UNIVERSITY OF CAPE COAST

COMPLIANCE WITH FOOD SAFETY MEASURES BY TRADITIONAL CATERERS IN THE CAPE COAST MUNICIPALITY

BY

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DECLARATIONS

Candidates Declaration

I hereby declare that this thesis is the result of my own original work and that no part of it has been presented for another degree in this University or elsewhere.

Candidate's Signature: ..... Date: 10/07/08

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Supervisors' Declaration

We hereby declare that the preparation and presentation of the thesis were supervised in accordance with the guidelines on supervision of thesis laid down by the University of Cape Coast.

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ABSTRACT

Much work has been carried out on food safety in Ghana, however it appears that a problem still exists considering the increasing number of reported food borne cases to health centers (Cape Coast District Community Health Centre (CCDCHC). In spite of work that has been carried out on the subject, the reasons for non compliance with food safety measures have not been investigated. This study therefore sought to examine why caterers fail to comply with regulations and to determine the relationship between compliance and contamination of food by traditional caterers using the Cape Coast Municipality.

Both probability and non-probability sampling techniques were used to select 100 caterers, 150 clients and four regulatory agencies for the study. Samples of food were also purchased for laboratory investigation.

The study revealed that traditional caterers were of low educational background and are ignorant about food safety information. However, there was no indication that any of the background characteristics used significantly influence compliance with food safety measures, when the Chi Square Statistic and binomial logistic regression model were applied to the data. It was however established that non compliance with regulations influences food contamination.

Evidence from the study suggests that lack of co-ordination among regulatory bodies contributed to duplication of tasks and subsequent negligence of duty. Also lack of logistics affected the regularity of visit by enforcers. Some recommendations were made to help arrest the situation.

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CHAPTER ONE

INTRODUCTION

Background to the Study

Tourists have hierarchy of needs, which motivate them to travel and above all to select a destination over all others that might be available. Some of these motivational forces include travelling to get away from the monotony of everyday life through physical change of location, for relaxation, rest and entertainment.

Tourists consider services provided by hotels and foodservices operations and environmental health attributes as constituting important determinants in the choice of a destination and is prepared to pay a premium price for the enjoyment of such environmental quality (Iso-Ahola, 1982). Facilities that do not promote a congenial atmosphere are likely to be shunned by the health conscious traveller.

In tourism, services provided for guests include accommodation, food, money exchange, transport and entertainment. Although all these services are important to make tourists comfortable and satisfied, some services such as accommodation and catering are rated high and deemed paramount. The fact remains that the two constitute a basic need of all tourists and epitomize, to a large extent, the purposes of tourism such as relaxation, rest and entertainment

and a stay away from home. In the United Kingdom for instance, accommodation accounts for 34.9 per cent and eating and drinking 24.1 percent of overseas and domestic overnight-staying tourists' expenditure. Medlik (1994) noted the importance of hotels for the facilities and services they offer as a tourism product to consumers and these services include food and drink.

Teye's (1988) study on Ghana's past tourism efforts identified tourism accommodation and its related services as one of the important challenges facing the industry. One such accommodation related services alluded to in Teye's finding is catering service which confers the right to life on people. A critical factor, which would not generate goodwill in consumers, is when they are not assured of the safety of the food they are to consume.

Food safety then, has become an increasingly important public health issue, particularly, with the advent and increase in tourism where the lives of other visitors outside the destination area are involved. Regulatory aspects of food laws attempt to protect the health of consumers and to simplify trade at both domestic and international levels (Ihekoronye and Ngoddy 1985). Food laws have therefore been enacted to guide food providers to ensure that food served to the general public is wholesome, anything short of which attracts punishment.

To make matters simple, some agencies have been given the mandate to bring to the knowledge of food providers the food safety laws that are to be employed in food production. In Ghana for instance, the Food and Drugs

Board is charged with the responsibility of educating and training food manufacturers and handlers on safe food handling practices. Local health inspectors also have the mandate to inspect facilities where food is cooked and served to ascertain whether safety measures are being complied with. The development and promotion of tourism has also made it imperative to rope in Ghana Tourist Board, mandated by the Legislative Instrument 1205 to register and inspect transport and catering sectors of tourism and to enforce standards.

Worthy to note is the fact that no government has either the time or resources adequate enough to monitor foodservice operators on daily basis. It therefore behoves on food handlers to incorporate safety standards that have been established (Brownsell, Griffith and Jones 1992; Ihekoronye and Ngoddy, 1985; Rande 1996). The current trend of affairs however does not seem to suggest that standards are being employed to the letter even on the global scale. In 2000, 2.1 million people were reported to have died from diarrhoeal disease, which result from the ingestion of contaminated food and water (World Health Organization (WHO) 2004). The percentage of people suffering from food borne diseases each year in industrialized countries has been said to be up to 30. Less documented, developing countries are believed to have higher tolls due to the presence of a wide range of food borne diseases. Americans travelling to developing countries for instance are advised to refrain from eating when they visit such countries based on how food safety is rated in such countries. The Americans are of the view that if only 13% of catering establishments in America implement the Voluntary Food and Drug Act Code

for cooking temperatures for potentially hazardous food according to a survey conducted, then the situation could be worse elsewhere (Wardlaw, 1999).

In Ghana, the most commonly occurring food borne diseases are typhoid, cholera and diarrhoea and it has been established that food borne diseases are the fourth largest causes of illnesses after malaria. Contaminated food and water are the vehicles of these three food-borne diseases and the pathogens could be transmitted from a contaminated surface, food or from hands contaminated with organisms from the gastrointestinal tract (Bryan, 1995;). Statistics available indicate that these food-borne diseases are prevalent in Cape Coast of the Central Region more than any other district of the region. In 2003, there were 7017 reported typhoid cases in the Central Region, 1008 of which were from Cape Coast. Diarrhoea and cholera statistics were also 3,693 and 221 respectively (Ministry of Health, 2003). The annual report of the Cape Coast District Community Health Centre (CCDCH), (2004) indicated that there had been an annual increase in the number of reported food borne diseases and attributed this to the proliferation and the consumption of street foods. The prevalence of these food-borne diseases was suggestive of major underlying food safety problems.

Statement of the Problem

In the final report of the National Tourism Development Plan for Ghana, traditional catering establishments were identified as ubiquitous and believed to offer inexpensive and interesting local cuisine that tourists often

wished to try (UNDP/NTD). Research findings and other sources have also indicated that the major factors associated with tourism, particularly international tourism in Ghana, are African cultural heritage, conference meeting and leisure. Tourists, it is believed come to Ghana to experience African cultural and Pan-Africanism heritage projected in Ghana (Amenumey, 2003). Food is a component of culture which could be promoted to tourists as a new taste experience apart from being man's basic need. However, sanitation measures adopted by such facilities were found to be woefully inadequate (UNDP/NTD, 1996).

Recommendations with regard to the improvement in safety standards were made and the Ghana Tourist Board was charged with the responsibility of licensing facilities that met standards that had been set. As a corollary to this, the Board conducted an inspection in April, 2004 in the Central Region for certification and licensing of facilities. Out of the 106 registered chop bars in Cape Coast only 18 qualified for licensing, which proved that problem existed.

The competitive nature of world tourism today, however, demands that quality tourism products and services are marketed to tourists at all levels. Considering the move by the government of Ghana to develop tourism in the country, and recognizing the fact that Cape Coast is one of the host towns for PANAFEST and EMANCIPATION celebrations, which bring a number of visitors to the town coupled with the few endowed tourist attraction sites, an assurance that all other tourism related services are in good shape sets the tone for tourism promotion. Lack of adherence to safety standards by "chop bar"

operators and the prevalence of food borne diseases point to underlying food safety challenges which need to be established. It is in line with this concern that it has been deemed crucial to examine the safety measures that are in place and to establish the level of compliance with these measures and factors that militate against compliance.

Objectives of the Study

The main objective of the study was to assess the extent to which food providers of both licensed and non-licensed traditional catering establishments comply with official standards.

The specific objectives of the study were to:

1. profile the socio-economic background of workers of traditional catering establishments and that of their clients.
2. find out the sources of water and food and how these are handled.
3. assess the personal hygiene practices observed by food workers.
4. assess the effectiveness of monitoring and enforcement procedures and
5. make recommendations that will help address problems militating against compliance with safety practices by food workers.

Research Hypothesis

The study was based on the hypothesis that, there is no significant relationship between safe food handling practices and background variables such as level of formal education, sex and professional training.

Assumptions

The study was also founded on two assumptions that:

1. compliance (27 codes of hygienic practice) with safety measures is not related to status of chop bars.
2. compliance (27 codes of hygienic practice) with safety measures is not related to contamination of food.

Justification of the Study

One of the features of urbanization in developing countries has been a proliferation of street food trade (Food and Agricultural Organization, 1989). Also, with the change in economic trends people have become more occupied with their jobs thereby spending longer hours on them at the expense of their household activities, cooking inclusive. The only alternative left then is for people to resort to eating outside the home. However, whilst some people are compelled to eat outside the home due to pressure from work, others are made to do so for the fun of it. Better still; some people are compelled to eat away from home because they have travelled outside their countries for business or

leisure. This last group of people represents both domestic and international tourists.

The resultant increase in the patronage of food served away from home makes it imperative to ascertain the safety of the food. It has become even more important with the involvement of foreigners and when street foods have been identified by some as a deleterious trend dirty and dangerous to eat (Tinker, 1987). This assertion is evidenced by the findings of a survey which sought to explore the training needs of traditional caterers. Food hygiene was not ranked among the first eight training needs of significance but rather ranked next to bottom among last five of those of low priority.

One other fact that makes this study crucial is the fact that, critical scrutiny of the requirements for licensing the traditional catering facilities revealed some shortfalls. Provisions made were not all encompassing. This therefore called for an in-depth exploration of measures that could compromise food safety yet not covered by provisions.

Above all, a close analysis of tourism related service (foodservice) was a step in the right direction to match the positive strides being made by the industry than to allow negligence to detract from the current contributions to the economy of Ghana.

Structure of Thesis

The study is divided into six chapters. Chapter one deals with introduction, which is an embodiment of the background to the study;

statement of the problem, objectives, research hypotheses, justification for the study, organization/structure of thesis and information about the study area. Chapter two focuses on conceptual, theoretical and policy issues on food safety in Ghana. Sources of data for the study and the data collection itself constitute chapter three. Chapter four discusses the background characteristics of respondents and how some of these characteristics influence some of the behaviours of traditional caterers. Enforcement and compliance with food safety measures and the relationship between compliance and contamination of food in the Cape Coast Municipality are established in chapter five. Chapter six concludes the thesis with a summary of empirical findings, policy implications of the study and recommendations for further research.

Study Area

Cape Coast as the area for the study is located in the Central Region of Ghana. It is both a municipality and a regional capital refer to Figure 1. This presupposes that Cape Coast is an urban area with people of different ethnic backgrounds, some of whom have migrated from both within and outside Ghana for varying reasons. The predominant ethnic group living in the area however is the Fantes. Some of the other ethnic groups that live in the area include: the Ashantis, Akyem, Ga Adangbe, Bono, Ewe, Guan, Mole-Dagbani and Hausa.

Cape Coast is essentially an administrative and educational centre. It has five "A" Secondary Schools and other secondary schools of lower ranking.

She can also boast of a Polytechnic, a Nursing Training School, a Training College for women and some vocational schools.

Health facilities in and around the township also make almost the whole country move towards the town for treatment. These health facilities include Ankaful Leprosarium, and Psychiatric hospital, which serve the whole country. Christian Eye Centre, which serves people from even Togo and Cote D'Ivoire, and a regional hospital. There are also other health facilities which serve only Cape Coast and the surrounding villages. Among these are the University of Cape Coast hospital, the Cape Coast district hospital, and the Ewim and Adisadel Urban clinics not to mention the private medical practitioners.

Trading is an important economic activity especially for the female population. The men are also into fishing from both the sea and the Fosu lagoon. Cape Coast was once a national capital and its background as an important trade post for the Europeans has made it a historic town for tourists. Although the town on her own cannot boast of a lot of tourists attractions other than a Castle, coconut palm-shaded beach and a colourful festival she happens to be the regional capital of a region that abounds in a wide range of attractions including the celebration of two historic festivals, PANAFEST and EMANCIPATION. The above notwithstanding, the town is strategically located which has made it a transit point for travellers who may change vehicles or stop to eat. Indeed, the town has an efficient road network linking it

to some of the vibrant regional capitals like Kumasi, Takoradi and Accra, which is the gateway to Ghana.

During PANAFEST, EMANCIPATION and Oguaa Fetu Afahye, a number of visitors come from the world over to participate. There is also a general flow of visitors all year round patronizing the Castles and other tourist's attractions within Cape Coast and its environs for instance Kakum National Park,. Most of these visitors do not make a return trip which implies that some may have to eat from any of the eating spots around. To satisfy their curiosity, some of the foreigners may probably patronize some local dishes where supervision in their preparation, in the past years, has not been of much concern.

CHAPTER TWO

CONCEPTUAL AND POLICY ISSUES IN TRADITIONAL CATERING AND COMPLIANCE WITH FOOD SAFETY REGULATIONS

The Concept of Food Safety

Food and Agriculture Organization (2005) defined food safety as any food item devoid of any biological, chemical or physical hazards capable of causing harm to the consumer. The presence of these harmful contaminants not originally present in the food is believed to be introduced by humans although some do occur naturally (foodlink, 2004). Food safety also refers to all those hazards, whether chronic or acute, that may make food injurious to the health of the consumer. This makes food safety non-negotiable that is, the consumer has no control over the consequences once contaminated food is ingested.

Three main areas can be identified within this wide topic of food safety namely food hygiene, composition and labelling. Of interest here is food hygiene, which is defined as the sanitary science, which aims to produce food that is safe for the consumer. A critical examination of this definition makes it no different from those already stated. That is, the fact remains that people can bring their cultural practices to bear on the safety of food they serve but then food safety does not compromise on cultural practices. Moreover, food safety

is a trans- boundary concept and for that matter should have the same interpretation for all nations.

Food contaminants are introduced into food supply at numerous points along the way from farm to the table. Food animals and their manures can carry human pathogens without any clinical manifestations. Likewise fresh vegetables and grains can harbour pathogens or mycotoxins without any discernible loss of quality (Food and agriculture Organization, (FAO) 2005). This seems to suggest that by the time any raw food item gets to a catering establishment, it might be carrying its own load of contaminants. It therefore incumbent on the workers of food service establishments to either control the load of contaminants that already exist, or prevent any further contamination. This becomes even more important since the catering industry is believed to be the primary source of food borne outbreaks.

However, Knowles (2002) maintained that food handlers at each point of the food chain lack the knowledge of risks involved and the related safe food handling practices. He also noted that food preparers must be aware of how they can prevent cross contamination by properly cooking foods.

Micheals (1989) on his part asserted that clean and attractive premise of sound structure and designed for ease of work promotes food safety. Unfortunately, he lamented that many catering premises are not purpose-built or in the most cases are built at places that are not conducive for food safety promotion. He mentioned ventilation and natural lighting, access and possible storage areas among others as some of the issues that need consideration when

planning catering premises. A survey that was conducted on street food vending in Accra indicated that disposal of garbage and waste-water was very unsatisfactory. Also materials that had been used for the construction of stalls were no better and did not promote food safety (Ntiforo, 2001). Eating places were found to be frequently unhygienic (Sai, 1977), normally situated near filthy gutters and refuse dumps (Addy, 1986) and conditions of premises were generally poor due to deterioration and neglect of facilities (Ntiforo, 2001).

Sources of Food Contamination

Food naturally contains safe levels of both harmful and safe bacteria. However, the provision of favourable conditions allows bacteria to grow to sufficient numbers to cause health problems (Rande, 1996). Out of the eight most cited sources of food contamination, Micheals (1989) isolated cross contamination as the most singular source responsible for food contamination. Cross contamination is the process where harmful bacteria are transferred to food. The transfer could be direct contact between one food and another; from food handlers who do not wash their hands between handling raw and cooked food; or indirect contact, which is between equipment and improper storage practices (London Borough of Hillingdon, 2005). This assertion is buttressed by Ntiforo's (2001) findings in a survey conducted on street foods in Accra, Ghana. His survey revealed that raw materials for the preparation of food in Ghana are potentially capable of supporting vegetative and spore forms of bacteria due to their origin from the soil, poor hygiene and storage practices.

This presupposes that pathogenic microbes contaminate food from human and environmental sources all of which are channels of cross contamination, and the major risk being attributed to the food handler.

For the simple reason that raw foods is capable of supporting vegetative and spore forms of bacteria, Ntiforo (2001) suggested in his paper on street foods that food vendors be educated to purchase good quality raw material from reliable sources. Micheals (1989) and Knowles (2002) added that a member of management must inspect raw materials for food production when they arrive at the establishment. This is because the quality of raw materials used as components of a food product has a direct relation to the ultimate quality of the food produced.

Apart from cross contamination, other areas of concern with regards to food safety include failure to cool food properly, failure to heat or cook food thoroughly, waste disposal, cleaning and contamination by insect and rodents (Rande, 1996; Knowles 2002; Micheals, 1989). Knowles was however of the view that most foodservice workers are unaware of how to protect food from the threat of contaminants. In view of this he recommended familiarization with food safety measures by foodservice workers as a matter of paramount importance.

Food Safety Measures

Accurately determining which changes in food are only quality change and which changes indicate possible microbial spoilage by pathogenic bacteria

is difficult for many consumers and manufacturers. Similarly, waiting to check for the safety of a finished product is equally difficult and may be costly too. A well structured, preventive approach that controls processes is cost effective and therefore preferable in achieving food safety. With such an approach many potential food hazards are controlled by adopting good hygienic practices. An important preventive approach that has been identified is the Hazard Analysis and Critical Control Points (HACCP).

HACCP is a seemingly difficult name for a simple and effective way to ensure food safety. It is a proactive means of identifying and predicting risks to food safety and to prevent them before they happen. Another potential benefit that is inherent in HACCP is that it makes inspections more useful by concentrating only on potential problems (Price, Stevenson, and Tom, 1993). The principles of HACCP by right should be embodied in code of practice, which serve as a guide for inspection officers. The code contains a series of requirements and practices to be observed in the preparation and sale, in the street, of foods and beverages for direct consumption. The code of practice normally should be based on the food law that operates in any particular country, which should also derive from the recommended international code of practice with few additions to address national differences in terms of culture.

Codified hygienic practices for foodservice workers embody all aspects of food preparation. These include: the quality of raw materials; storage of such ingredients, general sanitation of the area where food is prepared, the condition of equipment to be used and the hygienic practices of the food

handlers themselves. Since all countries are to draw on the Codex Alimentarus codes of practice for uniformity and fairness in trade, one of such code of hygienic practice, which has been tested and currently in use in Latin America and the Caribbean was adopted for this study. It is a revised code of hygienic practice for the preparation and sale of street foods.

Tourism and Food Safety

Maslow, who is acknowledged with the best known theory of motivation, argues that man's needs fall into five broad categories, which form a hierarchy, beginning with the lower order psychological needs to higher order self actualization needs (Gartner, 1996). He noted that each of the needs expressed in a category would have to be satisfied by an individual before proceeding to the next category. Researchers who have applied Maslow's model in the context of tourism motivation recognize that tourist motivation changes over time and a tourist could achieve a number of needs at a time (Fridgen, 1996). Pearce (1992) also added that tourist motivation is an ever-changing process and people move up the 'ladder' as they progress through the various stages of the life cycle. One thing is however constant and that is, whatever motivation a tourist might have, he/she would have to meet the lower psychological need of hunger since that is a basic need and for that matter a prerequisite for life. Foodservice therefore becomes more or less an essential and integral part of travel and tourism although the prime aim of the traveller may not necessarily be to experience the local cuisine of the destination.

