red tapes in the regulatory process. They are incremental costs resulting from the process of compliance with regulation. Specific components include monetary costs and money value of time spent in:

1. Understanding and using regulations
2. Interacting with authorities to clarify issues
3. Payments made for professional advice
4. The cost of paperwork
5. The cost of proving that one has complied or is in the process of complying

Efficiency costs are the opportunity costs of regulatory compliance, they arise from distortions in the market occasioned by regulation. They are often the result of a difficult choice made politically. They include:

1. Administrative and procedural delays.
2. Cost of buying, installing and maintaining equipment required to be compliant with regulations (capital cost of regulation).
3. Negative effects of regulations on the selection of production techniques, employee size and markets to participate in.

4. Lost sales due to higher prices caused by the increasing effect of regulatory costs on production cost.

The key issue in introducing better regulations is cutting down red tape in administrative procedures, reducing negative impacts and holding compliance costs to the barest minimum without sacrificing the benefits thereof (SBP, 2004). Procedural audits, compliance cost studies and Regulatory Impact Analysis (RIA) are the latest proposals in setting the pace for introduction of better regulations. Only regulatory compliance cost studies rely on information directly supplied by businesses.

2.6.5 Factors affecting compliance cost

Regulations in street food trade span from those related to food safety through those guiding the conduct of marketing of produce to those related to association with urban space (Johnson & Yawson, 2000). Regulatory cost is determined by activities and characteristics of micro-enterprise (Alves & Graham, 1995) as well as efficicency on the part of regulatoy authority (Coolidge, et al., 2008).

Efficiency is mainly exemplified in the enforcement strategy adopted viz coercive or conciliatory (Amodu, 2008; Hawkins, 1984). Time and money cost, of compliance grow with demands of repetitive adherence to specified standards. Compliance cost is low for aspects of regulation with low risk of detection and less financial cost of detection (Gupta & Saksena, 2002). These suggest higher non-compliance and lower compliance costs for food safety regulations (Kok & Balkaran, 2014). Though consequences of detection of non-complaint behaviour at food safety may ultimately include closure of the enterprise, insufficient inspections and negotiated non-compliance have lowered compliance cost (Gupta & Saksena,

2002). Regulatory compliance cost is directly proportional to intensity of regulatory effort (ibid). In the final analysis, compliance behaviour is a cost-benefit analysis (Gupta & Saksena, 2002).

Where compliance cost relative to the benefits of regulation can be borne (better performing enterprises), compliance is often higher (Amodu, 2008). SMEs more concern of administrative burden and time costs of regulations (Rankin, 2006). Regulatory costs lowers implicit wage rates of smaller entrepreneurs and discourages investment and expansion in both outputs and employment and hence performance. Better performing enterprises are able to expand unimpeded in size, adopt of improved technology, invest more in operations cost and earn higher turnovers on cost. By so doing, they minimize compliance costs relative to turnover (Etzold, 2011). A study on food safety regulation confirms that small firms comply higher and pay higher compliance cost with adequate financial and technical resources (Yapp & Fairman, 2006).

Whereas the large enterprises are more adaptable to changes in tax, labour and product standards or regulations, the regulatory demands are the same for small and large scale enterprises An inverse relationship between size and magnitude of compliance cost for enterprises is therefore seen implying that economies of scale are present in regulatory compliance as suggested by Atawodi & Ojeka, (2012), IFC, (2010), and ITD, (2007). Fixed costs of regulations are more thinly spread over returns for the bigger firms. Lancaster, et al., (2003) confirmed that in health and safety regulations, cost and time involved in regulatory compliance puts smaller businesses at a competitive disadvantage. Coolidge, et al., (2008) and Quartey, (2001) found the distribution of compliance costs to be regressive with small firms bearing most of the brunt.

Yet Goh (2002) reported that small enterprises are more agile and this allows enough flexibility in locating and moving activities without the accompanying burden of legislation and regulation, thus evade a number of regulations. Due to evasions, Alves and Graham (1995) find actual compliance cost to be about 20% of expected regulatory cost among micro-firms in Latin America (Argentina, Brazil and Mexico). Low level of education, professional training and awareness of regulations among street food vendors (FAO, 2005; Fairman & Yapp, 2004; Mitullah, 2004; Tomlins, 2000; Tinker, 1997; Cohen, 1984) have further caused complaince cost to food safety regulation to decline relative to other regulations. In order to keep-up appearance before customers, however, some food safety measures are implemented by almost all vendors Rheinländer, et.al., (2008). Okojie & Isah, (2014) found 90.5% of the observed vending sites as appearing clean in consonance with Rheinländer, et.al., (2008) but safety of raw material and food handling practices remain unobserved. Compliance cost is lowered by rife evasions and non-compliance among small enterprises but increased due to the need to keep up appearances.

Relatively resourceful and powerful street food vendors operate from areas more noted for food sales and hence have higher customer patronage (Etzold, 2011). These operators use their social networks to avoid some regulatory costs by accessing zoned/permitted urban space for street food trade (Nicholas et al., 2007) and maintaining favourable distance to regulatory institution (Okello-Obura et al., 2007).

At vending sites, high presence of crude structures and rudimentary facilities/utensils are common among food vendors (Rheinländer, et.al., 2008; Mensah, et al., 2002). Regulation may imply changes and thus increase compliance cost (Fellows & Hilmi, 2012). Given heterogeneity in food types and duration of daily operations, different regulatory cost profiles are expected;

(Laryea, 2001). Some vendors expand services beyond food production and sales to provision of dining services. This has added implications to regulatory costs as standards codes of practices must be adhered to. Street food vendors operating during formal working hours do so in the full glare of regulatory officers (Laryea, 2001). Risk of detection and consequent cost are higher for such traders (Gupta & Saksena, 2002).

2.6.6 Perception of regulations

The regulations are multi-faceted with the involvement of multiple institutions with a net burden on SFEs, making accentors displaying a preference pattern in compliance. Perceptions of regulation govern investment decisions and compliance rates. Enforcement activity to deploy depends on what perceptions enterprises harbour about regulations (Hutter & Amodu, 2008). Perceptions are not facts as they are underlain by a number of drivers OECD (2012). Perception surveys, however, allow measurement of regulatory effectiveness and assess opinions and concerns of the regulated (ibid). Perception surveys are common in the developed world.

Battisti, et al., (2011) reveal that negative perceptions are common among businesses in all sectors. Higham & Davenport (2010) report that 33% of members of Federation of Small Businesses in the UK view regulation as an onerous and increasing obstacle to business perfomance. Where regulations are negatively perceived businesses may react negatively to regulatory controls (Hutter and Amodu, 2008). In meat hygiene studies it is revealed that beside economic factors, 'practices that have long been perceived as acceptable' significantly determine compliance rates (Hutter & Amodu, 2008, p. 9). Sookram & Watson, (2008) established that expansion of the informal sector and tax evasion is tied to perception of excessive burden of government regulation. Lund, (1998) found that perceptions of officer

extortion, protection money payments and unhelpful contacts with officials are common among street food vendors in South Africa.

SMEs are ambivalent about regulations as they perceived regulation to make no difference in their trade. About 75% of business in Sweden perceived regulatory burden to remain the same even after reforms (OECD, 2012). Such perceptions are underpinned by three (3) fact that; they are legal requirements, they are important though costly and that they have both up and down sides (Battisti, et al., 2011).

The OECD (2012), reports that handling of regulatory reforms/enforcement and characteristics of the regulated significantly drive perceptions. Kagan (1994), Battisti, et al., (2011) asserts that irritating experiences, trust, objective of regulation, cost of compliance, tangibility of benefits and participation ultimately shape enterprise perception of regulation. Intensive regulatory effort as revealed by frequent of inspections easily improves perception among small firms due to access to important information (Higham & Davenport, 2010).

At the enterprise level, Battisti, et al., (2011) report that owner-managers with negative view of regulation also lacked resources and had limited managerial experience. OECD, (2012) concurs that perceptions of regulation are often based on enterprise size, expectations and owners fundamental attitude.

Regulation of the informal sector in developing countries left so much to be desired. Mitullah (2004), reports that street vending is perceived by regulators as temporal, illegal, filthy and traffic/congestion generative. Street vendors and their advocates perceive that the trade is never provided proper market facilities and most of its out-dated regulations are intended to regulate enterprises growth. The perception of an overbearing regulatory environment with a police-

style implementation and without tangible benefits is rife in Africa among street food vendors (Cohen, et a., 2000).

Ingram, et al., (2007) found among small firms across Sub-Saharan Africa that, access to credit and collective resources (electricity and land/public space) are positively correlated with formalization. Magnifying benefits of registration of small business increase firm registration by between 20-50% in Sri Lanka (Woodruff, 2013).These are in consonance with findings of Kagan (1994), OECD (2012) and Battisti, et al., (2011) that, benfits of regulations drive perception and preference of regulations.

2.6.7 Preferences for regulations

Becoming legal and remaining legal are the key issues in regulation of informal groups (Chen, at al., 2001). SME regulation is fragmented; it is common to find SMEs be only registered or pay tax (especially market toll) even without a permit for operation. Regulators prefer tax regulations. Street vendors on the other hand prefer using vending sites that grant access to patrons and pedestrians (Ndhlovu, 2011). Many of such locations are, however, conflict zones or restricted. There is evidence of street vendors word-battling regulators over demarcation and use of urban public space in Lusaka (Ndhlovu, 2011). Street vendors are virtually ready to do anything to secure a vending site. Bhowmik (2010), reports that it costs street vendors in some parts of India between 400 and 600 Crore Rupees in aggregate annual bribe payments to police to secure a site. In some parts of India, street vendors sued and won against the state for restriction and frequent eviction on the use of public space.

Advocates of street food trade raise sitting issues in form of creation of food ‘courts’ and development of ‘street food zones’ in cities (StreetNet-Association, 2013). It also concedes that

organising of street food vendors, hygiene and health trainings, entrepreneurship development and facilitating registration remain pertinent issues to vendors and their advocates in professionalizing street food trade. In some parts of India, one-third of street pavement is allocated to vendors and improved regulations makes street vendor evictions and asset confiscations the last resorts (Bhowmik, 2010).

The risk of detection and cost implications of detection are higher for some regulations (SBP, 2008; Hutter and Amodu (2008); Gupta & Saksena, (2002); Sookram & Watson, 2008). Regulations with high compliance cost but low risk of detection are not preferred by street food vendors. Compliance cost for codes of practices (from HACCP and FSOs) can be large depending on enterprise's current capabilities (Battisti, et al, 2011).

Preferences for regulatory issues are rooted in street food vendor perceptions. Most perception surveys are qualitative and do not establish causality. Qualitative approaches are enriched by quantitative perspectives using socio-demographic, behavioural and psycho-graphic data (OECD, 2012). Choice experiments are also quite common in the area of qualitative assessment of preference. For instance, Sorice, et. al., (2005), used it to evaluate divers' preference for management scenarios in recreational water use. Boyle, et al., (1997) adopted it to assess lumbers' preference for management of timber harvesting. Blamey, et al., (1999), Hensher, et al., (2005) and Alberini et al, (2002) used it respectively in assessing preferences for drinking water supply options, transport modes and incentive mix for estate developers.

2.7 Studying preferences

Stated and revealed preference studies are available for assessing preference. Choice modelling is one of the methods of valuation of non-market goods/services. Contingent valuation and

conjoint analysis (contingent ranking, contingent rating and paired comparison approach) are other similar methods. As opposed to revealed preference methods (hedonic pricing, travel cost and benefit transfer among others), stated preference approach elicits values placed on attributes of goods/services using survey techniques.

Contingent Valuation Method (CVM) has had a controversial history of application (Blamey, Gordon, & Chapman, 1999) due to its inappropriateness for evaluation of phenomena with several attributes. Whereas CVM presents a single alternative, a couple of other scenarios are presented together at times with the status-quo in a choice experiment. The use of attribute levels reduces the frequency of yea-saying and related biases. The likelihood of dumping money on the first scenario is almost eliminated due to the awareness of respondents of the presence of other options. This especially makes choice experiments better suited to economic valuation of multiple mutually exclusive policy options (Blamey, et al., 1999).

Discrete choice experiments are based on the premises that, any good/services can be described by its characteristics (Fife-Schaw, et al., 2007). The theoretical underpinnings of discrete choice models contain elements the theory of consumer behaviour (rationale choice and assumptions of preference theory) as well as random utility theory. Discrete choice experiment permits the estimation of the relative importance of different aspects (attributes) of concepts/phenomena as well as total benefits derived via estimation of the willingness to pay (or accept) procedures (Ryan, *et al.*, 2001).

Choice experimentation starts with definition and assignment of levels to attributes in question. The other processes are the creation of the scenarios and the choice sets and obtaining preference (Louviere, et al., 2000). It is necessary to start-off by defining the problem, select attributes and their level, before considering the experimental design (Hanley, et al, 2001;

Adamowicz, et al., 1998). This is followed by the questionnaire design, sampling and data collection. Model estimation and the development of a decision support system are the last items. Rolfe, et al., (2004) assert that the choice experiment exercises comprises of three (3) broad issues; policy (pre-field study), framing (information, structure (labelled or generic) and presentation (text or graphic)) and statistical issues (type of experimental design (full, fractional and orthogonal design) and design efficiency (C and D-Optimal designs)).

According to Hansher et al., (2005), in preparing choice data for entry, orthogonal, effect or dummy coding is used. Dummy coding does not measure utility from the base level of attributes but assumes it is the average overall utility (i.e. the grand mean or the intercept term). Effect coding codes the base level as -1 instead of zero. It makes no assumption of linear increases in moving from one attribute level to the next. It also does not confound base level utility with overall average utility.

The resulting multinomial model could be alternative specific or generic on the structure framed. Peoples' preferences for features of goods are better tracked with in the generic form (Carson & Louviere, 2010). Information relevant to an individual (socioeconomic attributes) and the specified option (choice specific) are interacted to control violation of Independence of Irrelevant Alternative (IIA) assumption of the modelling process (Hanley, *et. al.*, 2001). Ordinary Least Square (OLS) and MLE estimation procedures (logit, probit, conditional logit, nested logit, panel data models etc.) are available for use (ibid).

2.8 Conceptual frame works

2.8.1 Determinants of extent of SFV compliance to food safety regulation

Probit and logit frameworks are in evaluating determinants of compliance to business start-up regulations (McPherson & Carl Liedholm, 1996), pollution controls (Gupta & Saksena, 2002) and food safety regulation (MacArthur, 2007). Probit and logistic regression approaches imply utilities are assigned to choice of compliance (CC), $U_{i0} = X_i\beta_0 + e_{i0}$ for non-compliance (CC=0) and $U_{i1} = X_i\beta_1 + e_{i1}$ for compliance (CC=1) under Random Utility Theory (RUT). Utility of choices is said to have a systematic part ($X_i\beta_i$) and a random part (e_i). Compliance to regulation is sought after only and only if $U_{i1} > U_{i0}$.

Since empirical evidence is concludes that compliance among small and micro enterprise is usually partial (Fairman & Yapp, 2004), dichotomisation leads to loss of information (Spermann, 2009). It becomes impossible to evaluate differences among vendors in compliance (Yu, et al., 2011). The Tobit model is a better alternative where extent/intensity of some phenomenon needs to be understood. This is because, given regulation information, street food vendors adopt food handling methods observed within a continuum from non-compliance to full compliance.

Compliance behaviour being a function of capital and operating cost due to compliance is a cost-benefit analysis that considers benefits of regulation, risk of detection and non-compliance cost (Gupta &Saksena, 2002). Benefits though plentiful are difficult to quantify (Alves and Graham, 1995). Benefits are thus latent but expressed in the extent of compliance (*EC**). Whereas only compliant vendors have scores for extent of compliance (EC), the dependent variable, data on all causal variables are present. The resulting data is censored just like data on

wages (Greene, 2003) and expenditure (Long, 1997). Greene (2002) and Long (1997) acknowledge that censored data appears in the literature in money or time units and/or counts or proportions. The dependent variable (extent of compliance (*EC*)) is captured as a proportion $(0 \leq EC \geq 1)$.

Following Long, (1997), the latent variables (EC^*) underlying extent of compliance (*EC*) has the structural equation below;

$$EC^* = X_i\omega + \mu \qquad [1]$$

Where ω is a vector of parameter, X_i is vector of independent variables, μ is random error term independent of X_i and distributed normally with a mean of 0 and a variance of 1. The independent variables which are observed for all cases have a detailed description in Table 6. $EC^*$is observed for values greater than τ and censored otherwise. The measurement relation below defines the extent of compliance observed.

$$EC = \begin{cases} EC^* if\ \mathrm{EC}^* > \tau \\ \tau_y \text{ if } \mathrm{EC}^* \leq \tau \end{cases} \qquad [2]$$

The general log-likelihood function is a combination of the likelihood functions of the probability of compliance (uncensored observations) and that of non-compliance (censored observations). It is given as:

$$lnL = \sum_{uncensored} ln\frac{1}{\sigma}\phi\left(\frac{EC - X_i\omega}{\sigma}\right) + \sum_{censored} ln\Phi\left(\frac{\tau - X_i\omega}{\sigma}\right) \qquad [3]$$

Whereas the likelihood function of the uncensored portion is the normal density function $\phi\left(EC_1^*; X_1^{'}, \omega, \sigma^2\right)$ that of the censored is the cumulative normal distribution function $\Phi\left(EC_1^*; X_1^{'}, \omega, \sigma^2\right)$. Under assumption of homoscedasticity and normal errors, consistent

estimates are obtained from the likelihood function via Maximum Likelihood Estimation (MLE) procedure.

These assumptions which are often violated are tested for in model diagnostics using the Lagrange Multiplier (LM), Score Test or Conditional Moment tests (Cameron & Trivedi, 2009) or the Information Matrix Test (Reynold & Shonkwiler, 1991). Reynold & Shonkwiler (1991) recommend that inverse hyperbobic sine (IHS) trasnforamtion is better than Box-Cox trasformation of the dependent variable in correcting violations. Due to the latters inability handle zero or negative value and its dependence on measurement scale. The HIS tranformation replaces the dependent variable (*EC*) in the log-likelihood function with a term $I(\mathrm{EC}^{*})$ computed as;

$$EC_i(\theta) = log(\theta EC_i + (\theta^2 EC^2 + 1)^{1/2}) / \theta \qquad [4]$$

The term θ is empirically assumed to be equal to one (1). The log-likelihood function after incorporation of adjustments for non-normality and heteroskedasticity becomes equation 5. Following this transformation, estimated parameters are not directly comparable to those of standard Tobit model (Reynold & Shonkwiler, 1991).

$$lnL = \sum_{censored} ln\left[1 - \Phi\left(\frac{X_i^{'}\omega}{\sigma_i}\right)\right] + \sum_{uncensored}\left[ln(1+\theta^2 EC_i^2)^{-1/2} - In\sigma_i + In\phi\left(\frac{EC_i(\theta) - X_i^{'}\omega}{\sigma}\right)\right] \qquad [5]$$

Three expected values and three corresponding marginal effects may be computed after standard Tobit model estimation. They include:

a. The expected value of the latent dependent variable, $E(EC^{*} \mid X) = X_i\omega$.

b. The expected value of the observed dependent variable given that the value is greater than zero (uncensored), $E[y|y> 0]$.

c. The expected value of observed dependent variable, $E(EC^* \mid EC > \tau, X) = X_i\omega + \sigma\lambda(\delta)$.

The marginal effect corresponding to the above expected values include:

a. Marginal effect on the latent dependent variable $\partial E(EC^* \mid x) / \partial x = \beta$).

b. Marginal effect on the expected value for y for uncensored observations

$\partial E(EC \mid x, EC > 0) / \partial x = \{(1 - w\lambda(w) - \lambda(w)^2\}\beta$

c. Marginal effect on the expected value for y censored $\partial E(EC \mid x) / \partial x = \Phi(w)\beta$

Though there is no consensus on which of the above to report, Greene, (2003) and Wooldridge, (2002) suggest that *E[EC]* should be used if the interest is in the effects of explanatory variables.

Marginal effect may be computed at the means of all explanatory terms (MEM), at representative values of selected variables (MER) and as the average marginal effect (AME) of the explanatory terms on the conditional mean of expected dependent variable. MEM, MER and AME may be reported as derivatives or elasticities. The use of AME and MER in policy analysis and MEM as a rough estimate is recommended (Cameron & Trivedi, 2009). Average marginal effects/Average partial effects (StataCorp, 2011) are reported here as elasticities to add meaning to direct coefficients. Partial effects are estimated at the averages of specified independent variables (Wooldridge, 2002).

2.8.2 Preference for SFT regulatory aspects and scenarios

Choice modelling represents process of choice as a comparison of utility from products (options/alternatives) based on their attributes. Per the Random Utility Theory (McFadden, 1974), the utility (U_{ij}) of the i^{th} individual for the j^{th} option in a choice set of regulatory scenarios, C, has two components; a systematic/deterministic part (measurable), V_{ij}, and the random component, μ_{ij} with the mathematical illustration below.

$$U_{ij} = V_{ij} + \mu_{ij} : V_{ij} = \left(\varphi_{ij} + X_{ij}\right)\alpha \qquad [6]$$

The systematic component is a function of attributes of the regulatory scenario, φ_{ij} and the individual/enterprise specific or socioeconomic characters, X_{ij} and α is the parameter to be estimated. A street vendor chooses regulatory scenario j ahead of k if:

$$U_{ij} > U_{ik} \forall j \neq k \qquad [7]$$

Suitable parameterisation of V_{ij} yields estimates of the *Willingness-To-Pay* (*WTP*) for the regulatory scenario rather than operate without it. Since utility is not observed directly, probability of choice are widely used (Sorice, *et al.,* 2005). The probability of choosing the regulatory scenario j ahead of k in a regulatory choice set, C ,is given by the relation below.

$$P\left(j \middle| j \in C\right) = P\left(V_j(Z) - V_k(Z) > \mu_j - \mu_k\right) \qquad [8]$$

V_j and V_k are systematic or measurable components of utility to be estimated and μ_j and μ_k are the random components of utility. The commonly used specification to determine the WTP from the random utility framework is the conditional logit where it is assumed that the error terms $\left(\mu_j - \mu_k\right)$ are independent and identically distributed and follow an extreme value

distribution, gumbell distribution (McFadden, 1974). In that case P_{ij}, the probability of the i^{th} individual choosing the j^{th} regulatory scenario over all other possible alternatives or k is given by:

$$P_{ij} = P\left(U_{ij} > U_{ik}\right) \forall j \neq k = \frac{\exp(V_{ij})}{\sum_{k=C} \exp(V_{ik})} \quad [9]$$

This is on condition that the IIA property is not violated. Remedial measures in case of violations include use of a nested logit (Blamey, et al., 1999), adding interactions effect of Alternative Specific Constant (ASC) and socioeconomic attributes of individuals (Holmes & Adamowicz, 2003) or the use of mixed effect logit model.

Assuming a linear-in-parameters utility function for the j^{th} alternative, the conditional logit model for V_{ij} is specified as follows:

$$V_{ij} = \psi_j + \alpha_1\varphi_1 + \alpha_2\varphi_2 + ... + \alpha_k\varphi_k + \psi_1\beta_1 X_1 + ... + \psi_n\beta_n X_n \quad [10]$$

Where, ψ_j, is the alternative specific constant included to prevent violation of IIA property (Blamey, *et. al.*, 1999). α_k and β_n, respectively are coefficients of the k^{th} attribute of regulation and socioeconomic factors associated with the n^{th} street food enterprise. The parameters are estimated using the MLE procedure. The description of regulatory attributes and enterprise/socioeconomic variables is in Table 8.

The negative of the ratio of any two attribute coefficients represents the trade-offs made between the two attributes, the marginal rate of substitution. When cost/price coefficient is used as the denominator, the ratio of coefficient provides an estimate of marginal ($\overline{WTP}$) for a

particular characteristic. This measures amount of money vendors are ready to pay in order to receive more of a given attribute holding other factors constant.

$$\overline{WTP} = -\alpha_i / \alpha_{tax} \qquad [11]$$

Regulatory scenarios (RS) are ranked in order of relative importance based on the estimated WTP, predicted probabilities and welfare estimates. Welfare estimate forthcoming in moving from one attribute level (or the status-quo) to another, compensating variation (*CV*) is given equation 12 and explained in Table 1.

The utility/benefit score (CV/WTP) for each of the scenarios is calculated following (Ryan, *et. al.,* 2001; Handley, *et. al.,*2001). The regulatory scenarios resulting from attribute level combinations roughly range from status-quo through a better to an excellent regulatory scenario. Changes in utility scores (estimate of *WTP)* are measured as one moves from a regulatory scenario to another or from status-quo to another RS. V_0 and V_1 are utilities of reference/base and improved/new regimes respectively.

$$CV = WTP = \frac{i}{\alpha_{tax}}\left(V_0 - V_1\right) \qquad [12]$$

The rule of thumb for utility score is that if it is positive, then street food vendors will gain more benefits from the regulatory scenario in question (Ryan, *et. al.,* 2001). Where utility score is zero or negative, vendors are respectively unaffected or made worse-off by the increments in terms of the regulatory scenario. Regulatory scenarios are characterised by siting (Zone), Registration and licensing (R n L), codes of practices (CP), taxation (TX) and training (TR).

Table 1: Utility score calculation

Regulatory	Coefficient	Status-quo	Alt A	Aspect	Status-quo	Alt B	Aspect

attribute		codes (0)	codes	score*	Codes (0)	codes	score
Zone	α_1	-1	0	AS_1	-1	1	BS_1
R n L	α_2	-1	1	AS_2	-1	-1	BS_2
CP	α_3	-1	-1	AS_3	-1	-1	BS_3
TX	α_4	0	5.5	AS_4	0	10	BS_4
TR	α_5	-1	0	AS_5	-1	1	BS_5
Total utility score for change to alt A ($U_{0\text{-}A}$)				$\sum_{i=1}^{5} AS_i$	Change to alt B ($U_{0\text{-}B}$)		$\sum_{i=1}^{5} BS_i$

*Attribute score (AS_i/BS_i) is computed as the product of the difference in attribute codes in the two (2) RSs and the parameter estimate of the attribute in the Conditional logit model i.e. (0-A/b) $\times\alpha_i$ for *Zone*.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Study Area

The study took place in urban Kumasi in the Ashanti Region, the operational area of the Kumasi Metropolitan Assembly (KMA). The essence was to ensure that the study benefits from existing knowledge on the large number of food vendors in the area. The metropolis' population accounts for a third (32.4%) of the region's population spread over an area of 254km^2 (77% of which is planned) (KMA, 2006). About 86% of the working population is employed. A formal sector engaged in large scale operations is paralleled by an informal sector comprising of thousands of workshops and enterprises. Its strategic location makes it a major commercial centre with all major trade routes converging on it. City planners allocated only 2.4% of the area for commercial activity mostly at the centre of the metropolis (KMA, 2006).

Notable economic issues are high immigration and a virtually non-existent agricultural (urban) sector (employing 5% of working populace). The manufacturing/industrial sector (employing 24% of the active labour) is dominated by wood/metal processing, construction, weaving, carving/ pottery and brewery/beverage processing. The iconic Kumasi Central Market, Kejetia Lorry Park and 28 other satellite markets have been integrated into a system on which trade and commerce thrives and employs 71% of employable populace. Massive street trade activity takes place in and around the Central Business District (KMA, 2006).

The Ghana Traditional Caterers Association, Freedom Fast Food Association, United Petty Traders Association and The Kumasi Royal Traders' Association are among the few active street trader associations. Though about 15000-20000 certificates were likely to be issue in

mass health screening exercise in 2012 across the then 10 Sub-metros of KMA, the Assembly does not know vendor population. Each Sub-metro has resident representatives of the EHSU, Revenue Collection, BOP Unit and other units of the Metropolitan Assembly.

Notable poor and migrant communities Aboabo No. 1 and 2, Sawaba, Ayigya Zongo, Asawasi, Yalwa, Moshie Zongo, Old Town, Dichemso, Apatrapa, Dompoase, Sokoban, Daban, Kaase, Anwomaso, Nsenie and Ayeduase, among others.

3.2 Population, sample size and sampling

Vendors of processed maize (kenkey and banku), rice[1] and fufu sellers in the study area were the targeted population for the survey. This was on the basis perceived health risk, volume traded and consumer assessments of importance were considered in this selection as revealed by a FRI-CSIR study. These groups are therefore a more representative group of street food traders.

The documented figure of vendor population 7964 from the medical screening records across the 10 Sub-Metros, as contained in the most recent Annual Report of the ESHU of KMA was used. At a confidence level of 95% and a ±5 acceptable margin of error, the sample size (s) was determined as 367 following the relation below by Krejcie & Morgan, (1970)

$$s = \left[\frac{X^2 NP(1-P)}{d^2(N-1) + X^2 P(1-P)}\right]$$

Where

s = required sample size, X^2= the table value of chi-square for 1 degree of freedom at the desired confidence level (3.841), N = the population size, P = the population proportion

[1] Earlier studies considered waakye sellers but in the face of the emerged ubiquity of check-check joints, rice is considered in order to rope in all major processed rice products sold on the streets.

(assumed to be 0.50 since this would provide the maximum Sample size) and d = the degree of accuracy expressed as a proportion (0.05).

Based on visibility of street food trade activity as revealed by certified food handler population distribution in Table 2, all nine (9) sub-metros with data were targeted for data collection. However, only 309 vendors whose number was almost uniformly across 8 sub-metros were used in analysis. The Kwadaso sub-metro most costly in terms of travel time, transport fares and personnel effort and hence had only a few respondents.

At the point of sampling, all points of street food vendor clustering were targeted within all populous communities in each sub-metro to include non-medically certified food handlers. Within a given cluster, having accidently sampled the first vendor a systematic selection of every third vendor was followed till the cluster is exhausted. Table 2, shows the number of vendors sampled within each Sub-metro.

Table 2: Medical screening of street food vendors by Sub-Metros (2011)

Sub-metros of KMA	**Screened Street Food Vendors** (from ESD-KMA, Annual report, 2011)	**Sample Size**
1. Bantama	1000	34
2. Suame	1171	48
3. Asokwa	643	34
4. Subin	1381	48
5. Manhyia	534	38
6. Tafo	313	39
7. Nyieaso	No screening	**
8. Kwadaso	1109	**
9. Asawase	293	36
10. Oforikrom	1250	32
Total	**7694**	**309**

Source: ESD-KMA, Annual report (2011)

3.3 Type, sources and methods of data collection

Secondary data on food handler population was sourced from the EHSU-KMA to aid sampling. A 10 day reconnaissance survey in the form of an industrial attachment (with Suame Sub-Metro of EHSU-KMA) was used to enable researcher learn first-hand about practical street food regulation.

Primary data obtained from street food vendors was used in most of the analytical processes. A cross section of street food vendors were studied using three approaches in data collection. A covert observation method was used to observe actual practices of street food vendors in food handling, eliminating observer effect. A checklist of 23 codes of practices food handling (From FSO, HACCP and inspections guide of the EHSU in Ghana) was used to measure evidence of partial, full or con-compliance to food safety regulations on a semantic differential scale ranging from 0-1 (0-100%). Six (6) indicators for medical certification, five (5) for site regulations, regulation and three (3) for tax regulations were used for the respective regulations during interviews. Some indicators are measured based on presence or absence of the indicator.

Questionnaire administration followed to unravel enterprise specific factors, awareness, perceptions of regulation and enforcement mechanism an on aspects of compliance, efficiency and non-compliance costs of all regulations. The instrument also includes the choice experiment where 16 alternative (see

Appendix 5) choice sets were presented to vendor to make a choice.

Perceptions are measured as scores on 5 point Likert-scales ranging from strongly disagree (1) to strongly agree (5) for a series of positive statements about the various aspects of regulation.

3.5.1 Data collection for preference for regulatory scenarios

Attribute selection was based on five (5) common regulatory benchmarks uncovered from literature review and refined during reconnaissance survey via participant observation and discussion with regulatory officials and SFVs. Alternative scenarios were proposed by varying benchmarks (3 different levels each) suggesting improvements in operating environment. Table 3 describes the attributes/benchmarks of regulation and assigns levels to correspond with neutral (status quo, level 1), better (level 2) and excellent (level 3) regulatory regimes.

Table 3: Attribute levels and descriptions

Attribute	Description of regulatory attributes	Attribute Levels
Zoning (Zn)	Access to allocated or developed public place	Level 1: No zone Level 2: Zoned urban space Level 3: Zone urban space improved facilities provided
Registration and licensing (RL)	Completion of health certification processes with renewal based on compliance and at vendors own cost.	Level 1: Registration at will Level 2: Annual renewal Level 3: Semi-annual renewal
Training (TR)	Proxy for professional knowledge of handling food and business management	Level 1: Training at will Level 2: Food handling only Level 3: Safe food an and business management
Compliance to codes of practice (CP)	Compliance with Codex Alimentarius Commission's codes to secure safe foods on the street (HACCP and FSOs)	Level 1: No hygiene consideration Level 2: Only person and site hygiene Level 3: Hygiene for personal, site and all processes
Taxation (TX)	Payments similar to metropolitan toll similar to levies paid by other traders open air markets/zoned markets/sites with improved facilities	Level 1: No payments Level 2: GHC 5.5 daily (like other traders) Level 3: GHC 10.0, (higher).

Source: Author (2014)

Levels of attribute combine into profiles/alternatives. These are paired up into choice sets using a fold-over approach and presented as a forced choice. The response mechanism is thus binary, that is SFT is possible only under the stated regulatory regimes. The choice sets were constructed using orthogonal design feature of SPSS 21.0. An unlabelled design is elected and a fractional factorial design is used to reduce the number of choice sets to 16 (presented in Appendix 5) from a full factorial design (3^5=243). One typical choice is presented as follows;

Suppose you could choose regulatory options I or II, indicate the one you will choose at the bottom of Table 4 below by a placing a check mark in space provided.

Table 4: A typical choice set

Option 1	Feature/Attribute	Option II
Zone	**Zoning**	Zone with facilities
Register with annual renewal of license	**Registration and licensing**	Register with semi-annual renewal
Food handling related	**Training**	Food handling and business operations
Personal and site hygiene	**Adherence to codes of practice**	Personal, site as well as controlling operations
Equivalent to other stall owners (GHC 5.5)	**Taxation**	Higher than paid for stalls elsewhere (GHC 10.0)
I prefer option I [ ]		I prefer option II [ ]

3.6 Empirical work; data description and analysis

3.6.1 Test of hypotheses

Hypothesis one is tested via percentages of summated scores from likert scale analysis of perceptions. The 2nd and 3rd hypotheses are tested using paired sample t-test for difference between regulatory costs and independent sample t-test for compliance cost and vendor characteristics, performance and regulatory effort. Marginal analysis of Tobit model tests the

5th hypothesis. Mean WTP for regulatory attributes and predicted probabilities/ WTP estimates for regulatory scenarios following conditional logit model are used to test hypotheses 5 and 6.

3.6.2 Measurement of compliance cost

Income and expenditure statement approach with a focus on compliance cost was adopted Average of mean compliance costs (sum of time and direct costs) of regulated activities is summed to provide estimates for various aspects of regulation and aggregated into regulatory compliance cost. Regulated activities include medical certification, siting/operations permits, taxation, food safety and training among others. Compliance cost includes money value of time used in compliance to aspect of regulation valued at hourly wage of the particular trader. Conversions to annual (or daily) cost are based on 6 working days per week for vendors (312 days/annum) and 5 working days for officials of formal regulatory institutions (260 days/annum). Computation of time cost of regulation is based on hourly wage computed from daily operating profit of SFEs; where operating profit is the difference between total revenue and total operating cost (i.e. sum cost of labour, services (waste, water, electricity etc.) and material cost).

Differences between time and money costs of changes and hold-ups in regulatory processes are measured and compared via a paired sample t-test. A series of independent sample t-tests were also used to assess how compliance cost relates with SFE features, performance indicators and regulatory effort. Enterprise were categorised based on firm attributes and performance indicators relevant to the study.

Table 5 below displays description of variables employed in categorisation of SFEs and testing of the hypothesized relationships. Whereas some indicators or features are discrete variables, continuous variables are categorised into two classes using the mean as the point of division.