Although the need for food to satisfy hunger might be present, it is only when the tourist is assured of his safety for the purchase of a product that he would patronize it.

The relation between health and tourism has long been recognized not only as a significant driving force for travel but also in terms of the potential health risks stemming from contacts by visitors with the environment and the host population. This primarily stemmed from the awareness of the dangers from infection imported by travellers which dates back to the Middle Ages when there were outbreaks of plague following the arrival of ships from the East. On arrival therefore, ships were kept at a distance and travellers detained for 40 days before they were allowed to proceed to their final destinations until Venice and Rhodes introduced the first travel regulations (Dawood, 2002). This idea of quarantine was later embraced by a number of countries until some form of sanitary regulation became the general rule in many countries during the next five centuries. However, the unprecedented scale and speed of modern-day travel means that ever increasing numbers of travellers are exposed to unfamiliar infectious diseases and other hazards.

There are a number of publications available in developed countries describing health hazards to tourists planning to travel to countries and places in developing economies. Although, normally very general in their contents, and often based on perceptions or projections rather than concrete facts, these publications respond to most of the concerns potential travellers have. Travellers are alerted by such publications because relaxed attitudes and

reduced inhibitions become the norm when they are at the host nations. The traveller may thus accept risks that would be avoided in everyday life, such as experimenting with unfamiliar food and drink thereby exposing him to unfamiliar infectious agents. It is also believed that the more varied the cultural contrast with the home country the greater the risk Dawood (2002) continued.

The foregone discussion makes the role of a marketer of tourism more challenging turning into a reality the dream of a tourist, which is an anticipated enjoyable holiday amidst misconceptions and negative perceptions. This challenge is made the more difficult for the tourism marketer to achieve since tourism is not a homogenous product but rather a collection of fragmented services, such as an airline seat, hotel room, three meals a day to mention but a few and where any deviation from the expectation of the tourist might negate the anticipated enjoyable experience and turn it into a nightmare (Halloway, 1998). For instance, a good room and fine service at a hotel may be spoilt by poor food. Despite the fact that an element of chance may be unavoidable, it is obligatory for all service providers to ensure that their products represent quality and to a large extent come close to the customers' expectations.

Intangibility of the tourism product makes its purchase a speculative investment, which involves a high degree of trust on the part of the purchaser. To reduce uncertainty caused by this characteristic of tourism, buyers look for tangible evidences that provide information and engender confidence about the service. For instance, the exterior of a foodservice establishment provides a cue to an arriving guest as to how well it is run. In view of that employees of any

food establishment need to reinforce whatever image they wish to portray. It has been observed that a tourist who purchases a service may go away empty handed but not empty headed and these are the memories he would share with others. Such memories may be good or bad depending on the experiences he/she had.

It is really hard to build up a good reputation in the foodservice industry, but easy to lose it. Some countries are said to miss out on potential income from tourism because of the prevalence of serious food borne illnesses, such as typhoid and dysentery (Micheals, 1989). Since people associate clean surroundings with high standards of hygienic practices and cleanliness of employees of foodservice establishments, although this might not always be the case, the tourism industry stands to benefit on the merit of goodwill if the general sanitation of the establishment is good (Rande, 1996).

According to Independent Traveller Inc. (2005), sampling of food of the world has been identified as one of the most satisfying experiences of travellers. The author however cautioned that, while one's palette may be game, his stomach may not always be up to that challenge. This notwithstanding, if Codex Standards are employed by all nations to serve as benchmark for comparison of sanitary measures, travellers, particularly foreigners would have confidence in caterers and what is provided them. In that vein, it would be in the interest of countries to harmonize their national food standards with that of Codex. Ironically, there exists no uniformity among countries with regards to safety measures as

among countries with regards to safety measures as revealed by a study conducted by Food and Agriculture Organization (FOA) (1989).

The demand for tourism generated by increased time and disposal income can be tempered by a wide variety of obstacles, which may serve as barriers. A wrong perception about the destination may reduce the likelihood of a visit. This explains why an enormous effort has to be made to ensure that a tourist destination has a good image. It is upon this basis that the Brong Ahafo Regional President of the Ghana Traditional Caterers Association (GTCA), Mr. Kingsley Hayford Ababio in the recent past urged traditional caterers to improve upon the quality of food sold for public consumption. He noted that the production of safe food would complement the efforts of the Ministry of Tourism and Modernization of the Capital City to woo potential tourists into the country. Mr. Ababio regretted that traditional caterers do not add any value to their food and continue to use rudimentary methods that do not enhance food safety in food production and service.

Since most of the tourists visiting the country are likely to have first hand information about the local dishes, which they can only do by tasting and as revealed by research, repeat visits on the part of tourists are influenced by past experience of a particular service and/or product (Haywood, 1988 in Travel and Tourism Association, 1997), it is only when the quality of the food is ascertained that patronage would increase. This, he added, puts traditional catering at the pivot of the tourism industry. It is incumbent on all stakeholders therefore to ensure that food handlers comply with food safety

measures and that regulations are also in harmony with that of Codex Alimentarus to engender confidence in the consumer. As part of the effort to regulate traditional catering in the country, the tourism agency has been roped into the regulatory agencies and mandated by the Legislative Instrument 1205 to inspect food premises to ensure that standards are met. This notwithstanding, existing standards have been fused into ECOWAS Standards to ensure uniformity at least in the sub-region. In view of that traditional catering establishments are to be roped into those foodservice establishments that are to be promoted to the outside world (SGS Training Document for the Food and Hospitality Industry).

Consumers

Confidence in the safety and integrity of the food supply is an important requirement for consumers (FAO, 2005). This perception can only be tenable if consumers were aware of food safety and adequately informed too. Unfortunately however, studies conducted by FAO revealed that consumers in general, have similar profile to food vendors from whom they purchased their food. They usually are from medium to low income families, have a relatively low education level and have little knowledge of proper food hygiene (FAO, 1989; Opare -Obisaw, 1990; Ntiforo, 2001). In view of this consumers are unable to protect themselves from possible health hazards since they are ill equipped to evaluate the safety value of street foods. It therefore becomes increasingly important that the provision of factual information be

directed at consumers also. Responses from patrons of street foods in Opare-Obisaw's (1990) study conducted in Accra however revealed a contrary view. Indications were that consumers were aware of the unhygienic conditions prevailing and the inherent health dangers. However, they ignored these and ate from such places because of convenience with respect to time and proximity and that is where consumers falter. To a large extent patronage of inferior quality goods allows the producer to take the consumer for granted whilst boycott of such goods would compel producers to address consumer concerns.

Unlike food vendors, consumers tended to be mostly men and the ages of consumers ranged from 10 to 60 years. Majority of consumers were also found in the low-income group. This was revealed in a study conducted on street foods in Ghana (Ntiforo, 2001). The age range of consumers of vended food was also confirmed by few studies that were conducted on characteristics of street food consumers in India, Indonesia and Nigeria. These studies revealed the age range from 10 through 40 years, which lowers the upper limit of the previous assertion by 20. A different result was however realized from some studies done in Ghana, which noted the ages of consumers to be between 23 and 48 years. One distinguishing characteristic that was identified by Ntiforo's (2001) study was the fact that majority of the street food consumers in Accra were Christians.

Motivation for patronizing street food included satisfaction of hunger (FAO, 1989) on the basis of taste (FAO, 1989; Ntiforo, 2001) convenience and

price (Ntiforo, 2001 and Opare-Obisaw, 1990). Deductions that could be made from the foregoing discussions were that cleanliness and safety of food vending sites and the vendors themselves were down-played to a large extent. Nonetheless, consumers are entitled to information packages and educational programmes, relative to food safety to enable them make informed decisions on how to select a food-vending site. Such a step would stimulate keen competition and help vendors to realize that compromising on food safety is not a way to reduce costs but rather, a very dangerous business path to tread.

It is important therefore to bring to the knowledge of the consumers what their rights are and what to look out for when they visit any catering establishment. In Ghana, there is a consumer association, which has been in existence for years and among other things promotes and sustains consumer awareness of their rights and responsibilities (Opare-Obisaw, 1990).

The Evolutionary History of Traditional Catering

Historical Background

The commencement of the informal catering sector in Ghana has not been well documented. However, Ghana like most African countries has strong traditions associated with the type of foods eaten. Methods of preparation are also deep-rooted in traditions (Opare-Obisaw, 1990). It is known that food was traditionally prepared at home from ingredients either produced by the family or purchased from the market.

The preparation of certain food items required such a high labour, capital, energy and specialized skill that only few families qualified to handle economically. Lack of adequate storage facilities did not also encourage individual families to venture into quantity foodservice. As a result, certain families became associated with the preparation and sale of specific cooked foods such as "kenkey"," gari", smoked and fried fish.

Ghana's independence in 1957 promoted industrial development and a general improvement in health and education bringing about both vertical and horizontal mobility of citizens. The source of employment, which was mainly indigenous agriculture and petty trading, was diversified into other fields. People then had to work away from home and the traditional environment. Those who could not carry food to their places of work had to be catered for. Cooked foods, snacks and fruits had to be sold to customers by those who could cook in relatively large quantities.

With increasing urbanization and migration, the major cities and towns became centres where one could find a variety of traditional foods. Some of these foods were and still are associated with some ethnic groups (Sefa-Dedeh, 1989). The rapid increase in urbanization and migration has made these products important for many Ghanaians. People from outside the major cities also come along with their traditional foods, which in no time are accepted by other ethnic groups. The increasing number of working women has also caused changes in eating habits of Ghanaians. Consequently, fewer people now eat breakfast and lunch at home. Some school children, bachelors, people

without cooking facilities, those who do not want to cook, poor people and above all visitors have all found eating at public places convenient.

The Concept of Traditional Catering

The New Harmonized Standards for Accommodation and Catering Establishment by the Ghana Tourist Board (2003) classifies traditional catering under the informal catering sector. The sector encompasses all traditional catering establishments; drinking bars, snack bars, outdoor catering establishments and local fast food establishments. In the same document, traditional catering establishments have been defined as an informal setting basically equipped for the preparation and service of local food. The establishment may be wholly or partly enclosed or completely open but with a well defined service point. The type of service may either be cafeteria or counter where customers are assisted and served with their requirements. Traditional catering establishments have also been defined as small artisanal operations producing traditional foods for the local community (FAO, 2005). GTB,s definition of such facilities ropes in some category of street food vendors precisely the stationary vendors. This category of vendors is normally housed in large wooden structures or blocks made into rooms, which is classified as chop bars (FAO, 1988).

Some of the food items that have been identified with traditional catering include "fufu" and soup, "kenkey" and fried fish with pepper sauce,

rice and stew, 'akple' and "okro" stew "kontomire" stew and boiled yam or plantain, "konkonte" and soup and a lot more.

Traditional catering establishments have been found to have very limited resources for effective technological inputs. Such premises according to FAO are ill equipped to deal with the maintenance of food safety in a scientific and sustained manner.

Characteristics of the Traditional Catering Business

Traditional catering establishments fall under small and medium enterprises (SME's) and this sector accounts for 99.8 percent of all food businesses within the catering, hotel and retail sectors (Department of Trade and Industry, 2002). .It has been alleged that small businesses like that of traditional catering establishments employ more women (FAO, 1989; Headd, 2000, FAO; 1991). Most of the workers employed to work in such establishments have been found to be between the ages 25 and 65 years (Headd, 2000). Although findings of other studies in Ghana and Nigeria differed, the deviation is not so much (FAO, 1989; FAO, 1991; Ntiforo, 2001). Small enterprises are also reported to have higher percentages of employees with low educational background and all studies previously referred to in this text attest to this fact.

According to a study that was conducted in Nigeria by (FAO, 1991), traditional catering establishments are believed to employ one to four persons into the business. It was also identified by the same study that majority of such

businesses obtain the funds to start business from personal or family savings. The tendency to use some of their relatives and children in production is also very likely since proprietors may not have adequate funds to employ more people. However, they tend to employ majority of the workforce because requirements for intake are nothing to write home about.

With reference to foodservice industries, it has been reported by FAO, (1991) that such premises are ill equipped so they are not able to deal with the maintenance of food safety and quality in a scientific and sustained manner. This might be due to the fact that employees are of low level education and are ignorant about such measures or are so obsessed by certain beliefs which impact on food safety.

Characteristics of Traditional Caterers

A number of projects were embarked on by FAO (1989) in Latin America, Asia and Africa with a view of identifying problems associated with street foods. Findings of these projects revealed that, whereas women dominated food vending in Asia, the opposite was true for countries in South America. The case of some of the states in Nigeria reflected that of Asia where women were found to be in the majority as far as food vending was concerned (FAO, 1991). A survey of about 300 respondents from Accra and Tema revealed that 88% of food vendors were females (Opare-Obisaw 1990).

A training need assessment survey was also conducted on traditional caterers in the 10 regions of Ghana under the Ghana Tourism Development

Capacity Initiative Project. The result of the survey indicated that 83% of employees in traditional catering establishments were females with the remaining 16.7% constituting males (GTCD1, 2003). The conclusion that could be drawn from this is that food vending is a popular job for women. The level of formal education for vendors as reported by most surveys was found to be rather low with most of them having received less than eight years of formal schooling, a level comparable to the present JSS graduate certificate. This may be a contributing factor to the general lack of knowledge of hygiene and food sanitation among food vendors (FAO, 1989). A critical examination of individual studies however may reveal some variations among individual countries.

Most food vendors are also reported to be married rather than single. A study conducted in three states in Nigeria by FAO, (1991) and two other studies in Ghana all revealed that majority of food vendors were married women. One major reason that could be adduced to this trend may be the fact that with little formal education the only thing these women could do to supplement their families' income was to be roped into the informal sector, which requires nothing more than having the initial capital to start business. The average number of children for the sample interviewed in one of the studies conducted on street foods in Ghana by Osei (1990) was reported to be three whilst 50% had children above 11 years. Two studies (NFS, 1994; Osei, 1990) also revealed that almost 90% of food vendors had the job as their only source of livelihood. Christianity and Islamic religions were predominant in all

three studies conducted in Ibadan, Kaduna and Lagos, although some variations existed among individual states.

Legislation and Compliance

The consequences of food infection and food poisoning can be serious and sometimes fatal. Concern about the wholesomeness of food is therefore a matter of interest to both governments and the citizenry of every country. On the part of government, this concern is evidenced by the enactment of laws to regulate the activities of food handlers. The development of relevant and enforceable food laws and regulations should therefore be an essential component of any modern food control system.

Legislation

Food law traditionally consists of legal definitions of unsafe food and the prescription of enforcement tools for removing such food from commerce and punishing responsible parties after the fact. Food laws are also meant to govern production, handling and marketing of food with the ultimate aim of protecting the health of the consumer against fraud that is, ensuring that the consumer receives the food he legitimately expects, paying attention to packaging and labelling.

Critical examination of food legislations reveals that laws are made at the national level whilst local authorities derive bye-laws from the national laws. In Britain, the Minister of Agriculture, Fisheries and Food, (MAFE) and

the Secretaries of State for Scotland and Wales act jointly for all food legislation. Individual sections of legislation however is the responsibility of the department most concerned (Hobbes 1993). American food law stipulates the role of the federal government which is to protect the quality of food products purchased by the operator but has nothing or little to do with the daily operations of foodservice operators. The most striking feature, which is an integral part of Germany's food law, is that there is a ministry which represents the food industry and in consultation with another ministry representing the government prepares food law and standards.

It was not until 1974 that the Nigeria Standards Organization (NSO) recognized the sensitive nature of food and took a bold step with the promulgation of the Food and Drug Act. The provision compelled manufacturers to ensure that their standards matched up to those established by the Codex Alimentarus Commission (Ihekeronye, and Ngoddy, 1985). Before then, there was no specific body adequately staffed and charged with defined responsibilities of ensuring that food products met international standards in Nigeria.

In pursuance of the Provisional National Defence Council Establishment Proclamation, (PNDCL 3035) in 1981, the Food and Drugs Law of 1992 was promulgated. The law prohibits the sale of unwholesome, poisonous and adulterated food. Additionally, it takes into account the sale of food under in- sanitary conditions, which makes the food vulnerable to contamination. Moreover, the law stipulates that food must be manufactured

under supervision and that the sale of unwholesome food is tantamount to an offence punishable by a fine, imprisonment or at worse closure of premises.

Legal provisions relating to food regulate specific activities, namely production, processing and sale of food. Most modern food legislation consists of a basic law which all other regulatory instruments are based. In some industrialized countries, an established practice is to enact comprehensive and detailed text which brings together practically all general provisions concerning food. Administrative authorities are in this case left with just the prescription of technical procedures for enforcement and detailed provisions in respect of particular foods.

An alternative approach, which is found in less developed countries as well as countries where Roman, German or Scandinavian law prevails, is to limit the content of the basic law to enable other provisions to be made by the administrative structures that enforce the law. This system has an inherent flexibility in that within the general framework laid down by law, the necessary powers are delegated to the appropriate authority to make rules governing the administration of the law, and to prescribe technical regulations and standards for specific foods. An added advantage is that because the law is basic and all details are confined to regulations and standards, changes with respect to scientific advancements can be made more easily without any reference to parliament for its amendment. Relevant Minister or Ministers have the power to issue any appropriate regulations and can therefore act to take care of new developments. Most food laws also contain a category of

provisions that set up structures to carry out the activities necessary to enforce the law. Offences are defined along with the nature and limits of the penalties that may be imposed together with the procedures for such imposition once the commission of an offence has been duly established. It may also be possible to include detailed schedules like, list of inspection.

Regulation and Enforcement

The Food and Agriculture Organization Codex Alimentarus is the body that sets food safety standards worldwide (FAO, 2001). Through its Regional Coordinating Committee, Codex creates guidance documents that serve as the basis for national and local regulations on street foods. Codex standards contain requirements aimed at assuring the consumer a sound wholesome food product correctly labelled and presented and also free from adulteration.

Generally, the national government has little to do with the daily activities of foodservice operators. In the United States, agencies that are empowered by law to handle issues related to food safety are the Food and Drug Administration (FDA), and United States Centre for Disease Control. The FDA is responsible for developing ordinances and regulations for state and local health. The ordinances then become the basis for state and local regulations and codes. In Britain, the Minister of Agriculture, Fisheries and Food (MAFE) main concerns are food production and quality, correct labelling, the absence of adulteration and unapproved ingredients in food. There is also the Department of Health responsible for the safety of food with

regard to the health of the consumer. In Germany there are two ministries, which have general responsibility for matters of food law enforcement: the Ministry of Health and the Ministry of Nutrition, Agriculture and Forestry. After policies have been made, it is the Veterinary Office that carries out the policies under the able leadership of the Veterinary doctor. The actual control of food safety is under the direction of veterinarians'. In instances where there is an indication of delayance in compliance; authorized police officers are deployed to enforce food law. This is a most significant feature, which distinguishes Germany's food law enforcement from many other countries.