Table 5: Description of variable classes

Variable	Operational Definition	Measurement/Categorization
Enterprise Features		
Duration of trade	Number of hours worked daily	Greater than mean (9.37)=1 Less than or equal to mean =0
Nature of food sold	Whether food is light or bulky	Bulky (Fufu, kenkey and banku)=0, All rice based food =1
Span of services	Range of services provided by street food vendor to the clients	Food sales only=0 Food sale and dining services=1
Type to structure	Whether trade is conducted in a structure that ensures food safety	Undeveloped (Head and table top) =0, Developed (Fixed/ Semi fixed)=1
Trade site location	Location of processing and trade activities relative to roads and sanitary sites	Trading at a prohibited area=0 Trading at a permitted area=1
Enterprise performance indicators		
Enterprise size	Size of the labour force for the enterprise (number of food handlers)	Three (4) or less people =0 Above 4 handlers=1
Cost of daily operations	Amount of money invested per cycle of operation (Gh¢)	Mean daily cost (Gh¢282) or less =0 Above Mean daily cost=1
Daily financial returns	Financial returns per daily cost of operation (Gh¢)	Mean returns (Gh¢ 0.25) or less =0 Above mean returns=1
Improved equipment use	Equipment capable of enhancing food safety like freezer, LPG stove , Ice chest etc.	No improved equipment used=0, User of improved equipment=1
Regulatory Effort indicators		
Inspection	Frequency of visits	Less than or equal to mean (14)=0 Greater than mean=1
Advisory visits	Number of advisory visits	Less than or equal to mean (5)=0 Greater than mean=1
Detection	Number of detected infractions	Less than or equal to mean detections (3) =0 More than 3 detection=1
Informal enforcement	Most common operational type of enforcement mechanism	Punitive enforcement =0 Conciliatory enforcement =1
Knowledge of regulation	Awareness of regulations	Uninformed of regulations=0 Informed of regulations=1
Vendor associations	Membership associations	Member of vendor association=1 Otherwise =0

Source: Author (2014)

3.6.3 Determinants of extent of compliance to food safety regulation

Extent of compliance to food safety regulation was measured as gap between standard and actual practice on 23 codes of practice. Scores on codes were between zero and one (0-100%) on a semantic differential scale and summed into an aggregated. The nature of predictors of extent of compliance to food safety is described in the Table 6 below.

Table 6: Determinants of extent of compliance

Variable	Description of variable	*Expected sign*
A. Regulatory environment		
CRI	Cost of transport, time and fees for training (GH¢)	-
TIME	Time taken by regulators to reach vending premises (Minutes)	+
I_3PAR	Strength of 3rd parties (yes=1, no=0)	-
H_VIS	High visibility of violation (yes=1, no=0)	-
WTC	Time cost of work and work place regulation per unit profit (GH¢)	-
WDC	Direct cost of work and work place regulation per unit profit (GH¢)	
MCT	Time cost of medical certification regulation per unit profit (GH¢)	-
MDC	Direct cost of medical certification regulation per unit profit (GH¢)	-
B. Regulatory information		
F_MEANS	Source of regulatory information (1=Formal, 0=Informal)	+
I_PR	Vendor perception of officer's demeanour in the field (1=Positive, 0=Negative)	+
SKL	Perception of officers knowledge(1=Adequacy, 0=Otherwise)	+
N_AV	Number of advisory visits from the EHSU in a year	+
C. Vendor concerns and physical attributes		
CNR1	Fear of damaged public image (1=concerned 0=Otherwise)	+
Train	Perception of training in food handling	+
E_SIZE	*Number of people working within enterprise*	+
EDUC	*Number of years of formal education*	+
AGE	Age of street food vendor	+/-
EXP	*Number of years' of engagement in street food trade*	+
TRAIN	*Possession of professional training (1=yes, 0=otherwise)*	+
MEM	Member of street food vendors association (1=Yes, 0=Otherwise)	+
F_VIB	Return per daily cost of production in Gh¢	+
DUR	Length of time spent on in production and sales daily (Hours) Duration of trade activity	-
S_SERVE	Availability of a dining area Services provided(1=Yes, 0=Otherwise)	-
PRoad	Proximity to road (Beyond 92 m/100yrd from road=1, otherwise=0)	+
Dis	Distance from vending to site to nearest open drainage, garbage dump or toilet (metre)	+

Source: Author (2014)

3.6.4 Preference for regulatory scenarios

Effect coding was used to prepare choice data for econometric analysis using. Table 7 below shows the effect codes. RA is generic term for regulatory attribute (as defined in Table 3). B and E respectively represent better and excellent levels of the RA in question. Note that for effect codes, L (number of levels) minus one (L-1) is the number of variables created for each attribute.

Table 7: Effect codes for attributes in alternatives regulatory profiles

Attribute level (φ_i)	ZnE	ZnB	RLE	RLB	TRE	TRB	CPE	CPB	TXE	TXB
Excellent (E)	1	0	1	0	1	0	1	0	1	0
Better (B)	0	1	0	1	0	1	0	1	0	1
Neutral (N)	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1

Source: Author (2014)

Table 8 describes enterprise and regulatory environment factors that influence response to regulation that were include in the conditional logit model.

Table 8: Description of SFE specific and socioeconomic attributes

Firm specific Attribute (X_i)	Description
Enterprise Size (E_SIZE)	Number of workers people engaged in the street food trade
Mobility of operations (STR)	Relative mobility of the enterprise as evidenced by head top, table top, temporal wooden or permanent wooden or walled structure; 1=developed structure, 0=head/table top
Viability of street food enterprise (VIB)	Return per daily cost of production (Gh¢)
Nature of food sold (FDN)	Dummy variable capturing kenkey, banku and fufu (bulky food=0) and plain rice, jollof, check-check and waakye (light food=1)
Membership of street food vendor association (MEM)	Dummy with 1=Member 0=Otherwise
Knowledge of influential third parties(3PAR)	Knowledge or access to persons capable of overturning punitive regulatory action. Dummy variable:1=yes 0=no
Frequency of advisory visits (N_AV)	Number of visits received from regulators that more advisory than infections related per year
Visibility of violations (VIS)	Perception of widespread violation of regulations among other vendors. Dummy with =1 if widespread, 0= otherwise
Source of regulatory information (F_MEANS)	Means via which regulatory information is received. Dummy with 1=Formal source 2=Other sources
Negative influence of third parties (I_3PARS)	Knowledge of third parties capable of overturning formal regulatory action (yes=1, no=0)
Cost of compliance (CREG)	Total money and time expenditure in compliance to regulation

Source: Author (2014)

CHAPTER FOUR

RESULTS AND DISCUSSION

4.0 Descriptive analysis

4.1.1 Profile of street food vendors in Kumasi Metropolis

Descriptive statistics of socioeconomic attributes of street food vendors in the Kumasi Metropolis are displayed in Table 9 and 10. Seven (7) food types, categorised into light and bulky foods were identified in seven (7) possible vending locations.

Table 9: SFV distribution by food sold and vending site

Location of vending site	Type of food sold							
	Light Food (N=162)				**Bulky food (N=147)**			
	Jollof	**Plain**	**Fried**	**Waakye**	**Kenkey**	**Banku**	**Fufu**	**Total**
Commercial street	3	9	18	10	13	16	14	**83**
Street in residential area	4	24	11	7	3	29	0	**78**
Within a residential area	2	12	1	3	9	2	5	**34**
Near /within garages	1	6	0	5	2	15	0	**29**
Near schools	0	5	1	1	0	2	0	**9**
Near community markets	1	9	1	0	4	7	6	**28**
Near or within a lorry park/terminal/bus stop	4	6	6	12	10	1	9	**48**
Total	**15**	**71**	**38**	**38**	**41**	**72**	**34**	**309**

Source: Field Survey (2014)

Plain rice and banku (about 25% each) were the most commonly sold and the sides of streets (commercial (26.9%) or residential (25.2%)) were the commonest vending sites used by about

52% of SFVs. Vending sites near schools were the least patronised and jollof, the least sold food. Most fufu vendors (41%) located along commercial streets.

From Table 10, about 69% of vendors adjudged their vending sites appropriate for trade whereas only 50% of vendors are located at places approved by the Metropolitan Assembly for such trade activity. Whereas only 20% of vendors are located beyond the 100 yard displacement-from-road regulation, as much as 72% of vendors are located beyond the 20 yard displacement-from-sanitary site regulation. This is expected as it is in line with doing the apparent things as reporting by Rheinländer et al., (2008). According to Etzold (2011) vendors locating at sites that clearly do not aid trade must be resource constrained and powerless. In terms of estimated distance, displacement from the nearest sanitary site (open drain or garbage dump) and road are respectively 71 metres and 60 metres. The respective standard deviations are 93 metres and 80 metres. This indicates wider variation in the distribution of enterprise location relative to both landmarks but much variable relative to sanitary sites.

Street food vendors operated mainly from a relatively fixed (43%) or slightly mobile (41%) vending structure. A total of 16% of vendors operated from a fully fixed/walled structure (9.7%) or as mobile vendors (6%). Up to 45% of SFVs had access to electricity for lighting purposes at trade site and 62% used at least one of the following improved equipment; fridge, gas cookers and ice chest. These findings are consistent with Rheinländer, et.al., (2008), Fellows and Hilmi, (2012) and Mensah, et al., (2002) who also reported high presence of crude/simple structures, absence of facilities and rudimentary utensils in use among food vendors in most countries.

About 69% enterprises were managed by an owner with 3 employees whereas 6% were operated by owners alone. About 66% of owners had attended at least a workshop/a training session. Trade activity lasted between 4 and 17 hours per day.

Table 10: Descriptive statistics of physical attributes of SFEs

Description of variable	**N**	**Mean**	**SD**
Distance from vending to site to nearest road (metre)	309	59.57	79.90
Distance from vending to site to nearest open drainage/garbage dump (metre)	309	71.03	93.36
Age of street food vendor	309	38.63	7.33
Number of years in street food trade	*309*	*8.36*	*7.07*
Return per daily cost of production (Gh¢)	309	0.24	0.23
Daily duration of trade activity (Hours)	309	9.37	2.91
Number of people within enterprise	*309*	*3.67*	*1.86*
Number of years of formal education	*230*	*9.17*	*2.63*
Perceived suitability of site (yes=1, no=0)	309	0.69	
Located at approved site (yes=1, no=0)	309	0.50	
Proximity to road (Beyond 92 m/100yrd from road=1, otherwise=0)	309	0.27	
Proximity to sanitation site (Beyond18 m/20yrd from site =1, otherwise=0)	309	0.72	
Presence of improved facilities and equipment (yes=1, no=0)	309	0.62	
Use of electricity on site/in vending activities (yes=1, no=0)	309	0.45	
Professionally trained (1=yes, 0=no)	309	0.66	
Vendor association member (1=Yes,0=No)	309	0.16	
Dining services provided (1=Yes, 0=No)	309	0.82	
Enterprise size categories	**N**	**%**	
Owner alone	20	6.47	
Owner with 1 to 3 workers	214	69.3	
Owner with 5 to 7 workers	57	18.4	
Owner with more than 7 workers	18	5.83	
Level of education			

	Primary	36	15.65
	Basic	121	52.61
	Above Basic	73	31.74
Nature of vending structure			
	Very Mobile (head load)	19	6.1
	Slightly mobile (Table top)	127	41.1
	Relatively fixed (Temporal/Wooden enclosure)	133	43
	Fixed or immobile (Completely walled with cubicles)	30	9.7

Source: Field Survey (2014)

On the average, SFEs operate for about 9 hours a day with a majority (82%) providing dining service to patrons. These enterprises earned on average GH¢ 0.24 daily on each cedi used in daily production. Owners of SFEs were mostly non-members of vendor associations (84%) with average age and experience of 39 years and 8 years respectively with the latter being more variable.

A larger proportion of street food vendors, (0.74) were found to have had some formal education. Table 10 shows that such vendors had been in school for a time period ranging between 2 and 17 year with an average of 9 years (basic education). The frequency distribution following indicates that 53% of vendors had either been to or completed Middle / Junior High (Secondary) school. Low level of education among SFVs as reported by Cohen (1984), Tinker (1997), FAO (2005) Fairman & Yapp (2004); and Tomlins (2000) is thus confirmed. But findings on limited number of vendors having professional/food handling training by same authors is contrasted due to the manner in which a day's workshop was religiously patronised.

4.1.2 Regulatory environment

The existing regulatory space as defined by access to quality regulatory information, enforcement activity and summary of cost of compliance is presented in Table 11 and 12. Beside a very popular one day workshop for SFVs, only 24% of vendors accessed regulatory information from formal sources only. SFVs reported about 14 visits from food safety regulators in the past year of which close to a third were for advisory purposes.

Table 11: Descriptive statistics of regulatory information factors

Description of variable	N	Mean	SD
Number of advisory visits from the ESD in a year	177	4.59	5.77
Number of visits from the ESI in a year	292	14.23	18.03
Source of regulatory information (1=Formal, 0=Informal)	309	0.24	
Vendor perception of officer's demeanour (1=Positive, 0=Negative)	309	0.85	
Perception of officers knowledge (1=Adequacy, 0=Otherwise)	309	0.83	
Categories of relevance of information	N	%	
Ability to prevent further infraction	95	30.7	
Inability to prevent further infractions	98	31.7	
Received no regulatory information	116	37.5	

Source: Field Survey (2014)

Whereas 292 (94%) of vendors received at least a visit of any kind from the regulators, only 177 (57%) received any kind of advisory visits within the year. This is translated into one inspection visit per month and one advisory visit per trimester. Therefore, whereas, inspections may enhance access to information as (Higham & Davenport, 2010), calls the regulator attention to violators (Fairman & Yapp, 2004) and increased risk of detection (Gupta & Saksena, 2002) and hence incentivises street food enterprises to comply, it is found to be limited in the Kumasi metropolis. The range for both inspections (181) and advisory visits (50)

is so wide with implication that regulatory effort is heaped on a few vendors. A majority of vendors (at least 83%) perceive food control officers as having adequate knowledge of their roles and adjudged demeanour of regulatory officers/inspectors as positive.

As a consequence, information is mainly sourced from secondary sources by 76% of vendors bringing its quality into question (Okello-Obura, et al., 2007). Accordingly, only 49.2% of vendors receiving reularoty information adjudge as being able to aid preventing further infractions and hence, useful.

From Table 12 an estimate of the amount of average time a regulator takes to reach vending premises is 28.00 minutes though can be as low as 1 minute or as high as an hour. Displacement to regulator affects compliance in terms of access to information and time to cover-up infractions in case an inspection is attempted.

Only 80 (26%) of street food vendors reported having been sanctioned or corrected by field inspectors between 1 and 6 times in the past year with an average of 2 corrections. About 19% of all vendors or 73% of corrected vendors were offered a grace period to correct detected infraction. The length of this period averaged nearly 5 working days. The strength of third parties including local and traditional authorities and leadership of vendor associations is reported to be effective in overturning actions of regulators by 26% of all vendors or 13% of corrected vendors. In all, 34% of the cautioned vendors reported that the management of infraction is more conciliatory than punitive. Most food control officers (63%) deal fairly with vendors when infractions were detected. Since most vendors (76%) report that food safety regulations were not difficult to implement, the extent of visibility of breaches was evaluated as low by 51% and high by 30% of all vendors.

Thus few responses are forthcoming from vendors concerning the management of infractions. Responses on the mechanism, fairness, and grace periods seem relatively homogenous whereas those on visibility of breaches are quite varied.

Table 12: Descriptive statistics of the regulatory environment

Description of variable	N	Mean	SD
Cost of transport, time and fees for training (GH¢)	202	21.48	7.70
Time taken by regulators to reach vending premises (Minutes)	309	27.65	13.19
Number of cautions/sanctions received from regulators	80	3.11	1.56
Length of grace period (days)	80	5.61	6.17
Direct cost of work and work place regulation (Gh¢)	164	121.77	72.56
Time cost of work and work place regulation (Gh¢)	294	878.41	1349.75
Total cost of work and work place regulation (Gh¢)	294	946.34	1388.89
Direct cost of Medical Certification regulation (Gh¢)	278	72.42	56.77
Time cost of Medical Certification regulation (Gh¢)	276	39.31	104.06
Total cost of Medical Certification regulation (Gh¢)	278	111.45	146.44
Direct cost of Food Safety Regulations (Gh¢)	288	139.25	102.86
Time cost of Food Safety Regulations (Gh¢)	301	894.03	1370.62
Total cost of Food Safety Regulations (Gh¢)	301	1027.27	1419.73
Presence of strong 3rd parties (yes=1, no=0)	309	0.26	
Conciliatory enforcement methods (yes=1, no=0)	81	0.34	
Difficulty in putting regulations to practice (yes=1, no=0)]	309	0.24	
Perception of Equal treatment for breaches (1=Fair, 0=Otherwise)	309	0.63	
Presence of Grace periods before actions (yes=1, no=0)	309	0.19	
Spread of infraction with Safe food handling regulation (categorical)			
Difficult to notice (yes=1, no=0)] Low visibility	309	0.51	
Hidden by vendors(yes=1, no=0) Medium Visibility	309	0.19	
Violation Seen all over (yes=1, no=0) High visibility	309	0.30	

Source: Field Survey (2014)

Adoption of grace period laws (PPRC, 2004), frequency of interactions (Gupta & Saksena, 2002), matching breaches and punishments and fairness in the treatment of misconduct (Amodu, 2008; Mitullah, 2004) are regulatory incentives that can influence compliance.

Grace period laws concentrate limited resources on major violations. Minor infractions are treated with notices to comply or of violation while a time period is allowed for the violator to come to compliance. The approach is necessary because per the CPM, small food firms do not notice noncompliance until they have been told so (Fairman & Yapp, 2004).