Nigeria Standards Organization is the body that ensures compliance with standards established by the Codex Alimentarus Commission. Generally, agencies that are involved in regulatory activities in the food industry in Ghana include: Environmental Protection Agency (EPA); Food and Drugs Board (FDB); Ghana Tourist Board (GTB); Ghana Standards Board (GSB) Veterinary Services Department (VSD) and the Local Authorities. A glimpse of the regulatory agencies reveal that there is no country where only one agency is involved in the regulatory task, a condition which might impact on regulation if coordination is downplayed. For instance resources may be wasted and efforts duplicated and even where there is coordination, joint efforts may be obstructed by personality conflicts, clash of interest and clash of roles in a particular situation (FDA, 1997).

As part of regulation in the UK, an initial inspection of the premise is conducted by an Environmental Health Officer, to ensure that standards set by

that agency are met, before a foodservice establishment is registered (Environmental Health Agency, 2004). Malta goes a step further to ensure that food handlers attend a food hygiene course and pass the test that has been set for them before obtaining a document as registered food handlers. Regulatory agencies are expected, from that time forth, to conduct regular inspection, however in U.K. the frequency of inspection is dependent on the degree of potential risk the establishment possesses. Just like U.K., the sale of food in Ghana is controlled through licensing and regular inspection in order to ensure the safety and quality of the food (Ntiforo, 2001). The only deviation may be the food safety training and assessment of prospective food handlers. Officers of the controlling authority from hygienic point of view conduct initial inspection and once license is issued, foodservice operators are under obligation to meet mandatory provisions of the local authority by-laws. There is the Accra Street Market Bye-law under the Accra Town Council Ordinance of 1943, which has provisions that enhance the safety of food sold to the public. Cape Coast Municipal Assembly Bye-laws, 2000 also embody environmental sanitation, maintenance of premises, drainage of wastewater, and solid waste management all of which are aspects of food safety.

Ntiforo's (2001) study on the safety of street foods in Accra revealed that, not only were the metropolitan bye-laws outmoded but they were also not in harmony with current trends in the street food business. Moreover, the laws were not effectively enforced due to inadequacy of trained staff properly equipped for that task. A degenerating data compiled from inspection of chop

and snack bars from 1990-1993 in Table 1 below affirms the assertion made by Ntiforo (2001).

Table 1

Chop and Snack Bars Inspection (1990-1993)

Year	No. of Inspections
1990	179
1991	178
1992	89
1993	99

Source: Ministry of Health, 2001.

Meanwhile any ideal food control system should include effective enforcement of mandatory requirements achieved through regular inspection programme (FAO, 2005). On the contrary, effective enforcement of inadequate food legislation also impacts on any food safety programme. A recommendation made by Ntiforo (2001) based on a study he undertook in Accra seemed to suggest that there are no stipulated codes of practice to guide vendors in the production of safe food. Regulators were only guided by bye-laws of the local area.

FAO (2005) is of the view that implementation of any food law requires a qualified, trained, efficient and honest food inspection service, because inspectors are the key functionaries who have day-to-day contact with the food industry. No matter how comprehensive a food safety programme if

it does not provide food control agencies with a clear mandate to prevent food safety problems it avails nothing. A programme that is reactive and enforcement-oriented rather than preventive and holistic in its approach to reducing the risk of food borne illness results is also not considered worthwhile.

Compliance

It has been alleged by Knowles (2002) that even developed countries assume that the substantial body of legislation which, they have is a guarantee for safe and wholesome food that is fit for human consumption. They are also tempted to believe that commercial transactions are conducted fairly and that the necessary systems of official control and inspection are put in place. It is true that safety is the responsibility of the food industries themselves, it should however not be taken for granted that people would comply willingly with safety measures. Official surveillance and an enforcement system therefore offer the opportunity for checks and balances.

Food safety regulations require businesses to ensure that they carry out their operations safely and hygienically. This is because it is the responsibility of the private sector to ensure that it provides safe food for consumption, whilst government's principal role is to verify that industry is carrying out its responsibility. Fairman and Yapp (2003) on the contrary argue that the primary motivation to improve food safety conditions cannot come from within, but would have to be provided by external motivators such as personal

contact with enforcement agency staff or trade associations. This argument is founded on the premise that many small businesses especially, display a lack of food safety knowledge and skill. This lack of awareness they say, results in lack of confidence to deal with food safety issues with the health of the consumer endangered. And it is only when the enforcer identifies and directs compliance decisions that businesses realize the fundamental challenges they pose for their businesses and adopt a self regulatory approach to food safety.

This assertion is buttressed by a study, which was conducted by a group of researchers. Conditions and practices that impact on food safety in one centralized school foodservice production system were investigated The result of the research revealed that the major factors that militate against compliance with food safety measures is ignorance on the part of food handlers (Brown and McKinley, 1982; FDA, 1997). Food handlers were simply not aware of how to protect food from contaminants, whilst hand wash facilities were accessible, poor hand washing techniques were observed. Knowles (2002) added that ignorance of food safety measures is also true of management and not only the staff.

Micheals (1989) and WHO (2002) have also identified low level of education, which presents itself as a barrier to communication and training. Besides the level of formal education of employees, which is an obstacle to communication, there may also be a language problem. Once employees' country and ethnic backgrounds differ and level of literacy even in their own mother tongue vary greatly, communication between management and

employees and among employees may be limited to the spoken word, which may even not be fully understood. Micheals (1989) further argued that people who work in food- service establishments engage in long hours of work in rather uncomfortable conditions for relatively small financial reward. In view of that a larger proportion of employees of the industry have little capacity or motivation to change their working habits. Implicit is the fact that even in situations where training in food safety has been done, lack of financial motivation prevents its application. The view held by Micheals (1989) is confirmed by WHO's (2002) assertion that the insipidity of food handlers towards compliance is as a result of their socio-economic conditions. WHO (2002) postulated education and training to be two major ingredients that could provide food control authorities and the food industry with the necessary information to make scientific decisions. Failure to do this, the organization continued; allows ignorance, taboos and traditional beliefs to dictate behaviours and practices. The import of this assumption is that, foodservice workers come to the workplace with their own ways of doing things owing to their belief system and living standards, and it is only through constant training and education that change can be effected.

If indeed compliance decision has to be externally motivated as propounded by Fairman and Yapp (2003) then regular inspection by the regulatory agencies is imperative. Unfortunately however, some studies that have been conducted allege that it would not be feasible due to lack of resources on the part of government and the extensive nature of the food

sector. Inspections are therefore said to be irregular and qualified trained staff for inspections is even lacking (WHO, 2002; FDA, 1997; Fairman and Yaap 2003). Also, while multiple food control agencies may be the norm, this may result in problems such as duplication of regulatory activity, increased bureaucracy, fragmentation and a lack of coordination between the different bodies involved in food policy formulation and implementation. Monitoring and control of food safety activities may also be a problem (FAO, 2005), and in some instances inconsistent enforcement may result (Food Standard Agency, 2001).

Inspection systems designed to assure the safety and quality of exported foods may protect international markets, generate business and secure returns whilst animal and plant health measures improve agricultural productivity. In contrast, food safety is an essential public health goal and may impose costs on producers and may not be immediately gratifying in the market place, it engenders confidence in consumers, who eventually would reap investments. This is all the more reason why producers need to comply with food safety measures.

Theoretical Framework and Models for the Study of Compliance with Food Safety Measures

Some theoretical frameworks have been developed for the study of food safety and compliance with food safety measures. These frameworks bring to light those responsibilities that ensure food safety. The Hazard

Analysis Critical Control Point (HACCP) model as cited in Price et. al. (1993) for instance identifies industry as having the responsibility of ensuring food safety and therefore the one to ensure compliance.

HACCP is a structured approach that assesses the potential hazards of a food operation and decides which areas are critical to the safety of the consumer. Once identified, the critical control points (CCPs) are monitored and deviations from the safety limits corrected. This approach can be applied to all food operations, from large manufacturer to the small caterer. HACCP is a written programme and an active process, which allows one to be proactive and also provides a means by which a continuous monitoring, documentation and corrective measures are taken. The strength of this model lies on its emphasis on building safety into the process rather than waiting to test the end product for quality.

HACCP model implementation is based on the premise that food handlers are aware of food safety measures they are to employ in food processing. On the contrary literature reviewed indicated that ignorance about food safety measures among food handlers account for non-compliance (Brown and McKinley 1982; FDA 1997).

Secondly, individual factors that can account for non-compliance have not been catered for in the model. Food handlers may be aware of the safety practices but other militating factors may hinder their compliance.

Finally, under HACCP-based regulatory programme there is a clear delineation of responsibilities between industry and regulatory agencies.

Industry is seen as having the primary responsibility for the safety of the food it produces and distributes whilst the government verifies whether industry is carrying out its role and initiates appropriate regulatory action if necessary.

Henson and Heasman (1998) also developed a compliance process model that describes the decision-making process carried out within a business when faced with a legislative requirement. They based their analysis of the compliance process within companies on work carried out by French and associates. French's work also formed the basis of work purported to ascertain the response of companies to regulation. Neither work was specific to SMEs. Henson and Heasman (1998) adopted the compliance process model to specifically relate it to small businesses.

The compliance process model developed by Henson and Heasman (1998) consisted of five stages; identification and interpretation of the legislative requirements; specific method of compliance; making a decision to comply; implementing this method and monitoring and evaluating the changes. The model is shown as Figure 1.

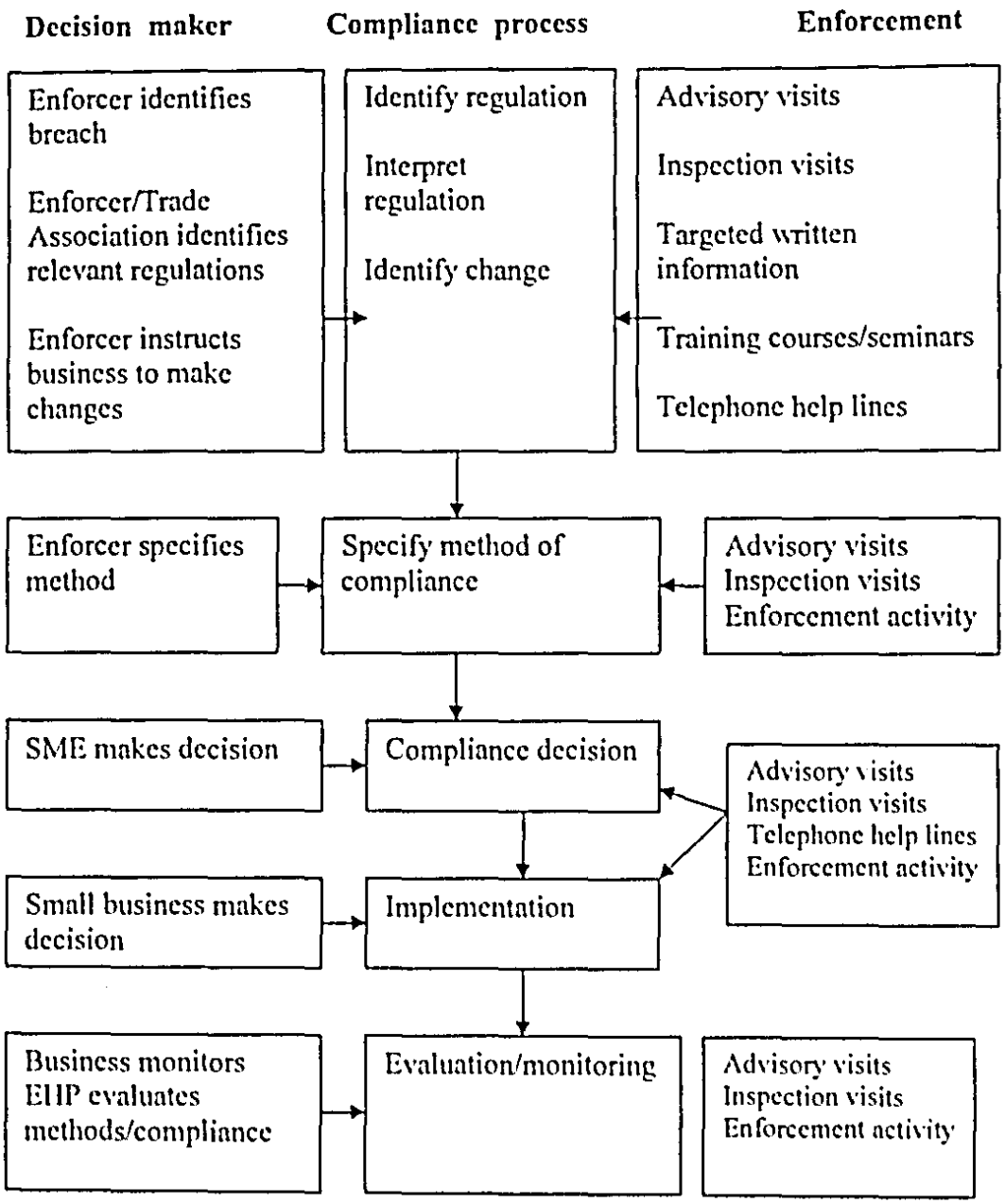


Fig.2 Conceptual framework for the Study of Compliance with Food Safety Regulations
Source: Henson and Heasman (1989)

The compliance process model is considered for this study because unlike the HACCP model which considers only food handlers as being responsible for the safety of food they produce; this model ropes in

enforcement agencies. The model is based on the premise that small businesses have little capacity to carry out compliance process themselves. Rather, there is a complete reliance on others for information about regulations and their effect. The strength of this model therefore lies in the fact that much as the food safety practices of food handlers would be looked at, it would also give room for the evaluation of enforcement approaches used by the regulatory agencies, as they collectively impact on food safety. Also the definition of SMEs snugly fits traditional catering establishments.

Conceptual Framework for the Study

Based on the literature and the theoretical and conceptual models reviewed in the preceding sections of this chapter, Henson and Heasman's (1989) conceptual model was considered the most suitable and was therefore reviewed and adopted for the purpose of this study. Some of the inherent strengths for the selection of the Compliance Process Model are that unlike the HACCP model which assumes that food handlers are aware of safety precautions and would willingly comply, the Compliance Process Model points out that small businesses make decisions whether to comply with a regulation based upon what exactly is being required of them.

The Decision Process Model (DPM) does not also confer food safety responsibility solely on the caterer; rather it ropes in the regulatory agencies whose duty it is to enforce regulation. In spite of its advantage over the HACCP model, the DPM does not account for variables, which may prevent

food handlers from identifying and interpreting regulations not to talk of compliance. Yet many researches indicate that non-compliance with food safety measures are influenced by some socio-economic factors. Taking into consideration the limiting factors in the model, the framework has been modified to include variables that account for non-compliance with food safety measures (see Fig 3.). Additionally, caterers are used in place of SMEs because the study is interested in the individual caterers as well as the establishment.

Within the Compliance Process Model, the caterer becomes aware of relevant regulation through an enforcer who might have identified a deviation from the code of practice and for that matter instructs the caterer to make changes. The caterer is made aware of relevant regulation through enforcement interventions which can be in the form of inspection visits, training courses, seminars, workshops, written information and phone calls.

After the caterer has been made aware of what needs to be done, she in turn interprets the regulation and takes a decision as to whether the regulation is worth complying with. The interpretation of the relevant regulation may be influenced by such factors as the level of education, level of motivation, religion, ethnic background, traditional beliefs and ignorance. Although this last factor has been isolated as the most single factor that accounts for non-compliance (Fiarman and Yapp 2003; Brown and McKinley, 1982; FDA, 1997 and Knowles 2002), the use of the decision process model does not make this tenable. The model is suggestive that through enforcement interventions,

caterers are provided with information regarding food safety hence; other factors also come into play.

Again through enforcement interventions enforcer specifies method of compliance, which ensures maximum realization of food safety. Unfortunately however, a caterer's method of compliance may be influenced by her level of understanding, level of motivation and other beliefs. A study conducted by Taylor (2001) revealed that certain factors do not motivate small scale enterprises to change the old ways of doing things. Factors include the belief that the existing procedures are safe, presumably because people are not dying from eating the food being produced under unhygienic conditions. Another barrier to compliance identified by Taylor was the remoteness of enforcement.

The next phase of the model is where the caterer makes a decision to comply and actually does so. In the course of implementation management is expected to monitor progress as enforcers evaluate procedures. Any ascertained discrepancies are fed back to inform subsequent interventions as postulated by (Steritech Group Inc., 2004). This group of researchers noted that, information gained on the level of compliance with regard to specific risk factors help to shape future intervention strategies in the areas such as employee training, food safety auditing, equipment purchasing and others. In sum DPM establishes regulatory measures, monitors system performance and facilitates continuous improvement.

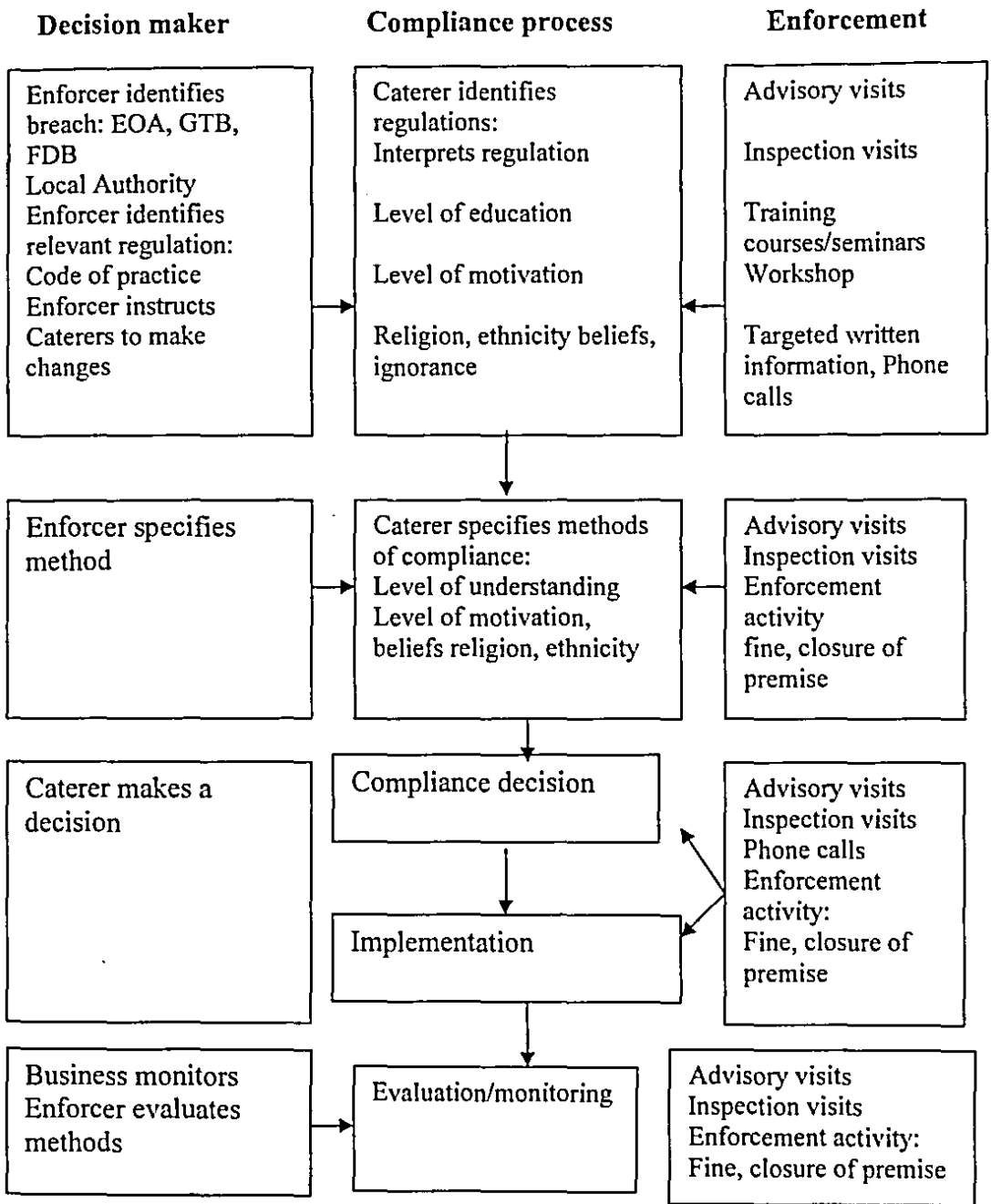


Fig 3 Adapted Compliance Process Model for the Study

Source: Adapted from Henson and Heasman (1989).