Cost of regulatory information is an annual one-off expenditure in a year among street food vendors. Up to 202 (65%) street food vendors reported costs for regulatory information which averages GH¢ 22.00 for 2013. The mean sum of out-of-pocket and time cost of compliance to food safety regulation (FSR) was about GH¢1000.00 per annum. It is however, very variable ranging from less than a cedi to about GH¢10,000.00 per annum across the metropolis. Compliance cost to FSR was dominated by time cost of compliance. Work and work place regulations had a higher mean time cost of compliance (GH¢878.00) relative to medical certification (GH¢39.00). The total average compliance cost to work regulations was about GH¢946.00 per annum whereas that of medical certification regulation was GH¢110.00. Compliance cost to the latter regulation had a larger direct cost component (GH¢72.00). Higher costs of regulatory information and compliance have the tendency to soar up non-compliance all things being equal. Given the level of earnings among SFVs, information and compliance cost may be high enough to engender negotiated non-compliance. With SFV being private enterprise, profiteering motives implies that compliance behaviour is a cost-benefit analysis

between the cost of compliance and the probability of detection and its related cost of non-compliance (Amodu, 2008; Gupta & Saksena, 2002)

Table 13 displays percentage of vendors reported enforcement methods and their rate employment in field interactions with vendors. Mostly, punitive and conciliatory methods of regulatory enforcement were rare with at least 62% of SFVs reporting never encountering any and at most 25% reporting rare encounters. At most 10% of vendors reported education is often employed whiles 7% report punishments were always metered out to vendors in infractions. This observation is most likely the result of insufficient inspections. It is expected that in food safety regulations, cooperative strategy is the commonest, with frequency of inspection and enforcement tools to deploy being directly related to wilfulness of violation, likelihood of recurrence, past behaviour of agent and likely consequence of violation (Hawkins, 1984; Yapp & Fairman, 2006)

Table 13: Frequency of usage of regulatory enforcement methods

Enforcement method	Percentage of respondents reporting frequency of usage by regulatory officers			
	Never (%)	Rarely (%)	Often (%)	Always (%)
Advisory visits	66.4	24.7	7.2	1.7
Persuasions	79.0	16.2	4.0	0.9
Education	62.1	24.8	10.2	2.9
Prosecution threats	68.1	19.8	7.2	4.8
Punishment	77.4	11.6	4.1	6.9

Source: Field Survey (2014)

Table 14 shows multiple response frequency distribution of sources of regulatory information accessible to SFVs in the KMA area. Regulatory information was mainly obtained from workshops (92%) and TV/Radio programmes (62%).

Table 14: Sources of regulatory information

Source of information	N	%
Workshop and Seminars	282	91.2
Durbars by vendor associations	147	47.6
TV/Radio programmes	191	61.9
Friends, Co-Vendors, Neighbours and Own Knowledge	147	47.6
Other sources of regulatory information	125	40.5
Total number of vendors	309	

Source: Field Survey (2014)

Other major sources of information included the durbars by vendor associations and social relations (friends, colleagues and family members). Some vendors received information from KMA information vans. Activities broadly circulated via the latter means are mass medical screening exercises and a workshops organised by the GTCA in collaboration with KMA and FDA.

Table 15 below is a multiple response frequency distribution of vendor awareness of various aspects of regulation in SFT.

Less than 50% of street food vendors were aware of regulations pertaining to permit for siting (42%) or operations (33%). About 28% demonstrated awareness of prohibited zones/areas for street food trade. At least 97% SFVs were aware of regulations on medical certification, tax regulation and food handling.

Table 15: Multiple response frequencies for Awareness of Street Rood Trade Regulations

Aspect of street food trade regulation	Number of positive responses	Percentage (%) of positive responses
Awareness of the Existence of prohibited Zones	85	8.4
Awareness of operations permits	103	6.9
Awareness of trade site location permit	131	10.7
Awareness of Codes of practices in handling	299	24.4
Awareness of taxation regulations	303	24.7
Awareness of Medical certification	305	24.9
Total	**1226**	**100**

Source: Field Survey (2014)

Thus whereas most vendors reported limited awareness for permit and zoning regulations in consonance with the chorus of low levels of awareness mong SFVs in the literature (Cohen (1984); Tinker (1997); FAO (2005) ; Fairman & Yapp (2004);Tomlins (2000)), knowledge of tax, medical certification and food handling regulation abound amongst a majority of street food vendors.

Among SFVs, about half (50.8 %) were concerned that open confrontations with regulatory officers can cast a negative image on enterprise. Among such vendors, majority, 60 (38.2%), experienced or suspected the impact of such confrontations on enterprise performance is only moderate, whereas 29.3% perceive a high impact.

Table 16 describes perceived impact of detection of regulatory infractions on SFE patronage. Among SFVs, about half (50.8 %) were concerned that open confrontations with regulatory officers can cast a negative image on enterprise. Among such vendors, majority, 60 (38.2%),

experienced or suspected the impact of such confrontations on enterprise performance is only moderate, whereas 29.3% perceive a high impact.

Table 16: Descriptive statistics of vendor concerns and perceptions

Description of variable	**N**	**Mean**
Fear of damaged public image (1=concerned 0=Otherwise)	309	0. 51
Impact of reputational damage on trade	***N***	***%***
High	46	14.9
Medium	60	19.4
Low	51	16.5
Not applicable	152	49.2
Total	309	100.00

Source: Field Survey (2014)

Table 17 is a detail analysis of perceptions considering all items under all regulated aspects. It is a frequency distribution of responses to a series of 20 positive statement regarding five (5) aspects of SFT regulations on a 5 point Likert scale. Varying number of statements correspond to separate aspects of regulation. Results of item analysis precede summated scores for each aspect of regulation. The table displays number of vendors falling into discrete categories of perception including strongly disagree (1), disagree (2), neutral (3), agree (4) and strongly disagree (5).

Top five (5) statements with the most negative perceptions relate to taxation, ex-ante regulations and enforcement mechanism. About 90% of SFVs were either in strong disagreement or disagreement with knowledge of beneficial use of taxes and market tolls. This is the most widespread negative perception and is consistent with perception of an overbearing

regulatory environment without tangible benefits among street food vendors in Africa reported by Cohen, et al., (2000). Just like Ingram, et al., (2007) found among small firms across Sub-Saharan Africa, inability of vendors to tell primary or secondary benefits forthcoming from compliance to regulations stifles formalization. OECD (2012), Kagan (1994) and Battisti, et al., (2011) also report benefits of regulations drive perception and preference for regulations and Woodruff (2013) found that magnifying benefits increased compliance among 20-50% of small firms.

About ten (10) times as many vendors as those agreeing, strongly disagreed or disagreed with fairness of evictions for wrong location, inspections before commencement of trade, knowledge of timing of visits and security of tax as guaranteed by mode of collection. Vendors mainly disagreed (47% and 53%) that municipal assembly ensures start-up regulations on proper location and basic facility installation are enforced.

This situation is fostered by what Etzold, (2011) referred to appropriation of public spaces from below, explained as subtle encroachment by the powerless. This phenomenon if fostered where regulators look-on and make initiatives to control rather than prevent abuse of public space.

Most vendors (49% strongly disagreeing and 40% in disagreement) also perceived inspections to be ad-hoc, unplanned and without prior notices. This situation is desirable as it is needed to prevent vendors from reorganising to cover-up deliberate infractions.

Vendors disagreed with positive statements on focus of inspections, inspector demeanour, frequency of advisory, rationale of medical certification, acceptability of tax payment periods, periodic tax amount, regularity of training (business and food handling), and absence of bribes. The sentiments on these statements are not as unanimously strong as they were for the first five (5) statements.

Table 17: Distribution of vendor perception of regulatory process

Aspect of regulation		1*	2	3	4	5	**Total**	SD**	SA
A. Medical certification									
1. Timing of regulatory visits are always known	N	152	124	6	18	9	**309**	276	27
	%	49.2	40.1	1.9	5.8	2.9	**100**	89.3	8.7
2. Medical certification process is not cumbersome	N	103	69	15	82	40	**309**	172	122
	%	33.3	22.3	4.9	26.5	12.9	**100**	55.6	39.4
3. Medical certification process is transparent	N	34	87	17	105	66	**309**	121	171
	%	11	28.2	5.5	34	21.4	**100**	39.2	55.4
4. The benefits of certification are explained to vendors	N	79	98	20	55	57	**309**	177	112
	%	25.6	31.7	6.5	17.8	18.4	**100**	57.3	36.2
5. Medical certification prevents Harassment from officials	N	65	73	24	100	47	**309**	138	147
	%	21	23.6	7.8	32.4	15.2	**100**	44.6	47.6
B. **Trade Siting**									
6. Regulators ensures vending sites are far from dirty sites	N	117	145	22	23	2	**309**	262	25
	%	37.9	46.9	7.1	7.4	0.6	**100**	84.8	8
7. Facility installation is done before approval of sit	N	104	163	11	26	5	**309**	267	31
	%	33.7	52.8	3.6	8.4	1.6	**100**	86.5	10
8. Eviction of vendors badly located is fair	N	70	134	28	51	26	**309**	204	77
	%	22.7	43.4	9.1	16.5	8.4	**100**	66.1	24.9
C. Enforcement Mechanism									
9. Inspections focus on relevant issues	N	72	162	24	33	18	**309**	234	51
	%	23.3	52.4	7.8	10.7	5.8	**100**	75.7	16.5
10. Conduct and demeanour of inspectors is positive	N	70	107	45	48	39	**309**	177	87
	%	22.7	34.6	14.6	15.5	12.6	**100**	57.3	28.1
11. Cash or in-kind bribes are not demanded by inspectors	N	62	69	142	32	4	**309**	131	36
	%	20.1	22.3	46	10.4	1.3	**100**	42.4	11.7

12. Inspectors have adequate knowledge about their job	N	43	47	151	48	20	**309**	90	68
	%	13.9	15.2	48.9	15.5	6.5	**100**	29.1	22
13. Advisory visits are a popular activity	N	70	144	47	40	8	**309**	214	48
	%	22.7	46.6	15.2	12.9	2.6	**100**	69.3	15.5
D. **Training programmes**									
14. Trainings on hygiene are regularly organized	N	56	149	9	82	13	**309**	205	95
	%	18.1	48.2	2.9	26.5	4.2	**100**	66.3	30.7
15. Training on management of trade are regularly organized	N	57	133	49	55	15	**309**	190	70
	%	18.4	43	15.9	17.8	4.9	**100**	61.4	22.7
16. Trainings are very useful	N	37	93	56	101	22	**309**	130	123
	%	12	30.1	18.1	32.7	7.1	**100**	42.1	39.8
E. Tax regulation									
17. Amount paid as tax is appropriate for our trade	N	99	96	15	70	29	**309**	195	99
	%	32	31.1	4.9	22.7	9.4	**100**	63.1	32.1
18. Period over which tax is paid is acceptable	N	107	119	7	42	34	**309**	226	76
	%	34.6	38.5	2.3	13.6	11	**100**	73.1	24.6
19. Mode of revenue collection makes diversion impossible	N	126	120	38	17	8	**309**	246	25
	%	40.8	38.8	12.3	5.5	2.6	**100**	79.6	8.1
20. Taxes are used to our advantage	N	194	83	25	5	2	**309**	277	7
	%	62.8	26.9	8.1	1.6	0.6	**100**	89.7	2.2

*Likert scale codes with 1= Strongly disagree, 2= Disagree, 3=Neutral, 4=Agree, 5=Strongly disagree. **SA=Sum of agree (5 and 4) and SD=Sum of disagree (1 and 2)

Source: Field Survey (2014)

There are between 2-5 times as many vendors disagreeing relative to agreeing that there exist a congenial regulatory space based on these statements. Like ingram et al., (2007) and Sookram & Watson, (2008), small firms perceive tax rates to be too high. Sookram & Watson, (2008) also established that most tax evasion among small firms is tied to perception of increasing

burrden and decreasing risk of detection. According to Lund (1998), such high payments maybe perceived as officer extortion and unhelpful contacts with officials.

Street food vendors were almost equally split between agreement and disagreement with pilling of responses at neutral on drudgery in licence acquisition, inspector knowledge and usefulness of business and food handling trainings. It is not uncommon to find small enterprises being ambivalent or indifferent on perceptions of regulation. Battisti, et al., (2011) found that majority of SMEs remain ambivalent about regulations as they perceived regulation to make no difference in their trade due to perceptions that they are legal requirements that must be observed, they are important and that they do have merits and demerits. At least 32 % of street food vendors at least agreed on transparency in licence acquisition and ability of certification to offer protection from official harassment.

Table 18 shows summated results for vendor perceptions on the five (5) aspects of regulation. Summated scores are obtained as sum of responses for all statement relating to a specific aspect/parameter of SFT regulation. Labels for columns three to five maintain the meanings in Table 17 above. Percentages are computed based on total number of responses in the last column that table. Only 7% or 16% of SFVs respectively strongly agreed or just agreed that there exists a congenial regulatory space for food vending activity to thrive.

A disaggregated view of aspect of regulation in Table 18 reveals that SFVs in the Kumasi metropolis mainly disagreed with a positive dispensation in trade siting and tax regulations. Whereas there is no marked indication of strong agreement on positive regime on any aspects of regulation, a relatively high proportion at most perceived training (in food and trade management, 26%) and medical certification (23%) positive.

Table 18: Summated scores on aspects of SFT regulation

Aspect of regulation		1	2	3	4	5	Total
Medical certification (5 items)	N	433	451	82	360	219	1545
	%	28.03	29.19	5.31	23.30	14.17	100
Trade siting (3 items)	N	291	442	61	100	33	927
	%	31.39	47.68	6.58	10.79	3.56	100
Regulatory mechanism (6 items)	N	469	653	415	219	98	1854
	%	25.30	35.22	22.38	11.81	5.29	100
Training (3 items)	N	150	375	114	238	50	927
	%	16.18	40.45	12.30	25.67	5.39	100
Tax regulation (4 items)	N	526	418	85	134	73	1236
	%	42.56	33.82	6.88	10.84	5.91	100
All aspects (21 items)	N	1869	2339	757	1051	473	6489
	%	28.80	36.05	11.67	16.20	7.29	100

Source: Field Survey (2014)

For implementation mechanism, vendor perceptions were concentrated on disagreement (35%) but drifted towards neutral (22%) and strong disagreement (25%). Battisti, et al., (2011), Allinson, et al., (2008) and Kanninen, (2002) report widespread negative perceptions about regulations among small. The 1st hypotesis of this study is thus sustained as SFVs disagree on the existence of a congenial regulatory arena.

4.1.3 Prevalence and extent of compliance to SFT regulations

Four main SFT regulations were identified together is the additional demand of attending a day-long workshop on management and handling of food in the KMA area. For these regulations, number of complaint SFVs as well as those reporting time or financial losses for non-compliance is shown in the Table 19 below. It shows that permit regulations were the most frequently violated with about 63% of SFVs not complying. At least 61% of SFV complied other regulations.

Only a fraction of vendors in non-compliance, however, suffered a variety of consequences for such inabilities or decisions. In percentage terms, consequences were more prevalent among vendors in breach of medical certification (76%) and environmental and food hygiene (66%) regulations. These are regulation under the mandate of the same department of the Metropolitan Assembly. Negative consequences of regulatory infractions were experienced by 40% of SFVs in breach of tax regulations and 36% in breach of siting regulations.

Table 19: Compliance with SFT regulation

Compliance to regulation	Compliant SFVs		SFV in Non-Compliance		Punished for Non- Compliance	
	N	%	N	%	N	%
Trade location (Site) permits (TS)	115	37.2	194	62.8	70	36.1
Medical Certification (MC)	273	88.3	36	11.7	28	75.7
Taxation (TR)	205	66.3	104	33.7	81	39.5
Environmental and Food hygiene	187	60.5	122	39.5	80	65.6
Other regulatory demands (workshop)	203	65.7	106	34.3	***	***

Source: Field Survey (2014)

Table 20 displays consequences of non-compliance to SFT regulations. Time and money cost of these consequences are discussed under noncompliance cost in Table 21. Only 36% of vendors in non-compliance to siting permit regulations report consequences. Most of such vendors (24%) reported a brutal confrontation with officialdom and 21% lost produce (prepared food) or business asset or both. A separate 17% were able to enter 'negotiations/pleading/bribes' leading to retrieval of confiscated assets.

Due to non-compliances to permit regulations alone, SFVs lost asset/produce whose worth is between GH¢ 20.00 to about GH¢ 900.00 in the 2013 operations year. Cost of negotiations

averaged GH¢ 56.00 per annum. Unfair confrontation sessions lasted between 18 minutes and 6 hours, averaging 2.7 hours over the year; the money value of which is estimated as GH¢ 26.00.

Table 20: Distribution of consequences of non-compliance with street food trade regulations

Consequence of non-compliance	**Vendors suffering specified consequence for regulation**			
	Siting	**Medical cert**	**Hygiene**	**Taxation**
Loss produce or asset	40	**	**	**
Negotiations/settlement	33	**	32	**
Remedial action	**	28	75	**
Harassment/rudely confronted	46	28	76	81
Lost sales	**	**	**	81
Prosecution threats	40	28	76	81
Total number of SFVs out of total reporting consequences	**70**	**28**	**80**	**81**

Source: Field Survey (2014)

From 36 SFVs in non-compliance to medical certification regulation (in Table 19), 76% report costs for the situation. Threatened with prosecution, vendors took remedial action including "pleading" and putting up with unfair confrontation in the presence of their client. Such pleas' which could be equated to spot fines, negotiation costs or bribes, cost between GH¢ 5.00 and GH¢ 30.00 with a mean of GH¢ 18.00 for the year 2013 also presented in Table 21. Total time for remedial action and confrontation regarding medical certification regulation ranges from 1 hours to 6 hours for the year. The average cost of which is about GH¢ 27.00 in terms of lost profits.

About 80 (66%) vendors breaching codes of food handling suffered one or more consequences. These include unfair treatment, correction of infraction over a grace period and time and money

cost in pleading. Time cost of the above ranged from GH¢ 1.00 to GH¢ 84.00 a year. Total out-of-pocket cost mainly for "negotiations" and acquisition of material, equipment and facility construction to right the wrong averages GH¢43.00 though with a wide range of GH¢ 135.00. The number of vendors experiencing rude confrontation by environmental sanitation officers (76) almost equal the number that incurred material, equipment or labour cost to right the infraction (75). Up to 40% of vendors in non-compliance to hygiene regulation entered some form of negotiation to escape prosecution or threats of same.

Vendors who never paid anything and those paying below the annual tax sum are considered to be in non-compliance. About 40% of vendors in non-compliance to tax regulation witnessed rude treatments, which in extreme case involves locking of premises. Such altercations last between 1 and 6 hours per annum for a typical vendor. The estimated money value of these encounters averages GH¢ 26.00 with a low of GH¢ 8.50 and a high of GH¢ 72.00. Average lost sales for the year due to altercations with tax regulators occasioned either by non-payment or under-payment of taxes reaches a mean of GH¢50.00 per annum in 2013.

Kagan (1994), Battisti, et al., (2011) and OECD (2012) report that irritating experiences, intensity or frequency of regulatory enforcement, cost of compliance, decide and shape enterprise perception of regulation.