Conclusion

This chapter has reviewed some literature on food safety, food safety and its relationship with tourism, traditional caterers and compliance with food safety measures by foodservice workers. The Codex Alimentarus Commission's definition of food safety is adopted for this study since the few definitions that exist are only a reflection of that of Codex. As regards traditional catering establishments, Ghana Tourist Board's concept of a traditional catering establishment as outlined in the New Harmonized Standards for Accommodation and Catering Establishments in Ghana is adopted for the study. This concept is expected to weed off such establishments that do not qualify to be restaurants and at the same time exceed the requirements of traditional establishments.

Information gathered from the literature and researches indicated that food safety has become one of the issues of public concern since it has a relationship with the health of populace. It also became evident that to compete on the tourism market, it is imperative to ensure that a good image of the destination is portrayed, which should also be a reflection of the truth. Since most tourists wish to experience the local cuisine of the destination, effort must be made to produce safe local foods.

In view of the fact that Ghana wants to increase its tourist inflow, and also the tourism agency in Ghana wants to promote the local cuisine, it is incumbent on all stake holders to identify the food safety problems that are on the ground and seek ways to address these. Accordingly, Cape Coast, which is

a tourist destination, was selected to help identify problems related to compliance with safety measures and the role some socio-economic factors play in this. The next chapter would describe the research design for the study.

CHAPTER THREE

METHODS OF DATA COLLECTION AND ISSUES FROM THE FIELD

Introduction

The chapter describes the various methods and procedures employed in the study. The study sought to establish the safety of food served by traditional catering establishments in the Cape Coast Municipality. The information gathered laid bare the deficiencies that exist in the segment of the foodservice industry studied for the appropriate interventions to be applied. It also outlines the sample and the sampling procedure and discusses the various types and sources of data. The methods of data collection as well as the types of research instruments used have also been looked at. The chapter also features prominently the types of statistical techniques used for the study.

Types and Sources of Data

The study employed both secondary and primary sources of data. The secondary data comprised pieces of information from related literature that is, books, journals and the internet. Specific information on food safety was sourced from books, articles, papers, journals, the internet and some publications from Food and Drugs Board. Documents that contained standards

and specifications for siting and operating a "chop bar" were obtained from Environmental Protection Agency and Ghana Tourist Board. The Food and Drug Law for Ghana and bye-laws for the locality were procured from the Municipal Authority. Ministry of Health was also contacted for statistics of reported food borne cases as at the time of the study.

The primary data on the other hand, were obtained through observations of procedures and practices employed by food workers to produce food, whilst interview schedule and questionnaire were used to elicit the needed food safety information from caterers, clients and regulatory agencies. The information elicited comprised background characteristics of respondents and all other necessary details needed to establish the safety of food produced in the "chop bars" and those factors that influenced the practices observed.

Sampling Procedure and Sample

The target population for the study comprised workers of traditional catering establishments in the Cape Coast Municipality. Although there were other segments of the foodservice industry, this segment attracted attention, because for far too long its tourism potential had not been recognized and acknowledged.

Although the study was interested in caterers, it had to start from the establishments to work it down to the individuals. Traditional catering establishments were of two classes, licensed and non-licensed. Classification was based on how adequately establishments satisfied the standards set by

Ghana Tourist Board. To arrive at the sample, traditional catering establishments were stratified according to category since a complete list was available. The licensed establishments were further stratified into two known classes, that is "A" and "B". Grading was on the basis of the extent to which licensing requirements of Ghana Tourist Board (GTB) had been met (GTB, 2005). Stratification was to insure the inclusion of all essential groups in the sample and also make inter category and intra grade comparison possible.

The Grade "A" chop bars in the licensed category were purposively selected whilst all others in the two categories were clustered according to location since there were two or more at some specific locations. A chop bar was then randomly selected using the simple random sampling method. This method was thought to be most suitable because the chop bars had become homogenous after the stratification. Every chop bar in the two categories had an equal chance of being selected. Random numbers were assigned and selected at random. Eighteen chop bars, 8 licensed and 10 non-licensed were selected with 100 caterers as the sample size. Table 2 and 4 present the list of licensed and non-licensed "chop bars" whilst Table 3 and 5 portray the location, composition of staff and grade of selected chop bars.

Table 2

Licensed Traditional Catering Establishments

Name of Chop Bar	Location
New World	Abura
Winflobeth	Amamoma
Babylon	Abura
Aunt Mansa	Kokoado
Nyame Bekyere	Pedu Junction
Anaafo	Anaafo
Don't Mind Your Wife	Abowinim
Dzin Pa Yie Sen Ahonya	Kakumdo / C. Poly
Adom W⊃ Wimu	Essuekyir
Ebenezer	Cornation
Abidjan	Abura
Family	UCC
Rosemary	Pedu Village
Nyame Bekyere	Abura Methodist Road
Okyeso	Anaafo
Bush Canteen	GNAT 'C' Poly
Kingdom	Essuekyir
Black	Goil Filling Station

Source: Fieldwork, 2005

Table 3

Selected Licensed Traditional Catering Establishments: Location, Composition and Grade

Name of Chop Bar	Location	Composition		Total	Grade
		Male	Female		
Adom Wo Wimu	Abura	1	5	7	B
Winflobeth	Amamoma	1	2	3	A
Babylon	Abura	1	5	6	B
Aunt Mansa	Kukwado/UCC	2	6	8	B
Nyame Bekyere	Pedu Junction	1	5	6	B
Anaafo	Anaafo	1	9	11	B
Ebenezer	Coronation	1	4	4	B
Don't Mind Your Wife	Kakumdo "C" Poly	1	5	6	B
Total		9	41	50	

Source: Fieldwork, 2005

Table 4

Non-licensed Traditional Catering Establishments

Name of Chop Bar	Location
The Lord is my Shepherd	Kukuado UCC
Barcelona	UCC
Westop	Amamoma UCC
Mados	Apewosika UCC
Ba Meiyi	Pedu
Home Taste	Kakumdo
Arise and Shine	Kakumdo
Joyce Lover	Bakaano
Chicago	Bakaano
Aponkye Kakra	Bakaano
Lam Nava	Adisadel College
Meet me There	Adisadel
Gegees	Adisadel
Home Again	Abowinmu
Fama Nyame	Gyegyeano
Malaka Bolozo	Gyegyeano
Sakra W'adwen	Siwdu

Source: Fieldwork, 2005

Table 5

Selected Non-licensed Traditional Catering Establishments, Location and Composition

Name of Chop Bar	Location	Composition		Total
		Male	Female	
Home Taste	Kakumdo	1	2	3
Aponkye Nkrakra	Bakaano	1	7	8
Gegees	Adisadel	1	8	9
Sis. Kakra	Koktokuraba	1	3	4
Wangarline	Kotokuraba	1	5	6
The Lord is my Shepherd	Kokoado, UCC	1	6	7
Ba Meiyi Chop	Pedu	1	3	4
Sakra W'adwen	Siwdu	-	3	3
Fama Nyame	Gyegyeano	-	2	2
Ola	Ola	1	3	4
Total		8	42	50

Source: Fieldwork, 2005

The study was also interested in ascertaining the views of patrons to chop bars on factors that informed their selection of a food vending spot and also in profiling their background characteristics. This was deemed crucial because few of the studies reviewed noted that patrons to chop bars have

similar profile to their food vendors and more importantly they were seen as having little knowledge of food hygiene and low education level (FAO, 1989; Ntiforo, 2001; Opare-Obisaw, 1990) and these had to be verified.

A convenient sample of 150 clients comprising 90 patrons to the 18 chop bars, 30 workers and 30 students of the University of Cape Coast who had ever eaten in a chop bar was selected. The purposive sampling method was used to select the 30 students and 30 workers. Any worker or student who had ever patronized a chop bar was roped into the sample until the proposed number was realized. This procedure was to ensure that some highly educated people were included to confirm or reject the assertion already alluded to. The accidental sampling method was also used to select 90 clients, 5 patrons from each chop bar. Cases that were available at the time of visit were interviewed. All four regulatory bodies involved in food safety monitoring were purposively selected to check on the roles each plays and militating factors in the execution of their duties. This brought the total sample for the study to 254 (100 caterers, 150 clientele and 4 regulatory agencies).

Instrumentation and Data Collection Techniques

Instrumentation

The study employed both quantitative and qualitative techniques to elicit information from respondents. Instruments that were considered for the study were observation, interview guide and questionnaire. Observation was used in conjunction with interview guide to help capture deviant behaviours

which would have been difficult to gather with the latter instrument. A pilot study of the study area revealed that most of the caterers could not read and interpret the questions so the interview schedule was thought to be most appropriate whilst questionnaire was administered to the regulatory bodies because those involved could read and understand.

A structured non participant observation of food handling practices of caterers preceded the administration of questionnaire. Compliance in this study was defined as food handling practices of caterers that enhanced food safety. Measurement of such behaviours was aided by an audit tool which comprised a compilation of safety measures for the hygienic preparation and sale of street food. A check of 'Yes", "No" or "Not Applied" was to be made against each safety practice to indicate whether the practice was observed by all or some of the workers throughout the observation period. "Not applicable" indicated that none of the workers observed that safety practice. This gave an overview of the food handling practices of the workers in the selected chop bars.

Structured interview schedule was developed to verify and clarify practices that were observed and also to address the issue of researcher bias. There were two sets of interview schedule – one for workers in the chop bars, and the other set for patrons to these establishments. The interview schedule for caterers was grouped into five modules. Module A consisted of a personal profile of the respondents. Items in this module included age, sex, educational background, religion and ethnicity, professional training and training in quantity food service. Module B had items that investigated sources of water

and raw food materials available to the establishments and how safely these resources were handled. Personal hygiene practices observed by food workers constituted module C. Module D had items that explored resources that enhanced the food workers', knowledge of food safety whilst module E looked at the general sanitation of the establishments' premises and equipment.

Interview schedule for the clientele was not grouped under modules. Question items elicited information on background characteristics of respondents and food safety awareness. Few open-ended questions were included to offer participants the flexibility of expressing their views.

To ascertain the role played by regulatory agencies to ensure food safety, a questionnaire was also developed to investigate the specific roles played by each of the agencies involved. The other intention was to verify responses given by the caterers and vice versa. These notwithstanding, the questionnaire sought to identify the challenges that beset the regulatory agencies in the execution of their duties and their views on the trainings and methods employed in disseminating the needed food safety information to food handlers.

Samples of food were taken from all selected establishments- both licensed and non- licensed and subjected to laboratory analysis to find out the level of contamination and to help establish the relationship between sanitation of a food premise and the safety of the food produced.

Data Collection

A pilot study was conducted in July, 2005 and the purpose was to pre-test the questionnaire and the method of administration. Ten chop bars in the Elmina District were selected for this study. It was realized that most of the workers could not read and answer question items on their own and questionnaire was found to be lengthy. Some questions also needed to be reconstructed to make them clearer. Since most of the caters could not bring themselves to answering the question items on their own, it was deemed necessary to change the questionnaire to a guided interview where the researcher would fill out the questionnaire as she interviewed them. The number of question items was also reduced from 84 to 68 by fusing related ones. Ambiguous questions were modified and inappropriate ones done away with.

The actual fieldwork started in August 2005 and lasted for 10 months. It was realised that some of the chop bars on the Ghana Tourist Board could not be located whilst others had rolled up. In view of that only one Grade "A" chop bar was available for use and the other replaced with one from Grade "B". Two research assistants were recruited to assist in the administration of questionnaire to clientele and monitoring of the food handling practices of caterers. Interviewing of caterers and the administration of questionnaire to the regulatory agencies were handled solely by the principal researcher. Observation and interviewing of caterers were done at separate times to allay fear which could have influenced responses. Snap shorts of some premises

which were found to be deplorable as well as conditions that compromised food safety were taken to buttress some of the issues that were to be discussed.

Observation of workers started from morning and ended in the evening and for every chop bar a total of seven days was used. An aggregate of 18 weeks was used to conclude that piece of exercise. A whole week was used on each chop bar to afford the researcher the opportunity to critically observe and capture every detail of food handling practices and to ascertain whether behaviours recur. Caterers were not so much bothered since their activities were not disrupted. Interview of caterers, on the other hand, was conducted in the afternoons when traffic at the establishments had gone down drastically and the caterers were a bit free to spare a little of their time. Each interview lasted 25 minutes and an average of three days was spent on each catering establishment.

Interview of the group of patrons who were students and workers on UCC campus was conducted by two trained research assistants, who also assisted in the observation of caterers when the need arose. The ones that were sampled at the chop bars were interviewed by the principal researcher since caterers could be bored with too many people getting involved in their activities. Samples of food were purchased from all 18 sampled chop bars and subjected to laboratory analysis to determine microbial load.

Questionnaire for the regulatory agencies were distributed to them and retrieved after two weeks. The main purpose of this questionnaire was to identify challenges that beset those agencies in the execution of their duties

and their views on the adequacy of trainings to caterers. Syllabi of National Vocational Training Institute (NVTI) and the Technical Institutes were procured for content analysis to find out how much space was allotted to food safety. Similarly, municipal bye-laws were also examined for content adequacy and to find out whether laws have been translated into codes of practice, which makes inspection, training and advice to the caterers easier for inspectors and may enhance compliance on the part of caterers. The explicit procedures that were adopted for data collection enhanced the reliability of the research results whilst the validity of the phenomenon was attained through conceptual constructs.

Data Analysis

Completed questionnaires were edited to check for consistencies and open-ended questions were coded and analyzed. During the coding process, responses to open ended question items were analyzed through the categorization of emergent concepts and comparison of these concepts in order to identify common themes. Those preliminary themes and topics were then analyzed and aggregated to arrive at a set of topics that were commonly recurring.

The Statistical Product for Service Solutions (SPSS) was then used to process and analyze the data. Descriptive statistics namely frequencies, percentages and tabulation were used to explore the background of respondents, which provided basis for the description of the background

variables. Bivariate analyses in the form of cross tabulation were used to describe and examine associations between food safety practices and the set of socio-cultural variables. Inferential statistics like, binomial logit regression and chi square were used to determine the relationship between food safety practices of caterers as influenced by some of their background characteristics like level of formal education, professional training and sex. Microbial growth and load on selected food samples was also determined and analyzed to buttress some of the observations made. On the whole the field research drew on document and content analysis, 250 interviews and 4 questionnaires.

CHAPTER FOUR

BACKGROUND CHARACTERISTICS OF RESPONDENTS

Introduction

This chapter describes the background characteristics of all respondents and will further assess how the characteristics of the clients influence the selection of a food-vending outlet. The chapter concludes with a discussion on the food safety awareness of consumers and the role played by consumer associations in helping consumers to make informed choices.

Demographic Characteristics

Two sets of interview schedules were used, one set for clients and the other for caterers. This section describes the demographic characteristics of the respondents in the two surveys.

Sex and Age

The survey covered a total of 18 traditional catering establishments with a total of 100 caterers and 150 clients. A summary of the responses on the sex and age status is given in Table 6. Eighty-three per cent and 17% of the caterers were females and males respectively, whereas in the case of the clients 52.6% were males whilst 47.3 % were females. The latter information is in

agreement with previous findings that majority of clients of food vendors tend to be males (Ntiforo, 2001).

It is clear from the Table that both caterers and their clients were within the active working age of between 18 and 60 years. In terms of the clients, nearly 72.0% of the males were between ages 16 and 35 whilst only about 5.1% were 51 years or older. Females within the same age brackets were 62.0% and 4.2 % respectively.

Table 6

Sex and Age Distribution of Respondents (%)

Age	Caterers		Clients	
	Male	Female	Male	Female
16-20	5.9	8.5	11.4	12.7
21-25	17.7	18.1	35.4	32.3
26-30	23.5	25.3	12.6	11.3
31-35	23.5	12.5	12.6	5.7
36-40	5.9	8.6	5.1	1.4
41-45	23.5	8.6	0.0	5.7
46-50	0.0	7.4	0.0	8.4
51+	0.0	7.4	5.1	4.2
Missing	0.0	3.6	17.8	18.0
Total	100.0	100.0	100.0	100.0

Source: Field Work, 2005 N-100 N- 150

For the caterers, the concentration for males was between ages 21-35 (64.7%) and 41-45 (23.5%) whilst with the females apart from about 43.4% who fell under ages 21-30, all others were fairly distributed among the other age ranges. Females were however found to be dominating among the caterers as against the clients whilst females among the respondents generally demonstrated older characteristic.

The age range of clients however differed in respect of gender which agreed with almost all the findings of previous studies referred to in the literature. Also there were differences in reported age ranges, for instance, whilst the present study had an age range of 16-50 years and above that of Ntiforo (2001) had 23-48 years. The slight differences might lie in the different categorization of the age groups adopted by the two separate studies. The small number of males in food vending is also a well- established fact. For example, FAO (1989), FAO (1991) and Headd (2000) reported that traditional catering industry was made up of mostly women and this might be due to cooking being a traditional role of women. Men who were interviewed as workers of the industry either pounded 'fufu' or were the proprietors of the establishment concerned.

Marital Status of Clients

Another demographic characteristic of respondents that was of interest to the study was their marital status, the summary of which is in Figure 3.

As shown in Figure 4, 64.6% and 15.2% out of the male population of 79 were single and married respectively. Similarly, 59.1% and 32.4% out of the female population of 71 were single and married. There were very little proportions of separated, divorced or widowed males and not females probably because females in these categories could cook for themselves.

It is evident from the data that more single people patronized food – vending outlets than married couples. This was expected as one does not expect married persons to eat outside, something that is easily practised in the West but frowned on in our part of the world. A greater percentage of females as against males were in the married category. A possible explanation for them patronizing food from vendors is that these people could be working mothers and therefore had problem with time to cook. It could also be because they were out of the house for work and were therefore compelled to eat out.