Contrary to the views of Higham & Davenport (2010) that inspections provide small firms opportunity to improve perception by learning and creates preference for regulations, SFV experiences point to elsewhere. With rampant punitive enforcement, preference and perception of regulation cannot be positive. These consequences and payments are the reasons for which Lund, (1998) reported that contacts with officialdom is unhelpful. The findings here also

confirm Cohen, et al, (2000) who report pperceptions of officer extortion and payment of other unofficial fees and protection money.

Table 21: Descriptive statistics for cost of consequences of non-compliance

Consequence	N	Mean	SD
Lost asset due to absence of permit	40	278.93	276.19
Cost Negotiations due to permits	33	55.70	50.83
Time used confrontations related to siting regulations	46	2.65	8.83
Time cost of confrontations due to breaches of siting regulations	46	25.52	8.65
Cost of remedial actions due to breaches of medical certification	28	18.18	7.83
Time used in remedial actions relating to medical certification	28	1.37	82.83
Time used confrontations related to medical certification	28	1.41	56.52
Total time used lost due to breaches of medical certification regulations	28	2.79	6.41
Time cost of all breaches to medical certification issues	28	26.53	8.65
Lost sales due to confrontation with tax/revenue collectors	81	73.92	7.05
Time used in confrontations related to tax payments	81	2.46	8.52
Time cost of confrontations related to tax payments	81	26.39	18.87
Time used in confrontations related to hygiene regulations	76	0.96	4.83
Time used in remedial actions due to breaches of hygiene regulations	75	1.92	4.90
Cost of remedial actions due to breaches of hygiene regulations	68	42.63	36.92
Total time lost due to breaches of hygiene regulations	80	2.71	4.66
Cost of lost time due to breaches of hygiene regulations	80	27.53	17.24

Source: Field Survey (2014)

Table 22 to 26 display descriptive statistics for extent of compliance with main regulations identified. Descriptive statistics for the twenty three (23) codes of practice that capture extent of compliance to FSR are displayed in Table 22 in descending order of compliance based on mean scores.

Table 22: Descriptive statistics for code of food safety and extent of compliance

	Code of food safety regulation	N	Mean	SD
1	Raw materials acquired first are used first	309	**0.78**	0.28
2	Sellers ensure First In First Out (FIFO) in serving	309	**0.64**	0.33
3	All waste are kept away from the dining area	309	**0.63**	0.31
4	Storage area is protected from all sort of dirt	309	**0.57**	0.34
5	Cooking is done using the same procedure	309	**0.52**	0.39
6	High quality raw material always used	309	0.49	0.25
7	Storage area is protected from rodents and insects	309	0.49	0.34
8	Separation between Raw material and cooked food	309	0.49	0.39
9	Washing of equipment prior to sharing	309	0.47	0.31
10	Sellers prevent contacting unclean utensils and water	309	0.47	0.33
11	Time of exposure and temperature loss is minimised	309	0.45	0.32
12	Select sellers/suppliers who prevent contamination	309	0.44	0.35
13	Food containers are always covered during sale	309	0.44	0.37
14	Cover raw material during transit from market	309	0.43	0.32
15	Cooks always wear aprons and head gears	309	0.42	0.36
16	Holds food in recommended containers during sales	309	0.41	0.34
17	Prevent over cooling by watching food temperature	309	0.39	0.36
18	Avoid the use of bare hands during preparation	309	0.38	0.36
19	Wash bowls with running water and keep flies away	309	**0.38**	0.38
20	Avoid the use of bare hands during food sales	309	**0.34**	0.31
21	Avoid sharing equipment among tasks	309	**0.34**	0.36
22	Keep unclean water and raw materials away at sales	309	**0.33**	0.33
23	Sellers always wear aprons and head gears	309	**0.30**	0.28
24	**Average compliance to SFR**	**309**	**0.44**	**0.15**

Source: Field Survey (2014)

Codes regarding the order of usage of raw material and sales of produce are the highest ranked with average compliance of 0.78 and 0.64. The next three practices most complied with include

keeping waste away from dining area (0.63), cleaning of storage (0.57) area and standardisation of the cooking procedure (0.49). The five (5) most abused codes of practices include use of protective clothes (0.30), seller separation from unclean water and material (0.33), prevention of cross contamination (0.34), handling food with bare hands during sales (0.34) , using running water in washing utensils.(0.38) and the use of bare hands in food preparation (0.38). These findings are consistent with those of McAthur (2007).

Practices with highest extent of compliance tend to be beneficial to vendors or easily detectable. Infractions are most prevalent for practices that are easily observed or are costly to implement. Overall, extent of compliance to codes f food handling is below average with a mean of 0.44 amongst the street food vendors.

For siting regulations, the presence or absence of some five (5) indicators are employed to measure extent of compliance. See Table 23.

Table 23: Descriptive statistics for extent of compliance to code of siting regulations

	Code of siting regulations	**N**	**Mean**	**SD**
1	Site proximity to sanitary sites	309	0.72	0.45
2	Same site is used for production and sale	309	0.56	0.50
3	Site is within prohibited area	309	0.50	0.5
4	Vendor possesses a permit for siting	309	0.37	0.48
5	Site proximity to road	309	0.27	0.45
6	**Location regulation**	**309**	**0.48**	**0.26**

Source: Field Survey (2014)

Vendors are required to set up trade infrastructure and operations beyond 92 m (100yards) from roads, but the practice emerged the most abused (mean score of 0.27). Locating without a prior

site permit is next most abused with a mean compliance score of 0.37. The mean score of the extent of compliance to siting relative to sanitary site (0.72) is the highest. Per regulation, a food establishment should be sited beyond 18m (20yards) from sanitary site. Regulations demand co-location of food production and food sales to make inspections easy. Compliance to this is above average as its mean score is 0.56. Roads in residential areas and some selected ones in the Central Business District (CBD) are declared prohibited areas. As many food vendors locating outside prohibited areas located within prohibited zones. In siting food establishments, street food vendors seem more considerate of factors with direct economic impacts. Similar research reports that these factors include increasing access to consumers (Solomon-Ayeh, et al., 2011), being perceived clean (Rheinländer, et al., 2008) and cutting down on cost of infrastructure (Mensah, et al., 2002). These reasons explain the high incidence of locating away from sanitary sites, close to road and use of the same site for production and sales of food.

Three indicators of taxation/market tolling regimes including evidence of tax/toll payment on site, tax payment situation (none, partial and full) and experience of unfair confrontations.

Table 24: Descriptive statistics for extent of compliance to codes of tax regulation

	Code of tax regulation	N	Mean	SD
1.	Evidence of payment	309	0.37	0.48
2.	Tax Situation	309	0.34	0.47
3.	Unfair confrontation	309	0.26	0.44
4.	**Tax**	**309**	**0.32**	**0.28**

Source: Field Survey (2014)

As shown in Table 24, evidence of tax payment had the largest mean of 0.37. Tax situation comes next with mean proportion of 0.34. Unfair confrontation is thought to be occasioned only

when vendor displays a penchant for non-compliance as Hawkins (1984) and Yapp & Fairman (2006) About 26% of vendors report such confrontation. On the whole, average extent of compliance to tax regulation is at a low of 0.32 consistent with Atawodi & Ojeka, (2012).

Table 25: Descriptive statistics for compliance to codes of medical certification regulation

	Code of medical certification regulation	N	Mean	SD
1.	Finds calls for medical screening acceptable	309	0.87	0.34
2.	Paid and went through Laboratory Test	309	0.85	0.35
3.	Made effort to obtain medical certification	309	0.46	0.50
4.	Possess medical certificate on site	309	0.32	0.47
5.	Proportion of workers with medical certification	309	0.24	0.36
6.	Ever had an unfair confrontation with officers	309	0.09	0.29
7.	**Medical certification**	**309**	**0.47**	**0.22**

Source: Field Survey (2014)

The elements labelled 1-6 in Table 25 are indicators of extent of SFE compliance to medical screening regulations. They represent reactions to the processes involved in obtaining medical certification.

Whereas 87% find the call to medical screening useful, 85% incurred the expenses necessary to undergo a laboratory test in the mass screening phase. Vendor desire to obtain certificates at a mass distribution session is demonstrated by a below average mean score (0.46) for obtaining the certificate after mass screening. Some 32% of vendors had medical certificates on site as dictated by regulation. Proportion of workers with medical certificates averaged 0.24. Only 9% of street food vendors encountered confrontation deemed unfair from officialdom. Overall compliance is relatively second only to location regulation. This finding is similar to Bickerdyke & Lattimore, (1997) and SBP (2008) that regulatory issues with one-off or periodic

costs such as registration and certification are frequently complied with at relatively higher levels of compliance.

A general overview of extent of compliance to SFT regulations is presented in Table 26. It summarise extent of compliance with all 4 regulations and proportions of SFVs falling in ordinal categories of extent of compliance respectively.

Table 26: Descriptive statistics for extent of Compliance to all components of SFT regulation

	Extent of Compliance to regulation	N	Mean	SD
1.	Location regulation	309	0.48	0.26
2.	Tax regulation	309	0.32	0.28
	Urban space regulation	**309**	**0.40**	**0.21**
3.	Food Handling Regulation	309	0.46	0.21
4.	Medical certification	309	0.47	0.22
	Food Safety Regulation (FSR)	**309**	**0.46**	**0.17**

Source: Field Survey (2014)

Tax regulation has the lowest degree of compliance (0.32) among street food vendors. Overall, compliance to siting/location (0.48), medical screening (0.47) and food handling codes (0.46) are in a uniform variation albeit below average. The mean score of the extent of compliance to food safety regulations (0.46) is higher compared to compliance to regulation on use of urban space (mean score of 0.37). The mean scores on both however, are below average.

4.2 Inferential analysis

4.2.1 Cost of regulations to street food traders in Kumasi metropolis

a) General overview

The tables in Appendices 1 to 3 display detailed elements of descriptive statistics of daily and annual costs of elements/activities relevant for computation of economic and regulatory cost in SFT. For taxation, 271 or 87% of vendors made monetary payments to regulators whereas 212 or 67% reported time cost. The majority of vendors reported time (89%) and money (90%) cost for medical certification regulation. Only 37% of SFVs incurred direct costs in obtaining a trade site whereas 35% reported time costs. Contrary to the nature of time costs though, distribution of money costs is relatively homogenous.

Total time cost for compliance to all regulations averaged GH¢ 900.00 with reference to the mean and GH¢ 210.00 at the median. Money expenditure on compliance on the other hand averaged about GH¢200.00 per annum. Almost 50% of the contribution to median compliance cost came from compliance to food hygiene regulation more especially so, its time cost. Average total compliance cost has a very wide range; the median is a better measure of centrality. Average compliance cost for all regulations in street food trade amounted to GH¢ 470.00 per annum in 2013. Detailed descriptive statistics for cash and time costs of compliance are presented in Appendices 3 and 4.

Table 27 is a financial statement for a typical vendor in the KMA area. Table 28 is a breakdown of out-of-pocket and opportunity cost of lost time incurred in complying with identified regulations in SFT. All figures reported are arithmetic means. Other descriptive statistics can be seen in Appendix 1.

b) Cost of compliance to street food trade regulations: Detailed view

Table 27: Financial statement for street food enterprise operations in 2013

Economic costs	Daily transactions	Extrapolation to annual transactions	
	Amount GH¢	**Days/year**	**Amount GH¢**
A. Total revenue (sales value of food)	**336.63**	**312**	**105027.24**
Direct operating cost			
Raw material	231.46	312	72215.75
Milling	3.64	312	1134.54
Water	1.97	312	613.18
Waste disposal	1.08	312	338.00
B. Total Direct operating cost	**236.86**	312	**73901.36**
C. Profit before indirect cost (A-B)	**99.76**	312	**31125.88**
Indirect cost			
Wages for Labour	18.93	312	5905.41
In-kind benefits to labour (food, housing, health)	13.97	312	4358.85
Depreciation of vending structure	0.17	312	54.23
Depreciation of tools and equipment	1.21	312	377.71
Cost of transport	4.30	312	1340.79
Cost of Fuel (Firewood and/or LPG)	10.63	312	3323.07
Cost of Electricity	0.66	312	204.77
D. Total indirect cost	**46.29**	312	**14442.86**
F. Profit before regulatory payments(C-D)	**53.47**	312	**16683.01**

Source: Field Survey (2014)

Street food vendors made an average daily revenue of GH¢ 337.00 from selling produce that cost a total of GH¢ 237.00 to produce considering raw material cost and service costs for water,

milling and waste disposal. A typical SFV then made a daily profit of about GH¢ 100.00 before any indirect cost was deducted.

With a total of GH¢ 46.00 deducted for cash and in-kind cost of labour, transport, fuel, electricity and depreciation of vending structure and tools, profits fell to about GH¢ 53.00 in the absence of all regulatory costs. From Table 28, however, 1.8% of profits was paid to various regulatory authorities in the form of hard cash on daily basis or GH¢ 250.00 per annum. A majority of this expense 42% (GH¢ 9.60/month or GH¢ 0.40/day) went into to actions in tune with compliance to food handling and environmental hygiene regulations. As much as 7.02% of daily profit is lost to activities relating to compliance to all regulations. About 91% (GH¢ 3.40 per day or GH¢ 875) emanates from hygiene regulations

a) Cost of non-compliance to SFT regulations: Detail view

Descriptive statistics of time lost to consequences of non-compliance are presented in Appendix 4. Average annual time used in dealing with confrontations, negotiations and remedial actions due to detected breaches falls between 2.4 and 2.7 hours per annum for all regulations in the trade. This finding reinforces inadequacy of regulatory effort.

Average daily and annual cost of non-compliance with SFT regulations are displayed in Table 29. Total money expenditure incurred by vendors due to inability or decision to act in contravention of regulations averages about GH¢2.0 per day or GH¢470 per annum. This is 3% of profits before regulatory deductions and 59% (GH¢1.07/day or GH¢ 280.00) accrued from financing/replacing assets lost/seized due to detected non-compliance.

Time expenditure of compliance (7.00%) is more expensive than non-compliance (1% or GH¢ 0.41/day or GH¢ 106.00 per year.

Table 28: Cost of compliance to regulations in SFT for year 2013

Regulatory costs	**Daily transactions**	**Extrapolation to annual transactions**	
Direct Regulatory Payments	**Amount GH¢**	**Days/annum**	**Amount GH¢**
Tax Payments	0.15	260	47.65
Medical certification	0.23	260	72.27
Permit (Kiosk License)	0.14	260	44.81
Environmental and food sanitation (purchases and/or repairs of tools, equipment, chemicals etc.) *requirement*	0.39	260	121.77
Workshop attendance (*Other Regulations)*	0.05	260	14.51
Total Direct Regulatory Payments	**0.96**	**260**	**301.02**
Direct Regulatory Payments as a percentage of profit after indirect cost	**1.80%**		
Profit after direct regulatory payments	**52.51**	**260**	**16381.99**
Indirect Regulatory Costs			
Tax Payments	0.09	260	22.48
Medical certification	0.15	260	39.31
Permit (Kiosk License)	0.05	260	13.87
Environmental and food sanitation	3.37	260	875.60
Workshop attendance (*Other Regulations)*	0.03	260	6.97
Total Indirect Regulatory Costs	**3.69**	**260**	**958.23**
Indirect Regulatory Costs as % of profit before indirect cost/before regulatory deductions	**7.02%**		
Profit After Indirect Regulatory payments	**48.28**		**15423.76**

Source: Field Survey (2014)

Average total non-compliance cost to all street food trade regulations is about GH¢ 577.2 per annum whereas compliances costs about GH¢ 1209.00 per annum (considering 260 possible regulated days per year). Non-compliance cost is thus only 48% of compliance cost in the street food trade in Kumasi.

Table 29: Non-compliance cost among street food vendors

A. Direct non-compliance cost	**GH¢ /day**	**GH¢ /year**
Lost asset (Site Permit regulations)	1.07	278.93
Negotiation Cost (Site Permit regulations)	0.21	55.70
Remedial Action Cost (Medical certification)	0.07	18.18
Negotiation and Remedial action cost (Hygiene)	0.16	42.63
Lost sales (Confrontation and remedial actions related to tax)	0.28	73.92
Total **direct** non-compliance cost	**1.81**	**469.35**
Direct Non-compliance costs as % of profit after indirect cost/ before regulatory deductions	**3.38% ≈3%**	**2.81% ≈3%**
B. **Indirect non-compliance cost among street food vendors**		
Permits for siting regulation	0.10	25.52
Medical Certification regulation	0.10	26.53
Food and environmental hygiene regulation	0.11	27.53
Tax regulation	0.10	26.39
Total average indirect non-compliance cost	**0.41**	**105.97**
Indirect non-compliance costs as % of profit after indirect cost	**0.762% ≈1%**	**0.635% ≈1%**

Source: Field Survey (2014)

b) Test of hypothesis: Regulatory costs

Table 30 below shows the results of a paired sample t-test for difference between mean time, direct and total cost of compliance and non–compliance. The research hypothesis of higher

compliance cost relative to non-compliance cost is sustained at 1% significance level for direct and total costs of regulation but rejected for money cost of regulation. The implication is that time and total costs of compliance to regulations in street food trade are significantly higher than corresponding non-compliance costs.

Table 30: Paired sample t-test for difference between total regulatory costs

	Paired Differences							
				95% CI Difference				
Paired Samples	Mean	Std. Dev.	Std. Error	Lower	Upper	t-stat	df	p-value
Direct Cost of non-compliance versus Direct cost of compliance	64.78	257.28	20.15	24.99	104.57	3.22	162	0.002
Time cost of compliance versus Time Cost of non-compliance	857.77	1316.17	100.36	659.67	1055.87	8.55	171	0.000
Total compliance cost versus Total non-compliances cost	923.59	1387.12	105.77	714.81	1132.37	8.73	171	0.000

Source: Field Survey (2014)

Johnson & Yawson (2000) report, permits for location, food safety, tax payments, licenses for/registration of business operation and health certification are indeed the regulations in SFT. The study confirms Alves & Graham (1995) that efficeincy of regulators in activities involved in compliance drive compliance cost. Reduced transport, communuication and paperworks for tax and site permit regulations reduced their complaince costs. As reported by Coolidge, et al., (2008), Yapp & Fairman, (2006) and Amodu (2008) increased visitation enhances regulator efficiency mainly by promoting the use of conciliatory enforcement approaches. In the process, administrative burden and time costs associated with regulations are brought down.

According to Kok & Balkaran (2014), as a survivalist's enterprise, SFVs often compromise appropriate hygiene practices to reduce cost. The relative size of compliance cost of FSR Kumasi SFV does not support this assertion. It seems rather that keeping-up appearance before customers as reported by Rheinländer, et.al., (2008) and Okojie & Isah, (2014) make vendors invest more in some aspects of food safety. The need to maintain a visually appeal makes food safety regulation more compelling and hence, more costly to comply with.

Coolidge, et al., (2008) as well as SBP (2004) and SBP (2008) report tax regulations as most burdensome based on empirical evidence from SMEs. The revelation from SFVs in Kumasi, however, points elsewhere as food safety regulation is the most costly.

4.2.2 Relationship between compliance cost and SFE features, performance and regulatory effort

Sections A, B and C of Table 31 respectively display summarized results of a series of independent sample t-tests of compliance cost categorised on a selections of representative variables for enterprise characteristics and performance as well as regulatory effort.

Changing SFE characteristics considered include type of food sold, daily duration of trade activity and provision of wider services (i.e. dining service in addition to production and sale of food). Other features include level of improvement of vending structure and use of approved vending site.

Cost of compliance behaved in no systematic pattern with increasing duration of trade activity, span of service and nature of food. Laryea's (2001) assertion of timing of SFT operation leading to different regulatory cost profiles is therefore not supported by this study. Though necessary to note that food sold and span of services may fix a vendor to one spot or imply costly processes in maintaining a favourable appearance, such cost differences did not seem too

different from those of other vendors. Timing of trade activity leading to escaping regulatory scrutiny is true where risk of detection and consequent cost are higher as Gupta & Saksena (2002) posited. Such will be the case with sufficient regulatory effort or enough inspections but the fact that most vendors receive just an inspections visit per month may explain the deviation.

Users of prohibited sites and developed structures, on the other hand, incurred compliance costs that are significantly higher at 1% significance level. Hypothesis 3 is therefore sustained. The study's findings are also supported by Mensah et al., (2002) and Fellows and Hilmi (2012) in terms of the evidence that usage of improved structures, facility and utensils add to compliance cost. The ability of relatively resourceful and powerful street food vendors access and use better public space for trade as well as use social networks to avoid some regulatory costs as Etzold (2011) reported is supported since users of prohibited sites also incurred higher compliance cost.

For enterprise performance, size,, daily operations cost, adoption of improve equipment and financial returns were used. The results of relevant t-test are presented in Section B of Table 31. Differences in compliance cost are significantly larger for larger street food enterprises using improved equipment at 1% and 5% α-levels respectively. Vendors producing with at most the mean daily production cost (GH¢282.00) and earning at most the average return per cost of operation (GH¢0.25) have compliance cost that are significantly higher at 1% and 5% α-levels respectively. All selected indicators of performance affect compliance cost.

Table 31: Independent sample t-test for compliance cost and vendor characteristics, performance and regulatory effort

VENDOR CATEGORIES	Mean diff	SE	95% CI of Difference		t-stat	df	p-value
			Lower	Upper			
A. Characteristics of SFE							
Prohibited **versus** Permitted sites	505.69	161.37	188.15	823.23	3.13	303	**0.0019**
Undeveloped **versus** developed structure	-483.71	159.62	-802.42	-164.99	-2.99	303	**0.0031**
Bulky **versus** light foods	-186.61	163.7	-508.73	135.52	-1.14	303	0.2552
Sales only **versus** sales and dining services	-316.97	212.43	-734.99	101.05	-1.49	303	0.1367
Mean ((9.4 hours) or less **versus** longer duration of trade	-171.55	164.61	-495.48	152.38	-1.04	303	0.2982
B. **Indicators of SFE performance**							
Mean (4 people) or smaller versus larger SFEs	-522.69	161.92	-841.32	-204.05	-3.22	303	**0.0014**
Non-users versus users of improved equipment	-426.03	167.06	-754.79	-97.28	-2.55	303	**0.0113**
SFV with mean daily production cost (GH¢ 282) or less versus higher	427.3	173.81	85.28	769.3	2.46	303	**0.0145**
Mean (GH¢ 0.25) or less returns to production cost versus higher	722.48	168.28	391.3	1053.6	4.29	303	**0.0**
C. **Elements of Regulatory effort**							

Mean (14 visits) regulatory visits or less versus more	-1004.79	456.67	-1903.43	-106.15	-2.20	303	**0.03**
Mean (5 visits) advisory visits or less versus more	288.21	165.85	-38.15	614.57	1.74	303	**0.08**
Mean (3 times) detections versus more	-798.20	289.93	-1368.70	-227.66	-2.75	303	**0.01**
Punitive versus Conciliatory enforcement methods	784.98	280.27	233.45	1336.51	2.80	303	**0.01**
Uninformed versus informed of regulations	-757.19	588.65	-1915.56	401.17	-1.29	303	0.20
Non-members versus members of vendor associations	-156.87	224.91	-599.46	285.73	-0.70	303	0.49

Source: Field Survey (2014)

Enterprise size and adoption of improved equipment is positively related to compliance cost whereas daily production cost and returns are negative. The study confirms that large and small firms respond differently to regulation as Genn (1993) reported. However, the chorus in the literature that distribution of compliance costs is regressive with small firms bearing most of the brunt as reported by Bickerdyke & Lattimore (1997), Atawodi & Ojeka (2012), IFC (2010), ITD (2007) and Lancaster, et al., (2003) may not be entirely sustainable among SFVs. The argument has been that enterprise size in inversely related to the magnitude of compliance cost based on presence of economies of scale in regulatory compliance cost. This is said to be caused by a relatively thinner spread of cost over returns for bigger firms. Larger enterprises are therefore cushioned whereas the implicit wage rates of smaller firms are reduced; ultimately inhibiting expansion in investment, output and employment.

The emerged relationship may be in consonance with Alves and Graham (1995), where massive regulatory evasions are reported among small enterprises and significantly reduced regulatory cost. Goh, (2002) concurs on the basis of the agile nature of small firms that allow relocating and moving activities without the accompanying burden of legislation and regulation. Thus the evidence here may support the assertion that increasing size of street food enterprise attracted increased regulatory attention and thus caused compliance cost to rise.

Empirical evidence is also conclusive that performance in terms of production cost and related returns explain how bearable regulatory compliance cost may be. Etzold (2011) suggested that better performing enterprises minimize compliance costs relative to turnover. Increase access to financial and technical resources (Yapp & Fairman, 2006) and ability to pass on regulatory costs often made compliance higher (Amodu, 2008) implying higher cost all things being equal. Street food vendors with higher daily operations cost and returns to production cost however, are found incurring lower compliance cost. This relatively resourceful group may be motivated by intangibility of regulatory benefits to adopt other measures other than compliance to handle regulations as Etzold (2011) and Amodu (2008) cautioned.

Regulatory effort is characterised by awareness creation, advisory visits, visits (inspections and advisory) and detections as well as mode of management of infractions. In Section C of Table 31 presents the results. The test could not reveal dependency between compliance cost and awareness of food safety regulations and membership of vendor associations. It is therefore only sufficient to note that vendors in association and or aware of regulations incur more cost in compliance

The use of punitive enforcement as well as more frequent regulatory visits and detection than current average levels per annum leads to significantly higher compliance costs at 5%

significance level. Increased advisory visits, however, reduce compliance cost. Vendors receiving 5 or less such visits have compliance cost that are on the average GH₵ 288.00 higher at 10% α-level. This finding is affirmed by Gupta & Saksena, (2002) where a directly proportional and bicausal reationship exist between intensity of regulatory effort and compliance. More regulatory effort leads to higher compliance and higher cost initially but eventually falls as regulatory effort falls at higher compliance. This study's findings on advisory visits confirm Higham & Davenport (2010) where inspections that provide access to information are more preferred by small firms and are thus required to cut down complaince cost.

4.3 Factors affecting extent of compliance to food safety regulation

Descriptive statistics for factors affecting extent of compliance to FSR are displayed in Table 32. Majority of these factors have been discussed under descriptive analysis. It is only noteworthy to mention that regulatory costs (time and money) for food safety and medical certification are expressed per unit of profit. Direct cost of medical certification and time cost of food safety are at least one and half times more than average profits in SFT. Average direct cost of food safety regulations per unit daily profit is about GH¢ 0.50 per annum being the cost of purchases of equipment, management of facility and payments to regulatory officers. The corresponding time cost per daily profits is GH¢ 1.78, indicating the latter is higher.in contrasts to food safety regulations, direct cost of medical certification per unit profit is larger (GH¢ 2.71) relative to time cost (GH¢ 0.61).

Table 32: Determinants of extent of compliance to food safety regulations

Variable	Variable	N	Mean	SD
A. Regulatory environment				
CRI	Cost of transport, time and fees for training (GH¢)	202	21.48	7.7
TIME	Time taken by regulators to reach vending premises (Minutes)	309	27.65	13.19
I_3PAR	Strength of 3rd parties (yes=1, no=0)	309	0.26	
H_VIS	High visibility of violation (yes=1, no=0)	309	0.30	
WTC	Time cost food safety regulation per unit profit (GH¢)	309	1.78	0.23
WDC	Direct cost of food safety regulation per unit profit (GH¢)	309	0.50	0.07
MCT	Time cost of medical certification regulation per unit profit (GH¢)	309	0.61	0.08
MDC	Direct cost of medical certification regulation per unit profit (GH¢)	309	2.71	0.46
B. Regulatory information				
F_MEANS	Source of regulatory information (1=Formal, 0=Informal)	309	0.24	
I_PR	Perception of officer's field demeanour (1=Positive, 0=Negative)	309	0.85	
SKL	Perception of officers knowledge (1=Adequacy, 0=Otherwise)	309	0.83	
N_AV	Number of advisory visits from the ESI in a year	177	4.59	5.77
C. Vendor concerns, perceptions and physical attributes				
CNR1	Fear of damaged public image (1=concerned 0=Otherwise)	309	0.51	
Train	Perception of training in food handling	309	2.64	0.89
E_SIZE	Number of people working within enterprise	309	3.67	1.86
EDUC	Number of years of formal education	230	9.17	2.63
AGE	Age of street food vendor	309	38.63	7.33
EXP2	Number of years' of engagement in street food trade	309	8.36	7.07
MEM	Member of street food vendors association (1=Yes, 0=Otherwise)	309	0.16	
F_VIB	Return per daily cost of production (GH¢)	309	0.24	0.23
DUR	Length of time spent in production and sales daily (Hours)	309	9.37	2.91
S_SERVE	Availability of a dining services (1=Yes, 0=Otherwise)	309	0.82	
PRoad	Proximity to road (Beyond 92 m/100 yard from road=1, otherwise=0)	309	0.27	
Dis	Distance from vending to site to insanitary sites	309	71.03	93.36

Source: Author's Construct (2014)

4.3.1 Inferential analysis: Discussion of empirical results

Table 33 shows Tobit model estimates for determinants of extent of compliance to FSR together with elasticities. Other detailed model parameters are presented in Appendices 5 and 6. The LM test for Tobit specifications was used as a diagnostic tool. The resulting LM statistic of 0.23 remained significant even at 10% significance level (8.2, 4.9 and 3.5 at 1%, 5% and 10% respective values of bootstrap critical values of the LM test). There is thus no reason for rejection of the model. The discussion on all elasticities stem from the premises of a constant rate of change between extent of compliance and each explanatory term.

a) Regulatory environment

All regulatory environment factors are significant except conciliatory relations with officers (perceived positivity of demeanour). The first three (3) were significant at 5% α-level and the rest, at 10% α-level. The extent of compliance is lowered by increasing cost of regulatory information. A 100% increase in the average cost of regulatory information leads to a 6% decrease in predicted extent of compliance to FSR. Time of food safety regulation and cost of medical certification are found to be significant respectively at 5%, 10% and 5% significance levels. Increasing time cost of compliance to FSR and medical certification each yields a 4% reduction in average extent of compliance, whereas a similar increase in direct cost of medical certification increase compliance 4%.

Abor and Quartey, (2010) and Atawodi and Ojeka, (2012) report so much time is used in complying with registration and taxation regulations. Allinson et al., (2008). Kanninen, (2002) concedes that reducing time cost of compliance enhances compliance consistent with this study. Fellows and Hilmi, (2012), IFC,(2010) SBP, (2008) and Alves and Graham, (1995) likened legal or regulatory cost to any other cost to be minimised to enchance performace.

Table 33: Tobit estimates for the extent of compliance with FSR

Variable	Coefficient (β)	Std. Err	Elasticity
Cost of transport, time and fees for training (GH¢)	-19.62**(-2.75)	7.14	-0.06
High visibility of violation (yes=1, no=0)	-5.500**(-3.26)	1.69	-0.04
Strength of 3rd parties (yes=1, no=0)	-3.541*(-1.80)	1.96	-0.02
Time taken by regulators to reach vending premises (Minutes)	**0.193****(3.11)	**0.06**	**0.12**
Time cost of work and work place regulation per unit profit (GH¢)	**-69.19****(-2.03)	**34.04**	**-0.04**
Direct cost of work and work place regulation per unit profit (GH¢)	-9.89(-1.27)	7.81	-0.02
Time cost of medical certification regulation per unit profit (GH¢)	**-50.35***(-1.97)	**25.52**	**-0.04**
Direct cost of medical certification regulation per unit profit (GH¢)	**13.22****(2.51)	**5.26**	**0.04**
Perception of officers knowledge (1=Adequacy, 0=Otherwise)	2.177(1.39)	1.57	0.03
Vendor perception of officer's demeanour in the field (1=Positive, 0=Negative)	-1.757(-0.70)	2.53	-0.03
Source of regulatory information (1=Formal, 0=Informal)	4.949**(2.42)	2.05	0.03
Number of advisory visits from the ESI in a year	0.577***(3.05)	0.19	0.03
Fear of damaged public image (1=concerned 0=Otherwise)	5.533***(3.55)	1.56	0.06
Perception of training in food handling	**3.192****(3.06)	**1.04**	**0.15**
Number of years of formal education	-0.007(-0.04)	0.16	0.00
Age of street food vendor	0.0477(0.35)	0.14	0.04
Number of years' of engagement in street food trade (exp2)	1.442***(2.95)	0.49	0.04
Number of people working within enterprise	0.952***(2.19)	0.43	0.08
Member of street food vendors association (1=Yes, 0=Otherwise)	9.088***(3.56)	2.55	0.03
Return per daily cost of production [Financial viability of SFE](GH¢)	14.16***(3.70)	3.83	0.08
Length of time spent in production and sales daily (Hours)	**-0.645****(-2.14)	**0.30**	**-0.14**
Availability of a dining area/Services provided (1=Yes, 0=Otherwise)	0.167(0.08)	2.09	0.00
Distance from vending to site to nearest open drainage, garbage dump or toilet	0.0324***(3.99)	0.01	0.05
Proximity to road (Beyond 92 m/100 yard from road=1, otherwise=0)	6.954***(3.89)	1.79	0.04
constant	22.06**(2.95)	7.48	
/sigma	11.53***(24.03)	0.48	
Log-likelihood	-1129.23		
N	294	Left censored (3)	
LR χ^2 (df=24)	173.41	Uncensored (291)	
p-value (χ^2)	0.000	Right censored (0)	
Pseudo R^2	0.0712		

, ** and * indicates significance at 10%, 5% and 1% respectively*

Source: Model Results (2014)

Vendors reporting longer times to reach regulators are found to be more complaint to FSR Reporting from the magnitude of the elasticity, a 12% increase in average compliance is expected for a 100% increase in mean time it takes regulators to reach food vending premises. Okello-Obura et. al., (2008) discussed the role of increasing distance to and cost of accessing regulatory information, asserting that such factors lower quality of regulatory information and compliance. However, it emerged in this study as though vendors siting close to regulators escape thorough scrutiny; a tacit example of the adage that familiarity breeding contempt.

Growing perception of the ability of third parties to obstruct regulatory enforcement is a factor negatively impacting extent of compliance among street food vendors. From its average level, a decline of 2% is expected in average extent of compliance if it is doubled. Customs, norms and allegiance (personal networks) are essential in securing compliance to formal regulations (Amoah, 2010). In fact, the ability of the regulator to ensure that a unanimous goal of regulation permeates the entire community is a measure of its effectiveness (Helmke & Levitsky, 2003). With notions of a strong parallel informal institution that has conflicting goals, a competitive or substitutive effect erupts and vendors will lean towards their allegiances.

Street food vendors with access to a network of colleague traders are found to be better in compliance; being a member of a street food vendor association increases mean extent of compliance by 3% holding all other variables at their mean levels. Enhanced and cheaper access to all manner of information is secured once one belongs to an association of peers. The presence of pressure from association (Jayasinghe-Mudalige & Henson, 2007), self-regulations (Solomon-Ayeh, *et. al.*, 2011) and protection of vendor welfare (Mitullah, 2004) among street vendor associations are reported to impact compliance positively.

The effect of doubling high visibility of infractions to FSRs lowers compliance by 4%. It has been reported by Alves & Graham, (1995) to not only worsen assenter behaviour towards compliance but also determine regulator reaction. Where regulatory officers via compromises and corruption condone with assenters, infractions become widespread and more vendors resort to non-compliance (Amodu, 2008).

b) Regulatory information

Frequency of advisory visits and the main source of regulatory information emerged significant in explaining extent of compliance to FSR at 5% and 1% significance levels. Whereas inspector skills (professionalism) did not matter much, an additional advisory visit to the mean of 5 visits per year is expected to add 4.9 units (3% increase) to the extent of compliance. More importantly, visits that are more advisory than inspections related enhance appreciation of the dual role of regulation (protection of consumer and investor interests).

The use of formal outlets of regulatory information increase extent of compliance relative to inter-vendor exchange of information as the former is treated with more seriousness. Though professionalism (perceived skills) on the part regulatory inspectors is important (Popescu, 2010; Amodu, 2010; Okello-Obura, *et. al.*, 2008; Kagan, 1994), findings here are contrasting. This could be explained by prevalence of low level of education among vendors and scantiness of advisory visits.

In a nut shell regulatory environment factors that are influential on extent of compliance include strength of third parties, membership of associations, compliance costs, perceived spread of infractions, accessibility of regulator and mode of enforcement.

c) Vendor concerns and physical attributes of SFEs

At 1% alpha-level, the effect of having concerns for enterprise reputation scales up average extent of compliance by 6%. Doubling the mean perception of training in food handling causes as much as 15% rise in the extent of compliance to FSR.