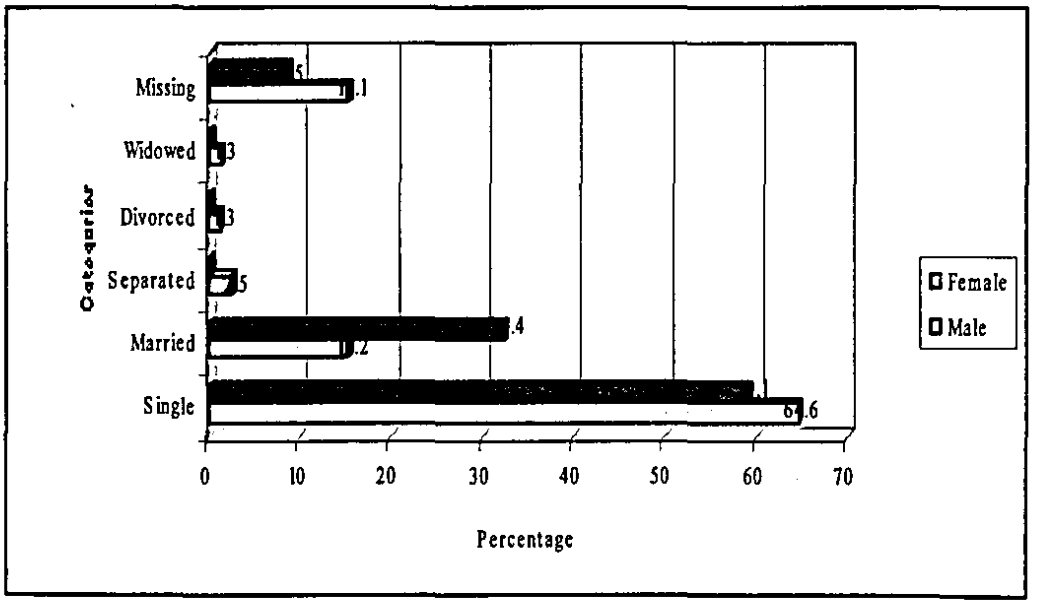


Figure 4: Marital Status of Clients (%) N = 150
Source: Fieldwork, 2005

Ethnic Background of Respondents

The questionnaire also sought information on the ethnic background of the respondents and this was meant to determine whether certain groups of people are more likely to be caterers or clients of food vendors than others in the study area. Table 7 provides summary of the responses.

Table 7

Ethnic background of respondents (%)

Ethnic	Caterers		Clients	
background	Male	Female	Male	Female
Fantis	70.6	71.1	25.3	28.2
Other Akan	17.7	16.0	39.2	42.3
Ewe	0.0	1.2	3.8	2.8
Hausa	11.7	3.6	12.6	11.3
Ga Adangme	0.0	0.0	1.3	4.2
Foreigner	0.0	7.2	1.3	1.4
Missing	0.0	0.0	16.5	9.8
Total	100.0	100.0	100.0	100.0
Source: Fieldwork, 2005	N = 100		N = 150	

It is evident from Table 7 that majority of clients who reported to have visited chop bars and those found patronising the place at the time of the study were predominantly Akans. There seemed not to be much differences between

male and female clients from all tribal groups however, Ewes, foreigners and Ga Adangme recorded very low rates. A possible interpretation for this trend is that, the "chop bars" normally serve popular local Akan foods and also the majority of people in the study area were Akans. The other issue was that Ewes were also likely to patronize banku and okro soup which is a delicacy although it might not be expertly prepared. For the Gas, their ethnic delicacy, ('kenkey') was sold under sheds which did not qualify for this study, although they qualified as street foods. It is a common knowledge that Moslems do not eat animals that have been slaughtered by non-Moslems. Since most of these "chop bars" are operated by other religious groups other than Moslems, it was expected that none or only few of such would patronize the food sold there. It could even be that the small percentage of patrons visited chop bars "operated" by Moslems.

Fantis were in the majority as far as the caterers were concerned whilst other Akan groups accounted for 17.7 % males and 16.0 females. Apart from Hausas which recorded nearly 12% for females, all others registered small proportions. The possible explanation one could give to such a picture is that, there was a concentration of Fantis because they are the local inhabitants with all others being immigrants. Also, since Fantis themselves are part of Akans, similarities in taste and meal preparation may exist hence, their relatively high concentration. It is most probable that the other ethnic groups did not have much patronage for their tribal delicacies hence their low concentration.

Nationality of Respondents

The nationality of clients was also determined to find out if all "chop bar" patrons were Ghanaians or some of them were foreigners. The result of the finding is presented in Table 8.

Table 8

Nationality of clients (%)

Nationality	Male	Female
Ghanaian	82.4	88.7
Nigerian	2.5	0.0
Togolese	0.0	1.4
Missing	15.1	9.9
Total	100.0	100.0

Source: Fieldwork, 2005 N-150

From Table 8 it is clear that foreigners accounted for a total of only 3.9% (2.5% males and 1.4% females) of the total sample of clients. The small percentage of foreigners notwithstanding indicated that foreigners also do eat from these chop bars. Most of the patrons were also found to be students and government employees, who had travelled to school or worked in the study area and for that matter, could be classified as domestic tourists inject some income into the local economy. Compliance with food safety measures therefore becomes imperative as failure to do so might make the country miss

out on potential income from tourism due to negative experiences of visitors. About 19 clients (15.1% males and 8.5% females) did not disclose of their nationality.

Socio-economic Characteristics

It is a common knowledge that majority of consumers who patronize "chop bars" are low-income earners with low educational background. In order to establish this fact the socio-economic background of respondents such as educational attainment, occupation, income and the type of client were investigated A summary of the educational background of respondents is given in Table 9.

Educational Background of Respondents

It is clear from Table 9 that majority of the clients were graduates of tertiary institutions, and this included 44.30% females and 54.2% males. All others did not record any substantial scores. These results somehow challenge the findings of other studies, which assert that patrons to chop bars are of low education background. It possible that the sampling technique adopted contributed to this finding. A different picture was however realised in the case of the caterers which confirmed all other studies. The highest educational attainment revealed was at the commercial/vocational level with greater concentration within the Basic and those without any education.

Table 9

Educational Background of Respondents (%)

Educational background	Caterers		Clients	
	Male	Female	Male	Female
None	35.3	37.3	2.5	8.5
Basic/Middle	47.1	50.7	13.6	7.0
Com/Tech/Voc	17.6	6.0	16.4	12.5
Secondary	0.0	3.6	12.6	8.5
Post Sec	0.0	0.0	10.6	9.3
Tertiary	0.0	0.0	44.3	54.2
Makaranta	0.0	2.4	0.0	0.0
Total	100.0	100.0	100.0	100.0

Source: Fieldwork, 2005 N-100 N-150

Employment Status of Clients

Another socio-economic characteristic that was examined was on the employment status of clients. The outcome of the findings is summarized in Table 10. The results show that about half of the female clients, (43.7%) and 35.4% males were students at various levels of the education ladder. This was followed by government employees for males (29.1%) and self employed (22.5%) for females. In all cases however, the individual is taken out of the home and is compelled to fall on food sold outside.

Table 10

Employment Status of Clients (%)

Occupation	Male	Female
Schooling	35.4	43.7
Government employee	29.1	18.4
Private employer employee	5.1	4.2
Self employed	10.1	22.5
Any other	5.1	2.8
Missing	15.2	8.4
Total	100.0	100.0

Source: Fieldwork, 2005 N = 150

Income Levels of Respondents

The results on income of respondents as evidenced in Table 11 show that whilst a small proportion of "chop bar" clients earned between one and five hundred cedis that is what almost all the caterers earned and some could not even determine wages earned. This amount is however considered far below the minimum wage in the country and this probably explains why caterers are not motivated to comply with the few regulations that are available. A greater percentage of the clients earned between five hundred and one million cedis. These figures indicate that the 'chop bars" are being patronized largely by low income earners. That notwithstanding, owners of such facilities need to work hard to retain their share of customers.

The trend witnessed in this study affirms the findings of Ntiforo (2001), and FAO (1989) that majority of chop bar consumers are usually from medium to low income families. All the same some percentage of clients who earned quite a substantial amount also patronized the "chop bars".

Table 11

Income level of respondents

Level of income	Caterers		Clients	
	Male	Female	Male	Female
Undeterminable	23.5	34.9	0.0	0.0
100,000 – 500,000	76.5	61.5	15.2	23.9
600,000 – 1 m	0.0	1.2	15.2	16.9
1.1m – 1.5 m	0.0	0.0	5.2	5.7
1.6m – 2m	0.0	0.0	10.2	4.2
2.1 – 2.5m	0.0	0.0	2.2	1.4
2.6 – 3m	0.0	0.0	0.0	1.4
Above 3m	0.0	0.0	1.4	1.4
Missing	0.0	2.4	50.6	45.1
Total	100.0	100.0	100.0	100.0

Source: Fieldwork, 2005 N- 100 N-150

It was also necessary to find out the income levels of caterers too in order to ascertain whether they were motivated enough to have job satisfaction.

Type of Clients Patronizing the Chop Bars

The type of clients patronizing the chop bars was also examined (see Figure 4). The results clearly showed that pupils/students (40.6%) and government employees (31.2%) were in the majority followed by traders (20.4%). An important finding though with a relatively low rate (7.8%) was that travellers/tourists also ate at "chop bars". Much as this is important in business terms, so is it important in health terms because the lives of tourists should not be risked by being served with unwholesome food. "Chop bar" operators need to understand the relevance of this issue and provide tourists with decent services.

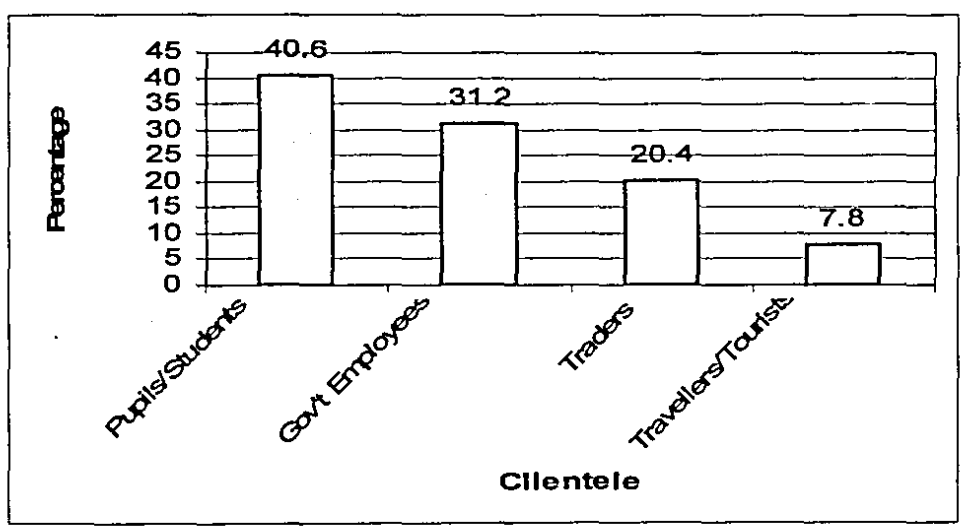


Figure 5: Clientele type (%)

Source: Fieldwork, 2005

Other socio-economic variables of caterers that were examined are shown in Table 11 and Figure7. One of such had to do with the religious affiliation of caterers since this can influence their way of doing and interpreting things.

Religious Affiliation of Caterers

Majority of the male caterers, reported to be traditionalist with only 1.2% for the females, whilst 29.5% and 23% were Orthodox and Pentecostals respectively. For the female caterers, almost half the percentage (45%) was Pentecostals as anticipated since common knowledge has it that women are more emotional and have the flare for things of spiritual nature. This was followed 37.3% Orthodox worshippers. Almost the same percentages were recorded for male and female Moslems. Generally speaking, it can be said that Christianity was predominant among caterers used for the study.

Table 12

Religious Affiliation of Caterers (%)

Religious affiliation	Male	Female
Orthodox	29.4	37.3
Pentecostal	23.5	45.9
Moslem	11.5	12.0
Traditional African Religion	35.3	1.2
Spiritual	0.0	3.6
Total	100.0	100.0

Source: Fieldwork, 2005 N-100

Level of Professional Training

The other line of interest was to find out the level of professional training attained by caterers as this could influence their food handling practices. Figure 5 gives a summary of the information obtained.

Out of a hundred caterers that were interviewed only 11%, which comprised one male and 10 females stated that they had been trained professionally. The rest, made up of 16 males and 73 females had not been trained professionally for the job they were undertaking. For instance, only 5% indicated that they had attained vocational level training and 1% polytechnic training

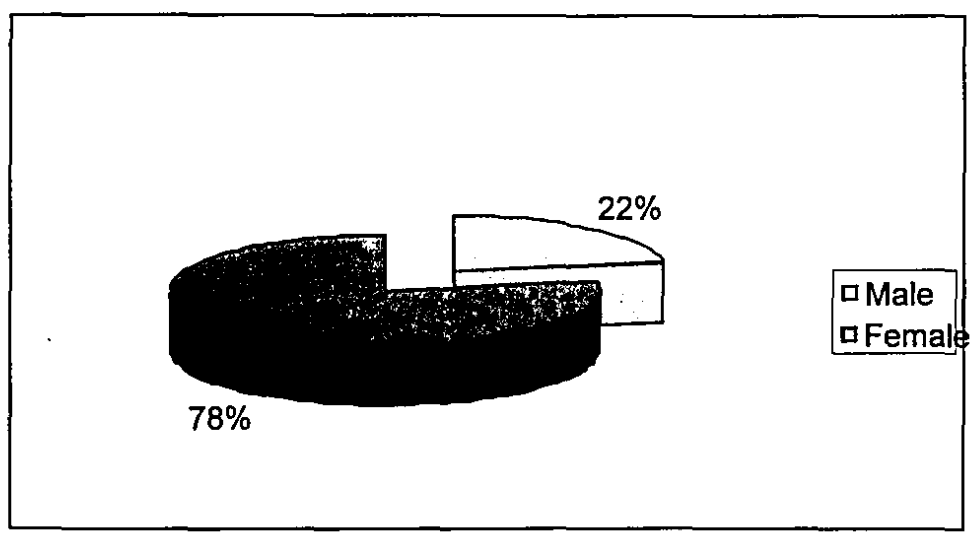


Figure 6: Level of Professional Training of Caterers N-100

Source: Fieldwork, 2005

There was another item that was meant to elicit information to buttress the adequacy and quality of professional training received. The question item called for caterers training in large scale food production. Only 1% of the caterers had attained this training at the polytechnic level. The rest were as

follows: 5% from vocational institutions, 6% as apprentices and 17% on the job. The problem here is that if trainers employ wrong food handling practices, the tradition is passed on to apprentices and those learning on the job. As many as 76% had no training at all on large scale cooking and this group could conveniently be added to the apprentices and those learning on the job since they would just emulate the practices of those around them or take instructions from their employers who were just as ignorant.

Caterers were also asked why they chose to work in chop bars amidst the number of other jobs available. Varied reasons were given, see Table12.

Reasons for Working in a Chop Bar

Critical examination of the trend of reasons given by the male caterers revealed weaknesses inherent in the sector. These included the fact that traditional catering does not require any certification (17.6%) and it is readily available (35.8%) due to lack of formal regulation. In view of that there is no permanency, people move in and out as they please. Male caterers either used as part time job (17.6%) or as a stepping stone (11.8%). None of the males used for the study actually had interest in the job. They were engaged in it because it is lucrative probably because of reasons already alluded to.

The picture revealed by responses from their female counterpart was quite different. Despite the availability of the job majority (31.4%) had it as a family business and so automatically became employed as they come of age. Quite a few of them (10.8%) actually had interest in the job.

Table 13

Reasons for Working in a Chop Bar (%)

Reasons for working in a chop bar	Male	Female
Family business	5.9	31.4
Stepping stone	11.8	19.3
Readily available	35.3	19.3
Does not require certification	17.6	9.6
Wanted to be self employed	0.0	1.2
Part time job	17.6	1.2
Language barrier	0.0	2.4
Interest in chop bar keeping	0.0	10.8
Used to be lucrative	11.8	4.8
Total	100.0	100.0

Source: Fieldwork, 2005 N-100

Food Safety Issues

All respondents in this study had at one point in time eaten from a chop bar and were therefore familiar with such eating outlets. As to which food they preferred most at the" chop bar" the following responses were given, (See Table 14).

The most preferred food of clients for both sexes was 'fufu' and soup, as females recorded 56.3% and males 43.0%. This was followed by 'banku' and 'okro' soup. and then rice and stew. There seemed not to be much

difference between males and females in relation to the most preferred foods. However one would have expected that more males would take fufu at the chop bars since women are in a better position to pound it and also because men outnumbered females in the sample covered.

Table 14

Clients' Preferred Food Taken at the Chop Bar (%)

	Male	Female
'Fufu' and soup	56.3	56.3
'Banku'and 'okro'	19.0	15.5
'Red red'	5.2	1.4
'Kenkey' and fish	1.2	1.4
Rice and stew	16.4	9.9
'Tuo Zaafi'	2.6	4.2
Missing	12.6	11.3
Total	100.0	100.0

Source: Fieldwork, 2005 N = 150

Table 15 portrays the picture that was realized when the same question item was used against the marital status of the respondents. Those who reported to be single had a higher preference for 'fufu' and soup (26.7%) to married persons (14.7%). Unlike their married counterparts, single persons may not find it obligatory to pound "fufu" if they feel for it. It was also

possible that being single their income was relatively low and therefore spent less to eat "fufu" outside.

Table 15

Preferred Food against Marital Status

Marital Status	Fufu & soup	Banku & soup	Red red	Kenkey & fish	Rice & stew	Tuo Zaafi	Mis-sing	Total
Single	26.7	12.0	3.3	2.7	10.7	2.7	6.7	64.8
Married	14.7	4.0	1.3	0.0	3.3	2.7	4.0	3.0
Separated	1.3	0.0	1.3	0.0	0.0	0.0	0.0	2.6
Divorced	0.0	0.0	0.0	0.0	0.0	1.3	0.0	1.3
Widowed	1.3	0.0	0.0	0.0	0.0	0.0	0.0	1.3
								100.0

Source: Fieldwork, 2005 N = 150

To confirm why people preferred these foods, a further question was asked to this effect. Table 16 provides a summary of the responses given by clients.

The pattern of responses given by both sexes was almost the same and the most cited reason was the fact that their preferred foods are difficult to prepare at home. The processes involved in preparing meals might account for this perception held by clients. "Fufu" for instance requires peeling of foodstuffs, boiling and pounding which can be energy sapping. Two other reasons that scored next to relative difficulty in the preparation of this meal

were cost of food and the fact food was a tribal delicacy. According to clients it is easier to buy 'fufu' from a chop bar than prepare it at home. Whilst about 14.0% of females reported they did not have much to cook a quarter of their male counterpart felt so. Although the difference might not be so much, it points to the fact that dual roles of women put constrain on their time.

Table 16

Reasons for Food Preference (%)

Reasons for food preference	Sex	
	Male	Female
It is cheap	21.5	18.3
Difficult to prepare	38.0	42.3
Tribal delicacy	17.5	19.8
Scarcity of time	4.0	14.0
Missing	19.0	5.6
Total	100.0	100.0

Source: Fieldwork, 2005 N = 150

It also became necessary to find out the factors clients considered in selecting a food-vending outlet. This item was used against level of education, with the view of determining whether it played any meaningful role in the selection of a vending outlet.

From Table 17, it is evident that the level of education played some role in the selection of a vending outlet. Among the factors given, sanitation of the food environment was the most considered factor, mentioned by nearly 29.3% of people with tertiary education. This was followed by 8.0% for secondary and 6.0% for post secondary. It is important to observe that patrons of "chop bars" are conscious of the health implications of eating out and vendors ought to be aware that keeping a decent environment can increase patronage.

The second most considered factor was the taste of the food which was selected by about 23.4% of the clients. This should be compared with the cost of the food which was selected by (19.3%) and the quality of service (5.3%). This result should not be interpreted to mean that consumers are ready to compromise poor service but may be due to the fact that most of the vendors offer similar services. Clients with tertiary education took sanitation into account more than those with little or no education.