Laryea, (2001), Fenteng (2000)and Ntifori (2000) hint at the role of reputational damages due to non-compliance but cautions that since attractive daily sales are made from the status-quo because consumer associations non-existent or inactive in Ghana, the effects are not far-reaching.

The span of services, age of street food vendor, and number of years one spends in school emerged insignificant. The square of the length of time (in years) vendor has been engaged in this trade together with the size of the enterprise, viability of the enterprise, duration and proximity to roads and sanitary sites are all positive and significant at 1% significance level.

Among these enterprise specific factors duration of trade activity ranks highest in its impact on compliance. Extending the average time of trade operation (9.37) by 11% (1 hour) causes a dip in compliance with FSR to the magnitude of about 0.14% (0.06 units) from mean compliance to FSR (that is from 0.44 or 44% (see Table 22) to 0.38 or 38%). SFEs are run for about 9 hours daily, whereas regulations happen in 5 hours usually from late morning to early afternoon. Increase in average trading duration pushes it into night trade under no regulators watch implying low compliance. The effect of length of time in SFT (experience) on average compliance increases at an increasing rate of 0.4% for a 10% increase from average experience (8.36 year), which is 10 months.

Size of enterprise and return per daily cost of production are the next key factors in terms of elasticities. It is found that an 8% growth in extent of compliance to FSR can be secured with

doubling the mean levels of these factors. Yapp and Fairman, (2006) confirmed in a study on food safety that small enterprises, accept regulation with difficulty. Other researchers report that enterprise size affects compliance through compliance cost which is regressive (Atawodi & Ojeka, 2012; IFC, 2010; ITD, 2007; SBP, 2004; Genn, 1993).

For relative distance to sanitary sites is found to impact compliance more than relative distance to streets, though both have positive and significant impacts at alpha level 0.01. Whereas an increase 10 metres from sanitary sites ups compliance by 5% from mean level, siting trade activities beyond the regulated 100 yards from roads increases it by 4%. This is consistent with the findings of Steel & Webster (1991) who contends regulation on location of enterprises is a major concern to small enterprise. McPherson & Carl-Liedholm (1996) explain the relationship between enterprise location and compliance that location significantly explains the probability of compliance. The use of developed structures, a proxy for standardised structures is hypothesised with reference to Mitullah, (2004) and Apraku, (2000) to enhance compliance to food safety regulations. It turns out, however, that compliance levels are not different between users of developed structures and their colleague non-users.

Thus in terms of impacts the duration of trade activity ranks highest followed by enterprise size and financial viability, before nearness to sanitary sites. The factors with the least impacts include siting proximity to roads and experience in street food trade.

4.3.2 Margins after Tobit estimation

Table 34 shows average expected extent of compliance with specific changes on specific policy variables (margins). It is the basis for test of hypothesis four. Compared to the average observed extent of compliance (44%), the following show the level of compliance if all individuals had the values given in Table 34 one at a time while all other variables are held at their means.

Table 34: Margins of extent of compliance at specified levels of policy relevant factors

Factor	Specified category/value	Margin	Std. Err*	Z-stat	p-value	[Limits:95% CI] Lower	[Limits:95% CI] Upper
	Informal	42.98	0.83	51.50	0.00	41.34	44.61
Source of information	Formal	47.93	1.69	28.34	0.00	44.61	51.24
	Members	51.87	2.26	22.93	0.00	47.44	56.31
Belonging to association	Non-Members	42.78	0.78	55.01	0.00	41.26	44.31
	Unanimous	45.07	0.84	53.95	0.00	43.43	46.70
Strength of third parties	Conflicting	41.52	1.62	25.69	0.00	38.36	44.69
Advisory visit	5 visits per year	45.33	0.77	58.70	0.00	43.82	46.84
Enterprise size	Owner with 3 aids	44.15	0.67	65.60	0.00	42.83	45.47
Financial viability	Gh¢ 0.18 cedi	43.32	0.71	60.85	0.00	41.92	44.71
Regulatory information cost	Gh¢14.00 per year	44.28	0.67	65.71	0.00	42.96	45.6

**Computed via delta method*

Source: Field Survey (2014)

Formalizing information dissemination among all vendors comes next yielding an average compliance of 48%. Implementing five advisory visits and unifying opinions with identifiable third parties yield marginal gains in compliance to FSR. The predicted values of extent of compliance with FSR with respect to fixing viability, cost of regulatory information and enterprise size at their averages for all respondents one at a time are also yield marginal improvements in mean extent of compliance. Thus holding all variables at their average levels, policies targeted at enhancing the growth of vendor associations yield the highest dividends in extent of compliance. The highest value of extent of compliance (52%), however, is recorded

when all vendors are all treated as members of vendor associations. This finding sustains the fourth hypothesis.

4.4 Assessment of vendor preference for regulatory attributes and scenarios

Vendor preference for aspects of regulation is discussed using conditional logit estimates (model 1 and 2) in Table 35. The models were estimated with levels of regulatory attributes alone in model 1. The IIA assumption that is often violated, it is relaxed in model 2 my including interaction terms. The Hausman specification showed a failed IIA assumption in model 1. In model 2, (ASC or CONS in models) entered in additive form as is interaction term with factors. Alternative Specific Constant is a dummy variable representing selection of one of the 16 regulatory scenarios in a choice set. It explains influences on vendor decision on changes in the nature of regulation. In model 2 signs and significance of all terms in model 1 are sustained except for the ASC/CONS. Interpretation is based on model 2.

A significant CONS is indicates vendors prefer a change in the current regulatory regime. SFVs on the whole prefer regulations intending to zone urban space for specific purposes and grant access to improved food handling facilities (electricity, water, drainage, storage, waste management among others). Judging from the relative sizes of coefficients (0.24 and 0.08), vendors are in stronger support of zoning per se (ZNB) relative to zoning with provision of improved facilities (ZNE) at α-level, 0.001 and 0.05 respectively. The scepticism may be explained by the full cost implication of such improvement and inability to custom design sites. This confirms the common finding in the literature that vendors are very concerned and passionate about siting issues (Bhowmik, 2010; Quartey, 2001). Access to improved vending sites is beneficial to both vendors and consumers (Etzold, 2011; Rane, 2011; Mitullah, 2004;

Goh, 2002). Adoption of street food zones or courts in urban areas as the advocates of street food vendors recommended in India provides a secured site and is in sync with the preferences of SFVs in Kumasi cities (StreetNet-Association, 2013).

Vendors demonstrate a marked dislike for registration and licensing regulations regardless of the renewal periods (annual or semi-annual). The abhorrence is stronger for shorter renewal periods though such may better protect consumers from contagious infections. Registration and licensing are subject to medical certification at a cost. Battisti, et al., (2011) and OECD (2008) confirm the negative preferences for registration regulation may be explained by costs and irritating experiences with medical certification processes. Proponents of the professionalizing street food trade concede registration should be facilitated (StreetNet-Association 2013) an opinion that this study supports. That medical certification, a proposed prerequisite for licensing, emerged in this study as the most involving regulation with an offical fee, transportation, communication, paperwork and other related costs.

Coefficients for both levels of training attribute (TRE and TRB) are insignificant. No evidence is therefore adduced for a marked preference/otherwise for regulations providing periodic training programs in food handling, personal/environmental hygiene and business management. It is however interesting to note that training programs with an expanded scope (hygiene and business management-TRE) are preferred (positive coefficient).

When regulations on hygiene are restricted to personal and site appearance (CPB), SFVs readily accept them at a 1% significance level (positive coefficient). However, an expanded scope of regulation is rejected if it makes stricter demands of improved food handling during material acquisition, transport, food preparation and sale (negative coefficient). This finding is consistent with the report of vendors keeping up just appearances (Rheinländer, et, al., 2008). It is also

consistent with the findings of Fairman & Yapp (2004) that food retailers are less likely to use HACCP The implementation of codes of food handling is likely to suffer setbacks if implemented without stronger regulatory effort similar to the findings of Battisti, et al., (2011), Sookram & Watson, (2008), Barro, et al., (2007), Mitullah, (2004), Johnson & Yawson, (2000), Tinker, (1997) and Cohen, (1984). Compliance Process Model (CPM) is thus better suited as it ensures food safety via adoption of responsible processes by vendors and collaboration with regulator and other external parties.

It is expected a priori that, increasing the legal fee on the use of urban space public space in conducting food trade will lead to a protest against regulation. This has been confirmed by the negative and highly significant (1%) coefficient of the tax attribute of regulation. Battisti, et al., (2011) found that small enterprises find compliance costly and small formal firms are more likely to report such (Ingram, et al., 2007). Sookram & Watson, (2008) established that tax evasion is caused by increasing burrden and decreasing risk of detection.

It is thus deduced that vendors prefer Local Assemblies to be responsible for provision of improved vending sites and structures (Zoning regulations). They, however, are less likely to accept mandatory medical certification (or registration and licensing) with annual or semi-annual renewal dependent on medical certification. Food safety regulations with emphasis on personal and environmental hygiene are more preferred whereas those that make stringent request of the latter in addition to proper food handling are relatively abhorred among SFV. Regulatory scenarios suggesting increases in the market toll or tax on operations are less preferred.

Interaction terms in model 2 (socioeconomic and ASC) explain the sharpers of preference for an overhaul of regulatory regime. Using the insignificance of interaction terms of ASC and

enterprise size, nature of food sold, higher numbers of advisory visits, negative influence of third parties and high visibility of violations, these factors do not affect preference for an overall change in regulatory structures.

Table 35: Conditional logit estimates for determinants of preference for regulatory changes and aspects of regulation

FACTORS AFFECTING PREFERENCE	Model 1	Model 2
CONS (Alternative Specific Constant (ASC))	-0.0854	0.411**
	(-1.61)	(2.70)
Attributes/feature/aspects of SFT regulation		
ZNE (Zoned urban space for specific purposes)	0.0829*	0.0837*
	(2.15)	(2.17)
ZNB (Zoning with access to improved food handling facilities)	0.239***	0.241***
	(7.32)	(7.35)
RLE (Registration with bi-annual renewal)	-0.0813*	-0.0820*
	(-2.44)	(-2.45)
RLB (Registration with annual renewal)	-0.0101	-0.0101
	(-0.32)	(-0.32)
TRE (Hygiene and business management)	0.00134	0.00131
	(0.04)	(0.04)
TRB (Food handling only)	-0.0399	-0.0402
	(-1.29)	(-1.29)
CPB (Personal and site appearance)	0.212***	0.214***
	(6.08)	(6.10)
CPE (Personal, site appearance as well as control of all process)	-0.0190	-0.0193
	(-0.59)	(-0.59)
TAX (Tax or market toll)	-0.165***	-0.167***
	(-31.22)	(-31.32)
Interactions of ASC and socioeconomic factors		
CONS*AV (ASC and Advisory visits)		-0.0180
		(-1.94)
CONS*I_3PAR (ASC and third party influences)		-0.152
		(-1.43)
CONS*MEANS (ASC and source of regulatory information)		-0.232*

		(-2.18)
CONS*E_SIZE (ASC and enterprise size)		-0.0343
		(-1.23)
CONS*MEM (ASC and membership of vendor association)		-0.341**
		(-2.76)
CONS*VIB (ASC and returns to daily cost of production)		0.750***
		(3.49)
CONS*FDN (ASC and nature/type of vended food)		-0.0955
		(-1.00)
CONS*VIS (ASC and visibility of infractions)		0.103
		(1.01)
CONS*STR (ASC and level of vending structure development)		-0.303**
		(-3.22)
CONS*CREG (ASC and total compliance cost of regulation)		-0.164***
		(-4.67)
N	**9888**	**9888**
LOG-LIKELIHOOD	***-5595.30***	***-5292.20***
DF	***10***	***20***
LR-CHI2	***1301.80***	***1908.00***
PROB>CHI2	***0.0000***	***0.0000***
PSEUDO R^2	***0.1042***	***0.1527***

t statistics in parentheses: * $p<0.05$, ** $p<0.01$, *** $p<0.001$

Source: Model results (2014)

Enterprises that are more financially viable have higher preference for overall changes in the nature of regulation. On the other hand, members of vendor association may have a tendency to stick to modest changes in regulatory structures. SFVs accessing regulatory information from formal sources using improved structures and incurring higher cost of compliance similarly move away from preference for massive changes in current regulatory situation. Members of food vendor associations like users of formal sources of information seem relatively more informed and convinced about the happenings in the regulatory space. The inertia expressed is

thus not unexpected. The stance of users of improved structures and vendors who have incurred higher cost in compliance may be explained by fear; the fear of the consequences of a change to a regulatory regime that may imply relocation or higher cost of compliance.

In a nutshell, demand for an overhaul of the regulatory structures characterised by these five regulatory attributes is supported only by financially viable enterprises. Subtle changes in some or all attributes may be supported by members of vendor associations, operating from developed structures, using formal sources of regulatory information and incurring higher compliance cost.

Aspects of regulation affected by these significant vendor-specific factors are shown in Section B of model 3 in Table 37. Model 3 adds interactions of socioeconomic factors and regulatory attributes in Section B. The parameters of such terms explain the effect of socioeconomic factors on choice of regulatory attributes.

Increasing advisory visits does not affect vendor preference for certification/licensing. Such vendors do not find moving away from the current mode of occupation of public space attractive. Although such a move implies a secured trade site and improved condition for food handling. This could be the consequence of knowledge of the time and financial burden of such visits. Vendors reporting higher annual advisory visits also despise higher taxation and mandatory periodic training but are comfortable with implementation of codes of food handling.

Using formal sources of regulatory information negatively affects preference for zoning but positively affects registration/licensing and taxation regulations. This stance seems explained by benefits of first-hand information. Formal sources of information however, do not affect decisions on periodic/expanded training and implementation of food handling codes.

Members of vendor associations preferred improvements in all aspects of SFT regulation. Street food vendors belonging to associations prefer a less rigorous alteration in regulation but are not against changes affecting all aspects of regulation. The evidence is stronger for zoning, registration/licensing and taxation compared to mandatory training and implementation of codes of food handling. Such findings are not surprising since as the major form of interaction among vendors (Atieno 2009), street food vendor associations promote interaction, build bargaining power and information sharing among members. Vendor associations are reported to be beneficial to regulatory compliance by Mitullah, (2004), Nicolo'and Bendech (2012), Solomon-Ayeh, et. al., (2011) and Frimpong, (2007). The fact that such assocaitions are not sucessful usualy (Nicolo' & Bendech, 2012) is a major issue is enhancing compliance via their gate-keeping roles.

Increasing financial returns to production cost, is found to insignificantly affect choices of improved aspects of regulations. Whereas well performing SFEs support an overhaul of regulatory structures, the changes desired seem not well characterised by attributes of regulation defined in this study. This class of vendors however, prefer the prevailing situation of registration/ certification/ licensing where it is practiced at the will of vendors.

Users of improved structures are ambivalent of zoning of public space. They support implementation of regulations with shorter renewal periods for licenses/certificates and an expanded periodic training (hygiene and business management). Such vendors also find the highest tax figure of GH¢ 10.00/day or GH¢200.00/month acceptable. Preference for frequent renewal period with indifference on zoning maybe explained as a strategic behavior; an attempt to cut down competition via increased cost and exposure of less established and less regulated SFEs.

Several authorities in the area of marketing tie product preferences to customer perceptions. And such perceptions may be formed by resource endowment and managerial competences, among other drivers. The matrix in Table 36 summarizes the effect of the main regulatory and enterprise factors affecting preference for regulations. Working through vendor associations seem the surest way to vary levels of all factor albeit subtly.

Table 36: Matrix of impacts of regulatory and enterprise factors on preference

Factors	Location	Certification	Training	Codex	Taxation
Advisory visits	-	NS	-	+	-
Formal sources	-	+	NS	NS	+
Vendor associations	+	+	+	+	+
Viability of enterprises	NS	+	NS	NS	NS
Improved structures	NS	+	+	NS	+

[+] implies positive impacts, [-] implies negative impacts and [NS] implies impacts are not significant

Source: Field Survey (2014)

Table 37: Further results of the conditional logit estimation

Section A	
Variable	**Model 3**
CONS	0.0593
	(0.48)
Regulatory attributes	
ZNE	0.0302
	(0.42)
ZNB	0.262***
	(7.75)
RLE	-0.207**
	(-3.18)
RLB	-0.0134
	(-0.41)
TRE	-0.0309
	(-0.48)
TRB	-0.0419
	(-1.31)
CPB	0.223***
	(6.21)
CPE	-0.0789
	(-1.44)
TA	-0.232***
	(-19.23)
Interaction of socioeconomic factors and ASC	
CAV	-0.057***
	(-3.99)
CMEAN	0.234*
	(2.06)
CMEM	0.0911
	(0.63)
CVIB	0.791**
	(3.07)
CFDN	-0.114
	(-1.23)
CSTR	-0.0188
	(-0.19)
CREGC	-0.206***
	(-5.96)
Section B	
Interaction of socioeconomic and regulatory attributes	
i. Advisory visits	
Zoning	-0.024**
	(-3.04)
Registration and licensing	-0.00448
	(-0.60)
Training	-0.031***
	(-4.29)
Taxation	-0.045***
	(-5.84)
Food handling codes	0.0168*
	(2.44)
ii. Information source	
Zoning	-0.391***
	(-5.66)
Registration and licensing	0.221***
	(3.49)
Training	-0.0597
	(-0.94)
Taxation	0.883***
	(14.66)
Food handling codes	0.0238
	(0.40)
iii. Vendor association	
Zoning	0.586***
	(6.73)
Registration and licensing	0.345***
	(4.41)
Training	0.160*
	(2.04)

Taxation	0.258***
	(3.37)
Food handling codes	0.225**
	(3.04)
iv. Returns on daily production cost	
Zoning	0.273
	(1.81)
Registration and licensing	-0.457***
	(-3.36)
Training	-0.0246
	(-0.18)
Taxation	-0.176
	(-1.34)
Food handling codes	-0.0621
	(-0.48)
v. Development of vending structure	
Zoning	0.0983
	(1.58)
Registration and licensing	0.217***
	(3.81)
Training	0.184**
	(3.26)
Taxation	0.302***
	(5.48)
Food handling codes	-0.076
	(-1.40)
N	9888
LR	-5291.22
DF	42
LR-HI2	1909.95
PROB-χ2	0.0000
PSEUDO R^2	0.1529

t statistics in parentheses $^{*}p< 0.05$, $^{**}p< 0.01$, $^{***}p< 0.001$

Source: Model Results (2014)

4.4.1 Ranking of regulatory scenarios and regulatory attributes

Table 38, display marginal WTP for attributes, based on model 2 and tests hypothesis 5. Street food vendors are willing to pay about GH¢38.00 per month or GH¢ 1.45 per day for a zoned area within urban Kumasi where they can erect vending structures and install facilities. They are also ready to do without GH¢ 1.28 each day in compliance to site and personal hygiene regulations only. Zoning with provision of improved watering, storage, waste disposal and other relevant facilities ranks third in marginal WTP with a mean score of GH¢0.50/day. Provision of an expanded periodic training programme comes 4th with an annual mean WTP of GH¢ 3.12.