There were not much differences between males and females regarding factors that influenced their selection of food-vending outlet. For age, majority of clients (22.3%) within the age range 21-25 years considered sanitation as the paramount factor as against the others. For age range 26-30 years, taste of food was the most popular choice. Reasons for this might be the fact that this group of clients might be married individuals and therefore might have a standard for comparing taste of food whilst age range 16-20 years clients may be single.

Table 17

Factors Considered in Selecting a Food-vending Outlet (%)

Educational background	Price of food	Taste	Sanitation of environment	Level of service	Mis-sing	Total
None	2.7	1.3	0.7	0.0	3.3	8.0
Basic	4.0	4.0	0.0	1.3	2.0	11.3
Secondary	3.3	4.7	8.0	0.7	2.0	18.7
Post-sec	0.0	2.7	6.0	0.0	0.7	9.4
Tertiary	9.3	10.7	29.3	3.3	0.0	52.6

Source: Fieldwork, 2005 N = 150

Reports on problems experienced after food intake at "chop bars" indicated that almost half of the clients (50.4%) had ever experienced one symptom or the other of food borne related illnesses. The high percentage of people who had ever experienced various food related problems is an indication that all is not well with the standard of food produced at "chop bars" in Cape Coast. The fact that people continue to patronize the food sold there despite their health experiences suggests that they have little or no choice.

A follow up question was asked with the intention of finding out the nature of the problems experienced by clients. The summary is given in Table 18.

Table 18

Symptoms Experienced by Clients (%)

Symptoms	Male	Female	Total
Vomiting	5.1	9.8	
Stomach ache	21.5	21.1	
Diarrhoea	6.3	8.5	
Missing	67.1	60.6	

Source: Fieldwork, 2005 N - 150

The results suggest stomach ache to be the most cited symptom experienced by clients (21.5 and 21.1% male female respectively). This was followed by diarrhoea (6.3%) for males and vomiting (9.8%) for females. All the three symptoms were indications of food contamination. This underscores why more has to be done by way of monitoring the food handling practices of food vendors. More than 50% for both sexes did not indicate whether they experienced any health disorders after eating at a "chop bar", yet they went further to state how their ailment was treated. This meant that people had their own reservation about disclosing issues on food they eat.

There was a further question to find out where treatment was sought by clients and this has been summarized in Table 19 This item was examined against two variables, education and sex.

Table 19

Nature of Treatment against Educational Background

Background (%)						
Education	At home	Herbalist	Drug Store	Hospital	Missing	Total
None	0.7	0.7	0.7	0.7	5.3	8.1
Basic	1.3	0.0	1.3	1.3	8.0	11.9
Sec/Voc/Com	2.7	0.0	1.3	2.7	11.3	18.0
Post sec	0.0	0.0	0.7	0.7	8.7	10.1
Tertiary	8.0	1.3	10.0	9.3	23.3	51.9

Source: Fieldwork, 2005 N=150

It is clear that most of the clients were either not sure or unwilling to disclose where they were treated because as much as 56.6% of them failed to respond to this question. It is also possible that those people either practised self medication or went to places that could call for derision so they were not ready to mention them. It was obvious that self-medication and the use of orthodox medicine were both high. The negative aspect about the attitude of clients who responded to this item was that some of them resorted to unapproved methods of medication rather than going to the hospital. Such people probably thought they were well educated to know what to do. This attitude could also affect the statistics of the hospital and confirms the assertion that food borne diseases are often not reported.

Table 20

Nature of Treatment against Sex (%)

Nature of treatment	Male	Female	Total
At home	8.8	15.5	
Herbalist	1.3	2.8	
Drug store	11.4	14.1	
Hospital	11.4	16.9	
Missing	67.1	50.7	

Source: Fieldwork, 2005 N-150

As portrayed by Table 20, more than 50% of both sexes did not disclose where treatment was sought for their ailment. Although there were more males than females in the sample used, females had slightly higher percentages than males in all modes of treatment. The deduction that can be made is that women may be more vulnerable to health problems than men and also more males than females did not respond to the item. It also became evident that clients resorted to unapproved ways of treatment much more than the approved ones.

Another interest of this study was to find out if the practice of consumer associations was well known by clients and if they made any impact on their lives. Approximately 79% of the respondents stated that they were not aware of the existence of any such association. Since a great proportion of respondents were well educated it was expected that they would be aware of

such important pressure groups. The other reason that could account for this apathetic attitude of consumers is that they may not be regular consumers of such foods. However, what consumers should not forget is that, it is not the number of times one visits or patronizes these foods that makes it dangerous but simply eating there, even if once. Indeed, out of the 140 clients who responded to this question item, only 8% happened to be members of a consumer association.

Since good sanitation is the key to food safety, it was necessary to solicit the opinions of consumers about the possible things that could be done to improve sanitation and food hygiene at "chop bars". Table 21 summarizes what the respondents had to say.

As the table shows, majority of the clients (34.2% males and 32.4% females) felt that food vendors should have tags indicating that they have been checked for good health condition. This was followed by training in good sanitation practices and education. A small percentage (6.3% males and 2.8% females) also felt that licensing of the chop bars would bring sanity into their operations.

Licensing and issue of tags, as suggested, are based on the premise that food vendors have already been educated and trained in sound food handling practices. This is because one cannot be tested on what one has not been taught. In view of this, to assume that vendors know safe food handling practices may just be a fallacy. Licensing and provision of medical tags should therefore be preceded by education and on-going training of vendors.

Table 21

Improvement of Sanitation and Food Hygiene (%)

Improvement Measures	Male	Female
Education	11.4	23.9
Training	27.8	25.4
Licensing	6.3	2.8
Medical check up tags	34.2	32.4
Missing	20.3	15.5
Total	100.0	100.0

Source: Fieldwork, 2005 N-150

Caterers were asked to indicate whether they had medical examination as a requirement for the job. The ideal frequency for this examination was once a year. Those who had never had any medical examination as at the time of interview constituted 55% of the sample. This was followed by 24% who honoured the routine requirement of the municipal authority and (16%) who did that occasionally. The trend for attending to this health need by males and females reinforces the perception that women seem to attend to health related matters more than men although fewer men were covered by the study.

Other factors however come into play in relation to this issue about the caterers. It was gathered from interactions with the caterers that, their

proprietors had to bear the cost of examination and since they were not ready to foot the bill, there was no way caterers could use their scanty salary to meet that need. The view of proprietors on the same issue was also sought and they were just not ready to spend money on workers due to the transitory nature of such employees.

Summary and Conclusion

The description of the data generated for this study shows that whilst majority of clients happened to be males, females dominated in food-vending. The survey also revealed that clients were predominantly single and that almost 98% of clients who patronized "chop bars" were Ghanaians.

Out of the number that was reported to be Ghanaians, 76.9% were Akans probably because the popular food served in the chop bars is an all Akan delicacy. The remaining 20.5% clients were made up of Ewes, Gas and Hausas. The ethnic background of the caterers, who happened to be the principal respondents, was almost similar to that of the clients. In terms of education, the striking feature that was observed was the disparity between the levels of educational attainment among the two groups of respondents. Whilst majority of clients were found to be at the top of educational ladder the picture portrayed by caterers was rather the opposite with a higher concentration at the other side of the spectrum.

About 48% of clients were found to be students whilst 52% were government employees, private sector employees or self employed individuals.

Incomes of both clients and caterers were found to be relatively low with majority of respondents earning between ¢100,000.00 and 1,000,000.00.

Caterers attributed their work in "chop bars" to a number of reasons, prominent among these were the fact that the job is readily available and did not require any certification.. It also became clear from the survey that caterers were apathetic towards medical screening which is a regulatory requirement. Slightly above 50% of the caterers never had any medical examination whilst the others were not consistent in their checks.

'Fufu' and soup was identified as the popular food mostly patronized by those who were single. Next to 'fufu' was 'banku'. Among reasons for food preference were the difficulty in preparing the food at home, cost involved and the food being an ethnic delicacy.

About 52.4% of the sampled clients had experienced at least one food borne related symptoms -vomiting, stomach-ache or diarrhoea. The survey also brought to light that clients' level of education did not have any influence on the means used to cure ailment although a greater number of clients did not respond to the question. It also became evident that more women sought treatment for their ailment than men and more single clients were prone to food borne illnesses than married couples.

The findings in this chapter suggest that there is a gap between what is expected and what is actually being done in terms of compliance with some food safety measures. In the next chapter, an attempt would be made to establish whether the municipality has codified measures for caterers. The

extent to which food safety measures were complied with by traditional caterers were also be established. Hypothesis was tested to ascertain the relationship between certain background variables and how they influenced compliance and assumptions held for the study examined. Finally, the degree to which monitoring is pursued by regulatory agencies was also investigated.

CHAPTER FIVE

LEVEL OF COMPLIANCE WITH FOOD SAFETY REGULATIONS BY TRADITIONAL CATERERS

Introduction

Compliance with food safety measures is based on the premise that some codified measures are already in existence. It also implies that these measures are made available to caterers through training or policy. There was also the assumption that there are mechanisms instituted to monitor compliance. Information gathered from the regulatory agencies affirmed the above assumptions. It became clear that, caterers in general are oriented, from time to time, on food safety measures and enforcers monitor compliance with these measures. The focus of the study, therefore, was to ascertain whether there were codified food safety measures. The study also sought to find out the level of compliance with the safety measures by caterers, why some of these measures are downplayed if any, the possible effects of this negligence, and the effectiveness of enforcement.

To facilitate the determination of the level of compliance with food safety measures by caterers, it became necessary to profile the background characteristics of caterers and to ascertain whether some specific characteristic influenced some of their food handling practices.

Compliance with Food Safety Measures

It is worth noting that no codified measures were available to caterers to guide or inform their hygienic food handling practices. In view of this, it was impracticable to assess the adequacy of available food safety measures and the extent to which they matched international standards. What were available for examination were the standards used by Ghana Tourist Board for licensing the informal catering segment. If the standards were something to go by then most "chop bars" did not meet the standards yet, they were in operation and some were even licensed. Moreover, a content analysis of the provisions revealed a gross inadequacy since emphasis was on availability and adequacy of facilities, which do not necessarily ensure food safety. This notwithstanding, for purposes of this study, an audit tool (Appendix VI) was developed from the international code of hygiene practice for street food vendors and employed for a non participant observation of food handling practices of traditional caterers.

In all, twenty-seven codes were adopted for the observation whilst employees of eighteen selected "chop bars" (eight licensed and ten non-licensed) participated. It was observed that almost all the codes were abused by caterers used for the study. However, some of the codes were abused more than others.

Measures that were frequently abused included temperature control, personal hygiene, quality of raw ingredients used and environmental conditions. Less frequently abused codes were controlled purchases of food

ingredients to match storage space, short and unpainted finger nails, rotation of raw food ingredients and treatment of leftovers. Appendix VII presents logistic regression table indicating the dependent and independent variables and the selected codes of practice which were found to be critical to food safety.

It was gathered from the results that most of the establishments did not have toilet facilities, there was unrestrained access of rodents and customers to the kitchen area, none of the workers wore appropriate clothing for cooking and these are to mention but a few. In some cases the abuse was higher in one category of chop bar than the other and equal in some cases.

An interview guide was employed to probe further into why some of the codes were abused more than others not. For instance percentage of workers with grown and painted nails was found to be small (17.5 and 17.7) for both licensed and non-licensed chop bars as if to suggest that they were conforming to standards. A further probe however revealed that observance of this had nothing to do with food safety. Reasons ascribed to this by caterers were more of religious character than the enhancement of food safety. Other less abused measures like purchasing raw ingredients in bits, cooking just enough and rotation of stock are more related to maximization of profit than ensuring food safety.

Observed behaviours of caterers revealed a lack of knowledge of the definition and causes of food contamination. Majority of caterers (82%) did not associate dirty hands with the transmission of bacteria and other harmful micro-organisms onto food. This was evidenced in the way caterers did not

micro-organisms onto food. This was evidenced in the way caterers did not wash hands even when they had just visited washrooms or been in contact with dirty surfaces or dipped their hands into dirty water before dishing out food for customers. This practice was buttressed by the data generated from this study which indicated that none of the caterers washed their hands with soap and water before touching cooked food. They also did not have special uniforms for work, neither did they cover their hair nor engage in other unwholesome activities that compromised food safety.

Some of the premises (33%) did not even keep dustbins whilst 44% of those who had them had never bothered themselves to maintain them hygienically. Surroundings of premises were therefore littered with solid waste. Liquid waste was also thrown into bushes around or unto the ground because of the absence of drainage systems. All these made some of the premises unsightly and also attracted flies, which hovered on the food, Plates 1-6 give a picture of what prevailed in and around vending sites all of which are in contravention of food safety regulations. Hygienic conditions of vending sites were generally poor. Stands were of crude structures, and running water was not readily available. Also, toilets and adequate washing facilities were rarely available. The washing of hands, utensils, and dishes was done in bowls or buckets. Disinfection was not carried out by any of the establishments, which could attract insects and rodents to sites where there is no organized sewage disposal and those engulfed in bushes. Food and equipment were not

adequately protected from flies and refrigeration was unavailable. Water used for washing serving dishes was always in a basin and dirty too.

X 1/10

Plate 1: Personal hygiene of caterers preparing fish for frying: caterers inappropriately dressed

Source: Fieldwork, 2005.

X 1/10

Plate 2: Pounding of "fufu": pestles exposed to open air.

Source: Fieldwork, 2005

X1/10

Plate 3: Arrangement of cooking utensils and cooked food exposed to open air. Quantity and condition of water for cleaning serving dishes not clean and adequate.

Source: Fieldwork, 2005

X 1/8

Plate 4: Container for storing water for cooking and the general sanitation of a vending site

Source: Fieldwork, 2005

X1/6

Plate 5: Public place of convenience littered with rubbish. Siting of a "chop bar" just opposite these two public places of convenience.
Source: Fieldwork, 2005.

X 1/10

Plate 6: Storage of food together with personal belongings

Source: Fieldwork, 2005

It is worth noting that houseflies are believed to pass on pathogens mechanically onto food. *Salmonella typhimurium* and *Shigella*, for instance, can multiply in the gut of flies and be excreted for weeks or longer (Asiedu, 2006). There is consequently a risk of contamination associated with the exposure of food to flies. Cleaning and storage of utensils and serving dishes also left much to be desired. On one occasion, a caterer was found cutting 'okro' on a very dirty table after which she did not even wash the 'okro' before using it to cook. The fact that most of the caterers reported they had not checked their typhoid status made it scary because they could also be a possible source of contamination. For instance where caterers did not have any hand washing programme, they could easily transmit pathogens to food from hands contaminated with organisms from the gastrointestinal tract (Bryan, 1995).

The extent of abuse of food safety measures by caterers who participated in this study was suggestive of the fact that food produced in those chop bars was not safe. This assumption however could be speculative without empirical evidence. In view of that, sample tests were carried out in the laboratory to check for food contamination and also to ascertain the microbial load on the food, which would confirm the assumption of poor or non-compliance with safety measures.

Food items produced in "chop bars" at the time of the data collection and sampled for this study included 'fufu', 'konkonte', 'banku' and soup. The sale of other meals like fried plantain and beans, rice and stew and 'ampesi' had ceased at the time of the study although literature reviewed mentioned them as some of the food sold in chop bars. The food fad now is fried rice and "jollof" and this is being served in fast food joints and this might account for why traditional caterers had given up on those. Fried plantain and beans were also being prepared by wayside food vendors. Those that were still being prepared in the "chop bars" were those that required real physical activity and were time consuming. The production processes of the individual food items sampled are presented in Table 22.

Table 22

Processing procedures of sampled food items

Food type	Description	Handling after cooking
'Fufu'	Raw cassava, plantain, peeled and boiled and pounded.	Fetched with hand after dipping hand in water if already portioned. Otherwise, it is fetched in bits on request, placed in mortar, pounded with pestle while turning over by hand lubricating intermittently with water until desired texture is reached.
'Konkonte'	Dried cassava milled into powder. Poured into hot water with continuous stirring until cooked.	Fetched with a piece of calabash or ladle which serves as mould while still on fire. May also be moulded with the hand or container into desired sizes into a bigger pan. Fetched with hand on request.
'Banku'	Corn dough mixed with water and stirred continuously until cooked.	Portioned into desired sizes with hand and water. Kept in polythene and in a pan. May also be left in the pot on fire and fetched with a container on demand.

Table 22 continued

Light soup	Fish or meat, tomatoes, pepper, onion, boiled until cooked. Salted to taste.	Served hot.
'Palm' soup	Palm fruit puree added to other ingredients as above. Salted to taste.	Served hot.
'Okro' soup	Same as light soup with okro and palm oil added and salted to taste.	Served hot.

Source: Fieldwork, 2005

Material and Method

Samples of food were purchased from the following chop bars: Home Taste Spot, Aponkye Nkrakra, Gegees Spot, Sister Kakra, , The Lord is My Shepherd, Ba Meiyi, Sakra W'adwen, Winflobeth Canteen, Babylon, Auntie Mansa, Nyame Bekyere, Anaafo, Don't Mind Your Wife, Ebenezer Wangarline, OLA, Fama Nyame and Adom Wo Wimu. The food was purchased into food flask that had been wiped with menthylated spirit to exclude all micro organisms that might have been harboured there. Samples of food were obtained in the mornings when the food was hot and in the evenings

when the temperature was quite low. The purchased food was brought to the laboratory and the temperature read. Twenty grammes of 'fufu', 'banku' and 'konkonte' were each blended in 80 ml of sterile 1% peptone water into liquid. Two millilitres of the blended sample as well as the soups were then pipetted into 8ml of sterile 1% peptone water and ten-fold serial dilutions made.

For each sample of the food item, three sterilized petri dishes were used. One millilitre aliquot of 1:10 dilution of each sample was inoculated onto Plate Count Agar (PCA), SS agar, MacConkey and Sabouraud agar respectively to estimate the total bacteria, *Salmonella* and *Shigella*, coliform bacteria as well as indicating possible faecal pollution and fungal population respectively. The inoculated plates were incubated at 35°C for 48 hours. There were three replicate determinations for each sample in each particular medium for validation of results.

Presentation of Results

Contamination of food is associated with unsanitary conditions, poor food handling practices and poor personal hygiene of food handlers, which might make the transfer of pathogenic organisms unto food possible. Of all micro organisms, bacteria are of greatest concern to humans due to their involvement in food borne illnesses. Although others like viruses, yeast and moulds are also involved in health hazard their occurrence was quite rare in this study.

A bacterium is a living organism and, like all living things, need nutrients to maintain their functions. Once bacteria gets unto food under favourable conditions – moist environment, right temperature and pH, they multiply rapidly to produce sufficient numbers that could cause a health hazard. The presence of bacteria on the food causes food infection whilst the production of toxin in the food by the organism causes food poisoning after the food has been ingested. Fungi, although previously not of so much concern is gradually gaining attention because of the devastating nature of their effect on humans which is not immediately noticeable. Fungi that have been involved in food contamination are *Aspergillus* niger and *A.* flavus (Osei-Kofi, 2002). In many developing countries, contamination with *Aspergillus* may lead to unacceptable levels of aflatoxin in harvested maize, groundnuts and other foods. Aflatoxin is a chemical substance produced by *Aspergillus flavus* and has serious health implications for humans. Fungi can grow under all conditions unlike bacteria.

In an attempt to establish the relationship between poor compliance with food safety practices and food contamination, total count bacteria, coliform bacteria and fungi present on test food samples were established. Also, isolation of *Salmonella* was done as this might be a contributing factor to the upsurge of typhoid infection in the study area. In the case of fungi, *Aspergillus niger, Aspergillus flavus, Fusarium* sp., *Penicillium* sp. and *Rhizopus* sp. were also investigated in test food samples.

Recorded temperature and percentage moisture content of test food samples from selected chop bars are presented in Tables 23through to 26. Temperature ranges for 'fufu' were between 29^0C-36^0C for the morning samples and 28°C-37°C for the evening sample. Ranges for other food samples were light soup, 68^0C-82^0C for the morning samples and 63°C-81°C for the evening samples 'banku', 66^0C - 67^0C for morning and 48°C-49°C for the evening samples, 'okro' soup 69^0C and 63^0C for morning and evening samples respectively, groundnut soup 74^0C and 70^0C for morning and evening samples and 'konkonte' 56^0C – 59^0C for morning and evening samples respectively. Food items that were watery in nature recorded higher percentage moisture content than those that absorbed the liquid used in cooking. Moisture content ranged from 52.7 – 67% for 'fufu' for the morning sample and, 54 – 68% for the evening sample, 'banku', 51.3-55.8% and 54-56.2% for morning and evening sample respectively, 'konkonte', 53 and 59% for morning and evening samples, 'okro' soup 70.3 and68.2% for morning and evening samples and groundnut soup 91 and 93% for light soup.

Table 23

Mean percentage moisture (%) of test food samples collected in the morning (M) and evening (E) (Licensed Bars)

Licensed Bar	Fufu		Konkonte		Light soup		Okro Soup		Groundnut soup	
(Source)	M	E	M	E	M	E	M	E	M	E
Auntie Mansa	67.0	68.0	-	-	98.0	98.7	-	-	-	-
Anarfo	59.0	62.0	-	-	96.0	97.2	-	-	-	-
Ebenezer	52.0	54.0	53.0	59.0	96.0	97.8	-	-	-	-
Nyame Bekyere	56.0	59.2	-	-	95.1	97.2	-	-	-	-
Babylon	62.4	67.0	-	-	93.5	95.0	70.3	68.2	70.3	68.2
Don't Mind Your Wife	53.2	54.4	-	-	94.2	96.0	-	-	-	-
Adom wo wimu	61.0	67.1	-	-	97.5	98.2	-	-	-	-
Winflobeth	53.8	55.9	-	-	95.0	97.2	-	-	-	-

*No samples were available

Source: Fieldwork, 2005

Table 24

Mean percentage moisture (%) of test food samples collected in the morning (M) and evening (E) (Non-licensed Bars).

Non-licensed Bars (Source)	Fufu		Banku		Light Soup	
	M	E	M	E	M	E
Home Taste	58.0	61.0	-	-	93.0	94.8
Aponkye Nkrakra	61.0	63.7	-	-	95.0	97.2
Gegees	52.7	56.0	51.3	54.0	95.7	98.2
Sister Kakra	58.2	63.1	-	-	96.8	98.0
The Lord is my Sherpherd	63.1	64.9	-	-	93.0	96.0
Ba Meiyi	59.0	67.0	-	-	97.2	99.0
Wangarline	61.0	66.0	-	-	97.2	98.3
OLA	56.0	58.2	-	-	94.1	97.0
Fama Nyame	59.2	58.7	-	-	96.2	97.0
Sakra w'adwen	61.7	52.9	-	-	94.3	96.4

*No samples were available

Source: Fieldwork, 2005

Table 26

Temperature (^{O}C) of test food samples collected in the morning (M) and evening (E)

(Non-licensed Bars)

Non-licensed Bars (Source)	Fufu		Banku		Light Soup	
	M	E	M	E	M	E
Home Taste	35	37	-	-	73	68
Aponkye Nkrakra	32	37	-	-	71	74
Gegees	38	36	66	49	72	81
Sister Kakra	28	33	-	-	76	68
The Lord is my Sherpherd	29	32	-	-	68	74
Ba Meiyi	31	30	-	-	82	77
Wangarline	34	31	-	-	72	69
OLA	36	34	-	-	82	76
Fama Nyame	32	33	-	-	78	69
Sakra W'adwen	35	37	-	-	78	74

*No samples were available

Source: Fieldwork, 2005

Mean counts of coliform bacteria showed that with the exception of two licensed "chop bars" that did not have traces of these bacteria, all 'fufu' samples had a load of total and coliform bacteria although mean counts differed from one chop bar to another (Tables 27 and 28).

Table 27

Mean population of coliform in test food samples collected in the morning (M) and evening (E) (Licensed Bars)

Mean number of colony forming units in indicated food samples ($x10^3$cfu)										
Licensed Bar	Fufu		Konkonte		Light soup		Okro Soup		Groundnut soup	
(Source)	M	E	M	E	M	E	M	E	M	E
Auntie Mansa	43	52	-	-	0	0	-	-	0	0
Anarfo	51	56	-	-	1	9	-	-	0	0
Ebenezer	51	7	0	16	0	0	-	-	0	0
Nyame Bekyere	0	0	-	-	0	0	-	-	0	0
Babylon	80	87	-	-	0	0	5	11	10	12
Don't Mind Your Wife	13	18	-	-	0	0	-	-	0	0
Adom wo wimu	18	35	-	-	1	4	-	-	0	0
Winflobeth	0	0	-	-	0	0	-	-	0	0

*No samples were available

Source: Fieldwork, 2005

Table 28

Mean population of coliform in test food samples collected in the morning (M) and evening (E) (Non-licensed Bars).

Mean number of colony forming units in indicated food sample ($x10^3$cfu)

Non-licensed Bars (Source)	Fufu		Banku		Light Soup	
	M	E	M	E	M	E
Home Taste	36	27	-	-	0	0
Aponkye Nkrakra	54	66	-	-	0	0
Gegees	15	32	0	0	0	0
Sister Kakra	28	34	-	-	0	0
The Lord is my Sherpherd	31	41	-	-	0	0
Ba Meiyi	62	84	-	-	0	0
Wangarline	85	103	-	-	0	0
OLA	59	80	-	-	0	0
Fama Nyame	15	25	-	-	0	0
Sakra w'adwen	35	55	-	-	0	0

*No samples were available

Source: Fieldwork, 2005

For *Salmonella,* the causative agent of typhoid fever, two chop bars from each category did not have the bacteria in samples analyzed whilst one in each category had very low counts in evening samples taken. Surprisingly, total bacterial counts for 'fufu' in licensed chop bars seemed to be higher than

that for non-licensed bars. The opposite was the expectation since the assumption was that caterers in licensed "chop bars" would comply with measures better than the other category. The trend for *Salmonella* in 'fufu' was almost the same for both licensed and non-licensed "chop bars" except for two licensed bars (Anarfo and Babylon) that had moderately high load. (Table 29 and 30).

Table 29

Mean population of *Salmonella* in test food samples collected in the morning (M) and evening (E) (Licensed Bars).

Number of colony forming units in indicated food samples ($x10^3$ cfu/g)

Licensed Bar	Fufu		Konkonte		Light soup		Okro Soup		Groundnut soup	
(Source)	M	E	M	E	M	E	M	E	M	E
Auntie Mansa	21	25	-	-	0	0	-	-	-	-
Anarfo	71	74	-	-	0	0	-	-	-	-
Ebenezer	0	5	0	0	0	0	-	-	0	0
Nyame Bekyere	0	0	0	0	0	0	-	-	0	0
Babylon	79	10	-	-	0	0	2	5	-	-
Don't Mind										
Your Wife	9	5	-	-	0	0	-	-	-	-
Adom wo wimu	13	20	-	-	0	0	-	-	-	-
Winflobeth	0	0	-	-	0	0	-	-	-	-

*No samples were available

Source: Fieldwork, 2005

Table 30

Mean population of *Salmonella* in test food samples collected in the morning (M) and evening (E) (Non-licensed Bars).

Mean number of colony forming units indicated food samples ($x10^3$ cfu/g)

Non-licensed Bars (Source)	Fufu		Banku		Light Soup	
	M	E	M	E	M	E
Home Taste	0	0	-	-	-	-
Aponkye Nkrakra	20	29	-	-	-	-
Gegees	0	9	0	2	-	-
Sister Kakra	0	0	-	-	-	-
The Lord is my Sherpherd	0	0	-	-	-	-
Ba Meiyi	21	31	-	-	-	-
Wangarline	12	16	-	-	-	-
OLA	13	15	-	-	-	-
Fama Nyame	11	21	-	-	-	-
Sakra w'adwen	9	11	-	-	-	-

*No samples were available

Source: Fieldwork, 2005

None of the samples of soup had a load of *Salmonella* bacteria although some had coliform bacteria present. However, mean counts were low amongst the soup sampled except a sample of groundnut soup that had relatively high mean total count of bacteria. Comparatively and surprisingly, samples of soup from licensed "chop bars" seemed to be more contaminated than those from

non-licensed bars as none of the non-licensed "chop bars" had load of coliform bacteria whilst some of the licensed "chop bars" had some of these bacteria present (Tables 31 and 32).

Table 31

Mean population of total bacteria in test food samples collected in the morning (M) and evening (E) (Licensed Bars).

Mean number of colony forming units in indicated food samples ($X10^3$ cfu/g)

Licensed Bar	Fufu		Konkonte		Light soup		Okro Soup		Groundnut soup	
(Source)	M	E	M	E	M	E	M	E	M	E
Auntie Mansa	124	147	-*	-	0	0	-	-	-	-
Anarfo	164	187	-	-	8	11	-	-	-	-
Ebenezer	67	99	-	-	0	0	-	-	-	-
Nyame Bekyere	9	24	-	-	0	0	-	-	-	-
Babylon	117	121	1	5	0	0	7	24	0	16
Don't Mind Your Wife	68	73	-	-	0	1	-	-	-	-
Adom wo wimu	88	103	-	-	7	12	-	-	-	-
Winflobeth	37	46	-	-	7	10	-	-	-	-

*No samples were available
Source:Fieldwork, 2005

'Konkonte', 'banku' and 'okro' soup did not seem to be popular in the "chop bars". Two "chop bars" from the licensed group and one from the non-licensed status prepared these dishes. 'Konkonte' had low mean total counts of only bacteria and coliform bacteria with no *Salmonella* isolated. 'Banku' from the two categories of "chop bar' had very low mean total counts of only bacteria. That was also the same for 'okro' soup (Table 30 and 31).

Table 32

Mean population of total bacteria in test food samples collected in the morning (M) and evening (E) (Non-licensed Bars).

Mean number of colony forming units in indicated food samples ($x10^3$ cfu/g)

Non-licensed Bars (Source)	Fufu		Banku		Light Soup	
	M	E	M	E	M	E
Home Taste	63	76	-*	-	0	0
Aponkye Nkrakra	98	130	-	-	0	0
Gegees	29	39	0	3	0	0
Sister Kakra	68	78	-	-	0	0
The Lord is my Sherpherd	85	95	-	-	0	0
Ba Meiyi	91	115	-	-	0	0
Wangarline	117	164	-	-	0	0
OLA	119	172	-	-	0	0
Fama Nyame	45	67	-	-	0	0
Sakra w'adwen	75	95	-	-	0	0

*No samples were available
Source: Fieldwork, 2005

A total of five fungal species were isolated from the samples analyzed. These were *Aspergillus flavus, A. niger, Fusarium sp., Penicillium* sp., *Rhizopus sp. Fusarium* and *Penicillium sp. Pennicillum* sp.were found in 'fufu 'samples, *Penicillium sp.*in'Konkonte',*Rhizopus sp. Penicillium sp.in' konkonte", Rhyzopus sp. in " okro"and all five fungal species isolated in " banku". Mean count for each species was low for all bars and for all samples with the exception of 'banku", which had comparatively high load (Table 33 and 34).*

Table 33

Fungal species isolated from test food samples collected in the morning (M) and evening (E) (Licensed Bars)

Non-licensed Bars (Source)	Fungal species	Number of colony forming unit (cfu/g) of food sample ($x10^3$)					
		Fufu		Banku		Light Soup	
		M	E	M	E	M	E
Home Taste	*Aspergillus niger*	0	0	-	-	0	0
	Aspergillus flavu	0	0	-	-	0	0
	Fusarium sp.	0	0	-	-	0	0
	Penicillium sp.	0	0	-	-	0	0
	Rhizopus sp.	0	0	-	-	0	0
Aponkye Nkrakra	*Aspergillus niger*	0	0	-	-	-	-
	Aspergillus flavu	0	0	-	-	-	-

Table 33 continued

	Fusarium sp.	0	0	-	-	-	-
	Penicillium sp.	0	0	-	-	-	-
	Rhizopus sp.	0	0	-	-	-	-
Gegees	*Aspergillus niger*	0	0	3	7	-	-
	Aspergillus flavus	0	0	0	9	-	-
	Fusarium sp.	0	0	1	6	-	-
	Penicillium sp.	0	0	3	8	-	-
	Rhizopus sp.	0	0	1	6	-	-
Sister Kakra	*Aspergillus niger*	0	0	3	7	-	-
	Aspergillus flavus	0	0	0	9	-	-
	Fusarium sp.	0	1	1	6	-	-
	Penicillium sp.	0	1	3	8	-	-
	Rhizopus sp.	0	0	1	6	-	-
The Lord Is	*Aspergillus niger*	0	0	-	-	0	0
Shepherd	*Aspergillus flavus*	0	0	-	-	0	0
	Fusarium sp.	1	1	-	-	0	0
	Penicillium sp.	0	0	-	-	0	0
	Rizopus sp.	0	0	-	-	0	0
Ba Meiyi	*Aspergillus niger*	0	0	-	-	0	0
	Aspergillus flavus	0	0	-	-	0	0
	Fusarium sp.	0	0	-	-	0	0
	Penicillium sp.	0	0	-	-	0	0

Table 33 continued

	Rhizopus sp.	0	0	-	-	0	0
Wangarline	*Aspergillus niger*	0	0	-	-	0	0
	Aspergillus flavus	0	0	-	-	0	0
	Fusarium sp.	0	0	-	-	0	0
	Penicillium sp.	0	0	-	-	0	0
	Rhizopus sp.	0	0	-	-	0	0
OLA	*Aspergillus niger*	0	0	-	-	0	0
	Aspergillus flavus	0	0	-	-	0	0
	Fusarium sp.	0	0	-	-	0	0
	Penicillium sp.	0	0	-	-	0	0
	Rhizopus sp.	0	0	-	-	0	0
Fama Nyame	*Aspergillus niger*	0	0	-	-	0	0
	Aspergillus flavus	0	0	-	-	0	0
	Fusarium sp.	0	0	-	-	0	0
	Penicillium sp.	0	0	-	-	0	0
	Rhizopus sp.	0	0	-	-	0	0
Sakra W'adwen	*Aspergillus niger*	0	0	-	-	0	0
	Aspergillus flavus	0	0	-	-	0	0
	Fusarium sp.	0	0	-	-	0	0
	Penicillium sp.	0	0	-	-	0	0
	Rhizopus sp.	0	0	-	-	0	0

*No samples were available

Source: Fieldwork, 2005

Table 34

Fungal species isolated from test food samples collected in the morning (M) and evening (E) (Non-licensed Bars).

Licensed bars (Source)	Fungal species	Number of colony forming units (cfu/g) of food sample ($x10^3$)											
		Fufu		Banku		Konkonte		Light soup		Groundnut soup		Okro soup	
		M	E	M	E	M	E	M	E	M	E	M	E
Aunt Mansa	*Aspergillus niger*	0	0	-	-	-	-	0	0	-	-	-	-
	Aspergillus flavus	0	0	-	-	-	-	0	0	-	-	-	-
	Fusarium sp.	0	0	-	-	-	-	0	0	-	-	-	-
	Penicillium sp.	0	1	-	-	-	-	0	0	-	-	-	-
	Rhizopus sp.	0	0	-	-	-	-	0	0	-	-	-	-
Ebenezer	*Aspergillus niger*	0	0	-	-	0	0	0	0	0	0	-	-
	Aspergillus flavus	0	0	-	-	0	0	0	0	0	0	-	-
	Fusarium sp.	0	0	-	-	0	0	0	0	0	0	-	-
	Penicillium sp.	0	0	-	-	2	4	0	0	0	0	-	-

Table 34 continued.

Ebenezer	*Rhizopus*	0	0	-	-	0	0	0	0	0	0	-	-
Nyame Bekyere	*Aspergillus niger*	0	0	-	-	-	-	0	0	-	-	-	-
	Aspergillus flavus	0	0	-	-	-	-	0	0	-	-	-	-
	Fusarium sp.	0	0	-	-	-	-	0	0	-	-	-	-
	Penicillium sp.	0	0	-	-	-	-	0	0	-	-	-	-
	Rhizopus sp.	0	0	-	-	-	-	0	0	-	-	-	-
Babylon	*Aspergillus niger*	0	0	0	0	-	-	0	0	0	0	-	-
	Aspergillus flavus	0	0	4	7	-	-	0	0	0	0	-	-
	Fusarium sp.	0	0	0	2	-	-	0	0	0	0	-	-
Babylon	*Penicillium*	0	0	1	4	-	-	0	0	0	0	-	-
	Rhizopus	0	0	0	0	-	-	0	0	0	0	-	-
Anarfo	*Aspergillus niger*	0	0	-	-	-	-	0	0	-	-	-	-
	Aspergillus flavus	0	0	-	-	-	-	0	0	-	-	-	-

Table 34 continued

	Fusarium sp.	0	0	-	-	-	-	0	0	-	-	-	-
	Penicillium sp.	0	1	-	-	-	-	0	0	-	-	-	-
	Rhizopus sp.	0	0	-	-	-	-	0	0	-	-	-	-
Adom Wo Wimu	*Aspergillus niger*	0	0	-	-	-	-	0	0	-	-	-	-
	Aspergillus flavus	0	0	-	-	-	-	0	0	-	-	-	-
	Fusarium sp.	0	0	-	-	-	-	0	0	-	-	-	-
	Penicillium sp.	0	0	-	-	-	-	0	0	-	-	-	-
	Rhizopus sp.	0	0	-	-	-	-	0	0	-	-	-	-
Winflobeth	*Aspergillus niger*	0	0	-	-	-	-	0	0	-	-	-	-
	Aspergillus flavus	0	0	-	-	-	-	0	0	-	-	-	-
	Fusarium sp.	0	0	-	-	-	-	0	0	-	-	-	-
	Penicillium sp.	0	1	-	-	-	-	0	0	-	-	-	-

Table 34 continued.

Winflobeth	*Rhizopus sp.*	0	0	* -	-	-	-	0	0	-	-	-	-
Don't Mind Your Wife	*Aspergillus niger*	0	0	-	-	-	-	0	0	-	-	-	-
	Aspergillus flavus	0	0	-	-	-	-	0	0	-	-	-	-
	Fusarium sp.	0	0	-	-	-	-	0	0	-	-	-	-
	Penicillium sp.	0	0	-	-	-	-	0	0	-	-	-	-
	Rhizopus sp.	0	0	-	-	-	-	0	0	-	-	-	-

*No samples were available

Source: Fieldwork, 2005

Discussion of Results

The presence of pathogenic micro organisms on food is considered harmful. However, there are levels at which their presence might not be so injurious to health. Microbiological limits for food outlines the permissible levels of micro organisms beyond which their presence may pose a risk to human health. Results obtained from test food samples were compared to the Australian/New Zealand microbiological limits for food (2002).