Table 38: Marginal WTP based on model 2

Attribute Level	Rank	Mean *WTP (GH¢/day)*	Lower limit *of 95% CI GH¢/day)*	Upper limit *of 95% CI GH¢/day)*
ZNE	3rd	0.50	0.04	0.96
ZNB	1st	1.45	1.06	1.83
RLE	8th	-0.49	-0.89	-0.10
RLB	5th	-0.06	-0.44	0.31
TRE	4th	0.01	-0.37	0.39
TRB	7th	-0.24	-0.61	0.13
CPE	6th	-0.12	-0.50	0.27
CPB	2nd	1.28	0.86	1.71

Source: Field Survey (2014)

Vendors will rather be compensated to accept passage registration with annual renewal, enforcement of food handling codes in addition to site and personal hygiene, periodic training in food handling only and semi-annual renewal of licenses. For licensing, compensation may be financial (say subsidies on fees) or reduction in time, drudgery and attendant cost of compliance

process. The largest of such compensatory payments is required for implementation of semi-annual renewal of licenses for all food handlers within an enterprise subject to a medical fitness test. It has a negative estimated marginal WTP of GH¢ 153.00 per annum assuming 6 working days per week.

This leads to a rejection of the 5th hypothesis that food safety regulation has the least preference. The study's finding do not deviate from the prevailing literature, since siting of enterprise is reported as a sizeable hurdle for SMEs (Quartey, 2001) and access to improved vending sites is beneficial to both vendors and consumers (Etzold, 2011; Mitullah, 2004; Goh, 2002).

Table 39: Predicted probabilities for alternative in choice sets

RS	Mean (choice)	Mean	S D
2	0.76	0.56	0.093
7	0.77	0.51	0.094
10	0.69	0.48	0.094
14	0.80	0.46	0.094
3	0.72	0.45	0.093
9	0.69	0.42	0.092
5	0.63	0.39	0.090
15	0.63	0.39	0.090
11	0.41	0.36	0.088
1	0.33	0.27	0.076
12	0.59	0.24	0.071
8	0.26	0.21	0.063
13	0.20	0.20	0.062
4	0.39	0.13	0.045
16	0.29	0.12	0.041
6	0.31	0.10	0.037

Source: Field Survey (2014)

Table 40: WTP for regulatory scenarios

Alternatives	ZnE	ZnB	RLB	CPB	TAX	Utility score	WTP (GH¢)
7	-1.67	-0.24	0.00	0.02	0.00	-1.90	11.35
14	-1.67	-0.24	0.02	0.00	0.00	-1.89	11.35
10	-0.84	-0.48	0.01	0.00	0.00	-1.31	7.84
2	-0.84	-0.48	0.00	0.02	0.00	-1.30	7.78
11	-1.67	-0.24	0.00	0.04	0.92	-0.96	5.74
1	-0.84	-0.48	0.02	0.00	0.92	-0.38	2.28
4	-1.67	-0.24	0.01	0.00	1.67	-0.23	1.41
9	0.00	0.00	0.01	0.04	0.00	0.05	-0.29
3	0.00	0.00	0.02	0.04	0.00	0.06	-0.35
12	-0.84	-0.48	0.00	0.04	1.67	0.39	-2.33
13	0.00	0.00	0.00	0.00	0.92	0.92	-5.50
8	0.00	0.00	0.01	0.02	0.92	0.95	-5.68
6	0.00	0.00	0.00	0.00	1.67	1.67	-10.0
16	0.00	0.00	0.02	0.02	1.67	1.71	-10.2

Source: Field Survey (2014)

Ranking of regulatory scenarios are based on predicted probabilities (Table 39) and marginal WTP (Table 40) estimated using delta method in STATA 12. All 16 orthogonal alternatives generated in SPSS 21 are displayed in appendix 7. WTP for regulatory scenarios are based on a movement from a laissez faire regulatory regime (regulatory option 15 in Appendix 7 with utility valued as CV_0) to a variety of regimens (options 1-14 and 16) using effect codes (Table 7) and utility score calculation relations (Table 1) and estimated parameters in model 2.

With difference in ordering and minor difference in composition, the first 4 and last 3 regulatory scenarios are similar from both schemes of ordering. First four scenarios are characterised by improvements in siting regulations with no increment in tax amount while

other attributes vary. This finding sustains the 6th hypothesized relationship of this study. The last four regulatory scenarios are characterised by higher tax/market tolls without improvements in enterprise siting regulations, though other attribute are more variable.

Vendors are willing to pay between GH¢8.00 and GH¢11.00 per day for the first four regulator scenarios but will rather demand between GH¢6.00 and GH¢10.00 if the last four regulatory options are to be implemented. Such compensatory demands may be met in the form of increased tangible benefits of regulation such as increased access to collective resources, finance, sponsored training programmes and facilitated licensing. Improvements in enterprise siting regulations are therefore the bed rock of a workable regulatory regime. The cost of such improvements to vendors must be considered a sensitive issue.

CHAPTER FIVE

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

The study has shown that compliance to regulations indeed is burdensome to SFVs. The burden of compliance expresses itself more in terms of time than money cost; more especially so for hygiene regulations. Time cost of compliance was found to be significantly higher than non-compliance. A variety of non-compliance costs abound among which loss of produce or business asset is the most significant. Cost of compliance behaves in no systematic pattern with SFE features like duration of trade activity, span of services and nature of food. However, it depends on the use of approved sites and use of improved vending structure. Enterprise size and adoption of improved equipment are positively related to compliance cost whereas daily production cost and returns have reverse impacts. The use of punitive enforcement as well as more frequent regulatory visits and detection lead to substantively higher compliance costs.

Extent of compliance to street food regulations is below average among food vendors in the Kumasi Metropolis. Compliance does not necessarily follow access to information as siting regulation, the least in vendor awareness, tends to be the regulation with the highest extent of compliance. Negotiated non-compliance is suspected for vendors located near the regulatory institution. Negative effects of costs of regulatory information and compliance indicate increments in such costs are disincentive to compliance.

SFVs at least disagree on the existence of a congenial regulatory arena within the KMA jurisdiction. Vendors prefer Local Assemblies to be responsible for provision of improved

vending sites and structures (Zoning regulations). They, however, are less likely to accept mandatory medical certification (or registration and licensing) with annual or semi-annual renewal. Regulations with emphasis on personal and environmental hygiene are more preferred whereas those that make stringent request of the latter in addition to proper food handling are relatively abhorred among SFVs.

Demand for an overhaul of the regulatory structures is supported only by financially viable enterprises. Subtle changes in some or all attributes may be supported by SFVs who are members of vendor associations, operating from developed structures, using formal sources of regulatory information and incurring higher compliance cost.

5.2 Recommendation

Increased consumer awareness creation exercises to increase financial cost of non-compliance is a highly commendable activity since non-compliance is too profitable. For instance a typical SFV in non-compliance stands a chance of saving about GH¢200.00 per annum in both money and time cost. A useful starting point will be to revamp identifiable but inactive consumer associations.

Difference needs to be made of implementation methods for specific regulations (education for permits and increased enforcement for tax, hygiene and medical certification). Adoption of a shift system that ensures field inspector presence outside regular working hours especially at night will be useful. The regulatory environment must also be purged of widespread inaction on the part of regulatory officers.

Effort at gaining solidarity with influential third parties is essential in attaining higher levels of compliance. This can be attained by up-scaling the current level or widening the scope of

participation with local and traditional authorities as well as other identifiable agencies. Extracting training and certification fees from vendors builds a perception of costly information and keeps vendors away from gatherings intended to disseminate regulatory information. Funding of SFV trainings with expanded scope by third parties is necessary.

Efforts at improving SFVs perception of regulation via formal information outlets like TV/Radio, workshops and advisory visits should be vigorously pursued by regulatory institutions.

Working through vendor associations seems the surest way to improve all aspects of regulations albeit subtly. Enhanced access to resources and lessening of compliance burden could enhance financial viability and enterprise growth. Vendor associations are encouraged to take up self-regulation and increase collaboration with material suppliers.

Whenever possible, vendors are encouraged to use improved (fixed or semi fixed) vending structures and adopt improved equipment. Improvements in enterprise siting regulations at minimal cost to vendors should be adopted by regulators as the bed rock of workable regulatory regimes.

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APPENDICES

Appendix 1: Descriptive statistics for elements of financial statement and regulatory cost:

	N	Min	Max	Med	Mean	SD
Daily revenue	309.00	50.00	3460.32	260.00	**336.63**	401.16
Raw material cost	309.00	28.00	2960.00	173.00	**231.46**	341.80
Daily Milling cost	205.00	0.43	16.00	2.00	**3.64**	14.42
Daily Water cost	302.00	0.10	20.00	1.60	**1.97**	17.39
Daily Waste management cost	305.00	0.20	4.00	1.00	**1.08**	17.38
Total Daily Direct cost	**309.00**	**29.80**	**2992.00**	**179.50**	**236.86**	**345.21**
Daily Profit Before Indirect cost	**309.00**	**12.13**	**468.32**	**86.13**	**99.76**	**70.83**
Total daily labour cost	290.00	0.00	74.00	14.00	**18.93**	20.98
Total daily in-kind cost (labour)	264.00	2.00	72.00	10.00	**13.97**	19.05
Annual depreciated (structure)	309.00	3.33	259.37	54.23	**54.23**	42.09
Daily depreciation (structure)	309.00	0.01	0.83	0.17	**0.17**	17.54
Annual depreciated (equipment)	309.00	78.00	1172.93	349.00	**377.71**	165.49
Daily depreciated (equipment)	309.00	0.25	3.76	1.12	**1.21**	17.49
Daily Electricity	138.00	0.10	3.50	0.36	**0.66**	11.63
Daily Fuel	308.00	0.80	80.00	8.50	**10.63**	19.72
Daily Transport	309.00	2.00	12.40	4.00	**4.30**	17.42
Total daily indirect cost	**309.00**	**2.63**	**209.83**	**37.89**	**46.29**	**35.51**
Daily profit before regulatory costs	**309.00**	**1.12**	**258.49**	**40.87**	**53.47**	**47.48**
1. Official payments (with receipt)						
i. Annual official fee for site permit	115.00	15.00	90.00	50.00	**44.81**	16.64
ii. Daily official fee for site permit	115.00	0.05	0.29	0.16	**0.14**	10.57
iii. Annual official tax/toll	272.00	4.00	130.00	50.00	**47.65**	30.58
iv. Daily tax/toll	272.00	0.01	0.42	0.16	**0.15**	16.45
v. Medical certification	278.00	18.00	51.00	35.00	**33.54**	16.55
2. Direct related cost						
Transport cost of MC per person	198.00	0.80	10.00	2.00	**2.89**	13.91
Cost of Documents for MC per person	256.00	2.00	9.00	4.00	**4.05**	15.75
Total cost of Medical certification	278.00	19.60	56.80	41.60	**39.32**	16.84
Number of persons with MC in SFE	278.00	1.00	8.00	1.00	**1.86**	16.59
Medically certified owners of SFEs	278.00	1.00	1.00	1.00	**1.00**	16.58

Medically Certified workers	110.00	1.00	7.00	2.00	**2.16**	10.35
Annual cost of medical certification	278.00	20.00	315.00	45.50	**72.42**	57.92
Daily cost of medical certification to SFE	278.00	0.06	1.01	0.15	**0.23**	16.63
Annual equipment, material and facility cost due to FSR	164.00	15.00	450.00	120.00	**121.77**	72.11
Daily equipment and facility cost	164.00	0.05	1.44	0.38	**0.39**	12.70
Annual Cost Other Regulations	202.00	7.00	21.00	15.00	**14.51**	13.48
Daily Cost Other Regulations	202.00	0.02	0.07	0.05	**0.05**	14.17
3. Indirect/Time related cost						
Interaction time with officials of site permit authority	111.00	0.00	3.00	1.00	**1.26**	10.30
Time used in permit inspections	85.00	0.25	2.33	0.67	**0.94**	8.98
Total annual time used on permits	107.00	0.42	4.33	2.00	**2.05**	10.06
MC acquisition time	276.00	0.17	10.00	2.17	**2.53**	16.51
MC time used in inspections	268.00	0.08	8.67	0.60	**1.10**	16.34
Total annual time used MC	278.00	0.49	61.80	4.33	**7.15**	18.67
Daily time used within SFE on activities due food safety regulation	147.00	0.30	2.50	1.00	**1.10**	11.96
Annual time used within SFE on activities due food safety regulation	147.00	78.00	650.00	260.00	**285.38**	141.25
Daily time used on inspections activities due food safety regulation	291.00	0.05	3.90	0.40	**0.68**	17.01
Total annual time used on activities due regulation	294.00	0.05	650.75	41.05	**143.37**	173.75
Interaction and payment time for tax	213.00	0.17	15.00	1.67	**3.55**	14.82
Total time used on other regulations	202.00	0.50	2.00	1.00	**1.11**	14.11
Hourly earnings of SFEs	309.00	0.50	31.62	4.68	**5.93**	17.88
Time Cost site permit regulation	107.00	0.95	59.24	9.20	**13.87**	17.23
Time Cost of medical certification	276.00	0.85	820.91	16.26	**39.31**	104.83
Annual Time Cost of hygiene	294.00	0.08	10157.56	65.54	**878.41**	1346.05
Daily Time Cost of hygiene	294.00	0.00	39.07	0.25	**3.38**	17.69
Time Cost tax regulation	213.00	0.59	186.03	9.05	**22.48**	36.71
Time Cost other regulations	202.00	0.82	44.89	4.52	**6.97**	15.41

Source: Field Survey (2014)

Appendix 2: Descriptive statistics for elements of other regulations

	N	Min	Max	Mean	SD
Workshop attendance	202	5	15	12.4653	2.72929
Transportation and communication	165	0.8	6	2.5091	1.3613
Total cost of certification	202	7	21	14.5149	2.91158
Total time spent at training	202	0.5	2	1.1081	0.46145
Time Cost of others	202	0.82	44.89	6.79	15.41

Source: Field Survey (2014)

Appendix 3: Descriptive statistics for elements of total regulatory cost

Column1	N	Min	Max	Median	Mean	SD
Total medical certification cost	278	23.44	1096.91	63.24	**111.45**	**146.46**
Total Tax cost	284	3.11	238.03	53.94	**62.50**	**43.52**
Total Perm cost	116	0.95	136.92	54.41	**57.21**	**25.14**
Total Hygiene cost	294	0.08	10277.56	194.66	**946.34**	**1385.10**
Total Other Regulation cost	202	10.85	63.49	20.13	**21.48**	**14.81**
Annual cost of all regulations	**304**	**0.19**	**10361.17**	**473.86**	**1104.96**	**1424.99**

Source: Field Survey (2014)

Appendix 4: Descriptive statistics for time lost due to non-compliance

Consequence	N	Min	Max	Median	Mean	SD
Site permit regulation						
Confrontation time	**46.00**	**0.30**	**6.00**	**2.50**	**2.65**	**8.83**
Medical certification regulation						
Confrontation time	28.00	0.45	3.00	1.00	1.41	56.52
Negotiation and action time	28.00	0.30	4.58	0.50	1.37	82.83
Total time for medical cert	**28.00**	**0.75**	**5.58**	**2.50**	**2.79**	**6.41**
Tax Regulation						
Confrontation time for Tax	**81.00**	**1.00**	**6.00**	**2.00**	**2.46**	**8.52**
Environmental and FSR						
Confrontation Time	76.00	0.10	3.00	0.75	0.96	4.83
Negotiation and action time	75.00	0.50	4.67	1.50	1.92	4.90
Total time for env't and FSR	**80.00**	**0.10**	**7.00**	**2.33**	**2.71**	**4.66**

Source: Field Survey (2014)

Appendix 5: Regulatory scenarios presented in choice sets

RS	Zone	Registration/Licensing	Training	Tax	Codex
1	Zoned urban space	Annual renewal	Food handling only	GH¢ 5.5	No consideration for hygiene
2	Zoned urban space	Registration at will	Safe food and business management.	GH¢ 0.0	Hygiene for personal, site and all processes
3	No zone	Annual renewal	Safe food and business management.	GH¢0.0	Only person and site hygiene
4	Zone urban space with facilities	Semi-annual renewal	Safe food and business management.	GH¢10.0	No consideration for hygiene
5	No zone	Registration at will	Training at will	GH¢0.0	No consideration for hygiene
6	No zone	Registration at will	Food handling only	GH¢10.0	No consideration for hygiene
7	Zone urban space with facilities	Registration at will	Food handling only	GH¢0.00	Hygiene for personal, site and all processes
8	No zone	Semi-annual renewal	Training at will	GH¢5.5	Hygiene for personal, site and all processes
9	No zone	Semi-annual renewal	Food handling only	GH¢0.0	Only person and site hygiene
10	Zoned urban space	Semi-annual renewal	Training at will	GH¢0.0	No consideration for hygiene
11	Zone urban space with facilities	Registration at will	Training at will	GH¢5.5	Only person and site hygiene
12	Zoned urban space	Registration at will	Training at will	GH¢10.0	Only person and site hygiene
13	No zone	Registration at will	Safe food an and business management	GH¢5.5	No consideration for hygiene
14	Zone urban space with facilities	Annual renewal	Training at will	GH¢0.0	No consideration for hygiene
15	No zone	Registration at will	Training at will	GH¢0.0	No consideration for hygiene
16	No zone	Annual renewal	Training at will	GH¢10.0	Hygiene for personal, site and all processes

Source: Author's Construct (2014)