A large proportion of 'fufu' was contaminated with unacceptable levels of bacteria, coliform and *Salmonella* bacteria as shown in Plate 7 and 8. There were a few isolated cases of soup contamination but the levels of microbial load were not as high as that for 'fufu' but still exceeded microbiological limits for food

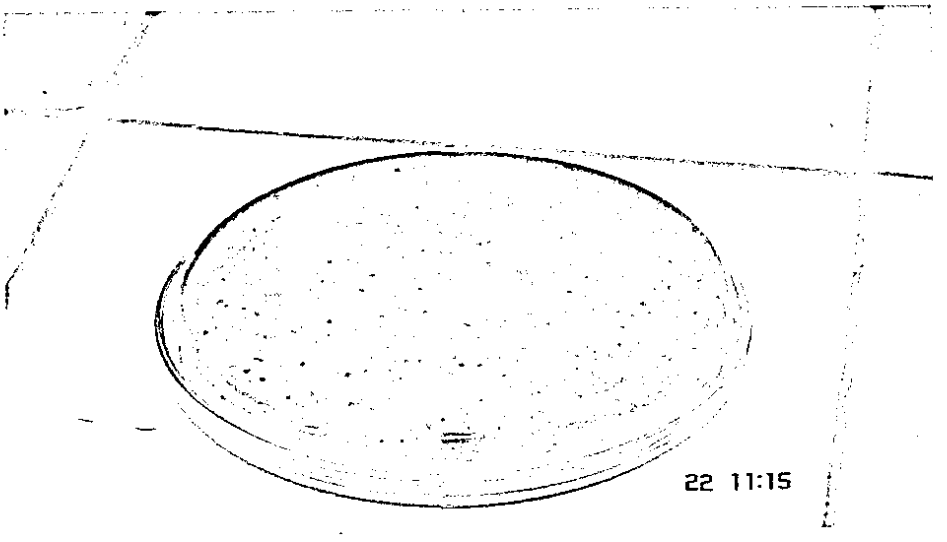
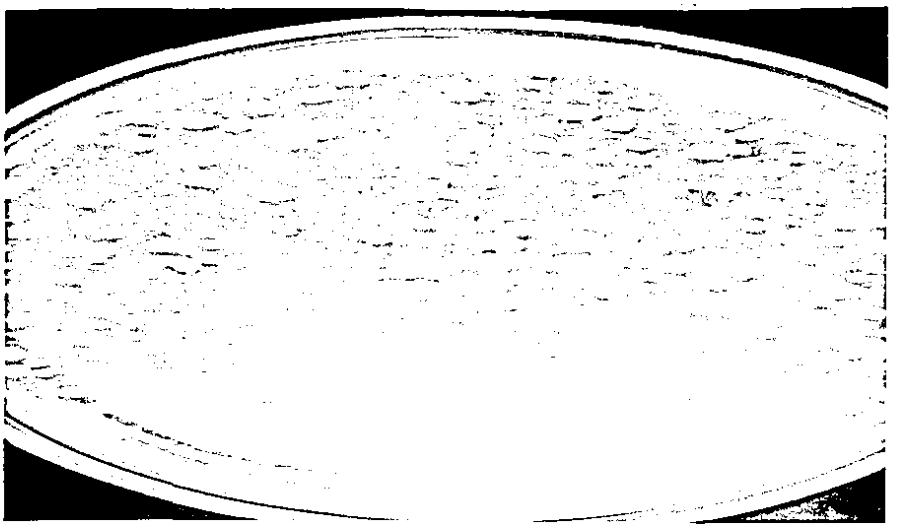


Plate 7: *Salmonella* colonies growing on S.S. Agar **X 8/9**

Source: Fieldwork, 2005



X1/3

Plate 8: Colonies of bacteria growing on Plate Count Agar

Source: Fieldwork, 2005.

. A combination of factors could have accounted for the presence and growth of bacteria particularly on 'fufu'. This food sample was found to be handled excessively with bare hands after the cassava and plantain had been boiled. Its preparation involved pounding by means of mortar and pestle and turning the stiff paste with bare hands, which were occasionally washed in a container of water. The water used for turning the paste was not boiled to kill bacteria that may be present.

It was also observed that untreated water was used to rinse the mortar and pestle and no hand washing procedure was followed by caterers. Micro organisms could therefore be transferred from food handlers, water used and the equipment for food processing. Temperature of fufu after preparation fell within the Temperature Danger Zone (TDZ) that is 37^0C to 60^0C, where micro

organisms thrive and multiply at a very fast rate hence, the unacceptable levels of microbial load (Tables 22-27).

'Banku' and 'konkonte' were rolled into balls after cooking and covered until a customer requested for some. Ideally, these two food items should not have had any microbial load looking at the temperature for their preparation. However, rolling of these food items into balls involved the use of the hands and a calabash or bowl and untreated water, which were possible sources of contamination of the cooked product. Samples of 'banku' analyzed did not have heavy microbial load, they carried very low level of total bacteria whilst 'konkonte' did not have any bacteria. Possibly, the temperature at which these food items are moulded could account for the low levels of microbial loads, despite the use of apparently contaminated equipment (Tables 32 and 33).

Light soup appeared to be less contaminated irrespective of the moisture content. It was realized that soups were kept on fire throughout the service period. In view of that bacteria were denied the ambient temperature, which enhance their growth and multiplication. All the same, a few samples analyzed carried low levels of bacteria load which might have been introduced by caterers via ladle for fetching the soup. Organisms could have also been present in the raw ingredients and escaped cooking temperatures since most caterers reported that they looked for good bargain rather than checking for acceptable organoleptic properties of food. Groundnut soup had quite an appreciable load of total bacteria and about half that load of coliform bacteria.

Groundnut soup and probably 'okro' soup are classified as potentially hazardous foods due to their nature and ability to support the rapid growth of pathogenic bacteria and that might account for the high level of the microbial load.

Generally speaking, levels of all types of bacteria exceeded limits that are expected on food especially *Salmonella* contamination where the presence of 1 x 10^3 of colony forming units (CFU/g) in sample is considered hazardous meanwhile, some test food samples had a mean of 79 x 10^3CFU/g. Risk factors that were empirically identified to account for food contamination is the use of bare hands to serve food. This was proved by the fact that vendors were tested with a variety of bacterial enteropathogens including *Salmonella typhi* and these are transmitted to food via defective personal hygiene to food (Ablordey, Mensah, Owusu-Darko, and Yeboah-Manu, 2002). The sale of food in "chop bars" was therefore thought to be the best alternative to ambulatory vending by the same author above. The present study however has refuted this opinion to an extent because of the findings that have been unravelled.

Although levels of fungal species were not so much on food items like 'fufu' and soup, which happen to be the most popular choice of clients, levels of all the fungal species on 'banku' and 'konkonte' were quite substantial (Tables 32 and 33). It is possible they were initially in the maize or cassava chips due to storage conditions and might have also escaped cooking temperatures. The fungal species with the highest recording was *Aspergillus flavus*, which is responsible for aflatoxin production,

a source of worry in the sub region because of its health repercussion on victims.

Licensed status of chop bars was also tested against how dirty dishes were washed. Ideally dirty dishes are to be washed with hot water and soap. The temperature of the water helps to kill micro organisms that might be in the water and on the surfaces being cleaned. It was also assumed that caterers in the licensed chop bars would comply with safety practices better than their counterparts in the non-licensed ones. The results of this test did not show any significance. The null hypothesis that there is no significant relationship between the food practices of licensed and non-licensed was not rejected. This meant that both groups of establishment indulged in the same food practices

Factors that Influence Compliance with Food Safety Measures

After the relationship between poor compliance with food safety measures and the microbial load on food had been established, it became necessary to ascertain whether background characteristics of caterers influenced the level of compliance. The Chi Square Statistic (X^2) was therefore used to test the relationship between some selected background variables (sex and professional training) with levels of compliance.

The result showed that sex of respondents had significant relationship with food safety practices at the 0.05 level (X^2 =12.862, df =1). It can therefore be said that, as far as the study area is concerned females are likely to indulge in different food safety practices than men.

It was anticipated that the level of professional training attained by caterers would also influence the level of compliance with food safety practices. The observations made and the trend of results did not point to this fact. To establish this relationship however the X^2 was again used for verification. The result did not show any significance at 95% confidence level as X^2 calculated was found to be less than the X^2 critical value.

Much as background characteristics of caterers were believed to influence safe handling of food, the relative contribution of these variables had not been established by any of the studies reviewed. This study therefore attempted to explore the relationship between a number of background variables and a number of food safety practices. The binomial logistic regression model was used to analyze how these variables affected how food was handled by caterers. This model was chosen because of its suitability for dichotomous categorical variables (i.e. the absence or presence of the issue under investigation and yes or no) and its capacity to analyze a mixture of continuous and discrete variables (Tebachmek *et al*, 1996 in Tanle, 2003).

The background variables used were those that the literature assumed to be of prime importance for acceptable food handling practices and these included level of formal education and professional training. One of these variables (level of education) was transformed to make it dichotomous since the other was already in that state. The variables were then coded as two options. No formal education was coded as 1 and formal education as 0.and

caterers with professional training as 1 and 0 for those without professional training. Tables 35a and 35b show the results of logistic regression.

Table 35a

Results of Logistic Regression

Explanatory variables	B	SE	Wald	Sig	ExpB
Formal education	1.065	.818	1.694	.193	2.901
Professional training	-679	1.138	.357	.550	.507
Constant	-3.155	.821	14.761	.001	.043

Codes: No formal education = 1, Formal education = 0; No professional training = 1, Professional training = 0

Source: Fieldwork, 2005

Table 35b

Explanatory variables	B	SE	Wald	Sig	ExpB
Education	-829	965	.739	.390	.436
Professional training	2.007	1.150	3.047	.081	7.440
Constant	2.444	.759	10.376	.001	11.522

Codes: No formal education = 1, Formal education = 0; No professional training = 1, Professional training = 0.

Source: Fieldwork, 2005

None of the explanatory variables used was significant at the 95% confidence level implying that none of the background variables influenced food handling practices of "chop bar" caterers. The hypotheses held that there is no relationship between background characteristics of caterers and safe food handling practices (temperature control and touching cooked food with bare hands) is not rejected because there is not sufficient evidence to reject the hypotheses at this time.

The odds ratio show how each of the explanatory variables influence the safe food handling practices of caterers as compared to a reference category. The likelihood of caterers with formal education to influence handling cooked food with gloves was 2.901 indicating that caterers who had received formal education were more likely to handle cooked food with gloves than those without formal education. Caterers with formal education were also as 7.440 times more likely to keep cooked food hot than those without formal education. With regards to professional training, caterers without training were .507 times more likely to handle cooked food with gloves.

The outcome of the findings brought to the fore that the major background variables which were believed to account for non compliance were not significant. This pointed to the fact that there could be other background factors not as yet identified that account for non compliance with food safety measures.

Sources of Food Safety Information to Caterers

The conceptual framework used for this study had an underlining assumption that small businesses, of which traditional catering establishments form part, have little or no capacity to carry out the compliance process themselves. Rather, such businesses rely on others for information about regulations and their effect. In view of this it became necessary to find out the sources of information that were available to the traditional catering establishments. Ninety-one per cent out of a hundred did not belong to any association. The 9% left belonged to a local traditional caterers association, and none of the males were found to be a member of such an association. Caterers had various reasons for not being members of the local association. For instance, as much as 91% of the caterers were not aware of the existence of such an association whilst 5% of them felt it was not really important to join the association. The rest complained of unavailability of money to be a member, non-existence of the association and the concentration of elites in the membership of the association. As to the role the association played in helping the caterers to employ food safety precautions in the execution of their tasks, only 5% stated that, the association provided in-service training. Another one per cent of the caterers said, the association only held meetings with them (Table 35).

Table 36

Reason for not being in Any Association (%)

Reason	Male	Female	Total
Not aware of any association	16.0	76.0	91.0
Seem unimportant	1.0	4.0	5.0
Made up of elite	0.0	1.0	1.0
Have no money to join	0.0	1.0	1.0
Non existent	0.0	1.0	1.0

Source: Fieldwork, 2005 N = 100

Majority of the caterers (68%) did not have access to any kind of food safety information from any of the agencies outlined in Table 36. This was followed by 28% of caterers who identified the Municipal Authority as their source of food safety information, with small percentages of caterers stating their sources as Traditional Caterers Association (1%), Ghana Tourist Board (1%) and Proprietors (2%). If this were true then caterers should not be blamed so much for non-compliance since the knowledge itself was not available to them.

Table 37

Agencies that Provide Food Safety Information (%)

Agency	Male	Female	Total
Ghana Tourist Board	0.0	1.0	1.0
Municipal Authority	5.0	23.0	28.0
Traditional Caterers Association	0.0	1.0	1.0
Proprietors	2.0	2.0	2.0
N/A	12.0	56.0	68.0

Source: Fieldwork, 2005 N = 100

It was gathered from the responses given by caterers that food safety training, which would have provided them with information to help them develop acceptable food handling practices, was virtually not being done. Ninety three percent (93%) of caterers contacted did not respond to the question, which sought to find out those who attended such training. Those who attend did so either three times a year (2%) or occasionally (5%).

The responses given presuppose that not much was being done to upgrade or enlighten caterers on the current trends of microbiological contamination to help them discard their traditional ways of handling food and adopt the scientific approach of making food safe. It was therefore necessary to find out whether the trainings were actually not organized or caterers were just apathetic towards such trainings.

Majority of the caterers (83%) did not respond to this question item. This made it rather difficult to know whether the trainings were organized and caterers did not attend or they had other reasons for not attending. For the remaining caterers, 7% felt the trainings did not benefit them because there was nothing useful about them. Another 7% stated that to the best of their knowledge, there had never been any such training whilst the remaining 1% attributed their non-attendance to lack of money to meet demands made at such meetings.

Table 38

Why Caterers have not had any Training (%)

Reason for not attending training	Male	Female	Total
Not useful	0.0	7.0	7.0
Times not suitable	0.0	2.0	2.0
There has never been such a training	1.0	6.0	7.0
No money	0.0	1.0	1.0
N/A	16.0	67.0	83.0

N = 100

Source: Fieldwork, 2005

Information gathered during interactions with caterers on why they had not been attending trainings brought to light that everything in Ghana revolves around money and so it was to stay clear than committed. It was realized that

those who attended were the proprietors or proprietresses and not those who were actively engaged in the cooking. This presupposes that it was possible trainings were organized but caterers chose not to attend, or rather commitment was very low.

According to some of the caterers, the agencies involved in disseminating food safety information adopted practical observation of their food handling practices to assess their level of comprehension of information or principles taught. Only 5% of respondents provided this information whilst the remaining 95% did not respond to that question item.

Measures normally put in place to monitor compliance with food safety measures taught include inspection of premise (4%), practical observation of participants (1%) and chastisement from proprietors and proprietresses (1%). However, majority of the caterers (94%) stated that nothing of the sort had ever taken place. Agencies, which conducted inspection of catering premises, were also identified. It was gathered from the responses given that only the Municipal Authority executed that job as 91% identified this agency as the one visiting their premises. For the purpose of their visit caterers had different perceptions and these have been summarized in Table 38. For example, the local authority checked on the sanitation of cooking environment during their visit 68% of the caterers indicated that. Other reasons for the visit expressed included compliance monitoring (7%), money collection (3%) and to spell out 'dos' and 'don'ts' (3%).

Table 39

Regulatory Agencies' Purpose of Visit (%)

Purpose of visit	Male	Female	Total
Collect money	1.0	2.0	3.0
Check an sanitation	12.0	56.0	68.0
To spell out dos and don'ts	0.0	3.0	3.0
To monitor compliance of advice given	1.0	6.0	7.0
N/A	3.0	16.0	19.0

Source: Fieldwork, 2005 N - 100

As much as 35% of the respondents (Table 39) did not respond to the question item which sought to find out how regularly agencies visited food vending outlets. The possible reason could have been that they did not receive any visitation from the health inspectors. This was followed by 23% who had occasional visitation and (13%) who were contacted quarterly basis. Infrequent visit to some catering premises by the local authority could be suggestive of the fact that caterers did not have any problems and that all was well as far as sanitation was concerned as some even suggested that only high risk premises are visited often to enforce compliance. However, there were a number of indications to prove that a lot had to be done in the area of sanitation of the food environments as well as the personal hygiene of caterers themselves.

Table 40

Regularity of Agencies' Visit (%)

Regularity of visit	Male	Female	Total
Quarterly	0.0	13.0	13.0
Three times in a year	1.0	3.0	4.0
Two times in a year	1.0	6.0	7.0
Once in a year	2.0	3.0	5.0
Occasionally	5.0	18.0	23.0
Twice in a month	0.0	5.0	5.0
Often	1.0	7.0	8.0
N/A	7.0	28.0	35.0

N = 100

Source: Fieldwork, 2005

Food Safety Legislation

The country has a law that stipulates the framework within which food handlers should operate. Additionally, penalties for offenders have been spelt out. It is also known that the local government has derived bye- laws from the national law to guide the activities of caterers in the locality (Cape Coast Municipal Bye-laws, 2000). These bye-laws, which were relevant to the study included cleaning of premises once a month at stipulated times, and the linkage of drains to the main drain from premises to facilitate proper disposal of waste water. Examination of these bye-laws revealed a gross inadequacy of

provisions. Moreover, there was an indication that these provisions were not codified to make them easier for compliance. It is believed that codification of laws into measures removes ambiguous clauses and makes its understanding easier to the layman. Above all, codification of measures ensures uniformity of practice.

It also became clear that traditional catering falls under the informal sector, which is outside a recognized system or law hence; there is no government sector that oversees their operation. This was noted at an International Delegates Conference on Informal Food Vending in Accra, Ghana in 2005. Delegates also observed that because traditional catering is considered informal, traditional approaches are adopted in dealing with problems confronting them although such methods do not yield any dividend. It was argued that since traditional caterers are already using public facilities, government intervention in their activities would be a step in the right direction. In the case of Ghana, the government, having assessed their tourism potential, has mandated the Ghana Tourist Board to license premises that meet set standards.

Agencies that were found to be empowered by law to handle issues related to food safety were the Food and Drugs Board (FDB), Ghana Tourist Board (GTB) and the District Assembly. FDB was responsible for organizing workshops for Environmental Health Officers. Knowledge acquired from the workshops then formed the basis for local regulations and codes of conduct. GTB was also empowered by Legislative Instrument 1205 to register and

inspect catering sectors of tourism and to enforce standards. Besides those required by law to ensure compliance, other agencies were identified to be involved in some dimensions of regulation and enforcement of standards. These included the Environmental Protection Agency (EPA), Ghana Standards Board (GSB), Veterinary Services Department (VSD) and the Central Region Development Commission (CEDECOM). The roles played by these other agencies included initial inspection of premises for permission to start business, inspection of goods and slaughtering of animals for food and running of workshops for hospitality staff.

The import of the information above suggests that the sale of food in Ghana is controlled through licensing and inspection. Also, the fact that some agencies are to run workshops for food handlers signify that food safety information is made available to food handlers. The number of bodies involved in licensing, inspection and training was just a replica of what pertains in other countries. There was no instance where just one agency was tasked with ensuring the safety of food sold to consumers. This may be a weakness in the system.

To verify some of the responses given by the caterers and also to help confirm the role played by agencies and institutions that trained and regulated activities of foodservice operators, a simple and short questionnaire (Appendix III) was designed for such agencies. In all, six agencies were identified to be working with the sector in question namely Central Region Development Commission (CEDECOM), Ghana Tourist Board (GTB), Environmental

Protection Agency (EPA), Food and Drugs Board (FDB), Municipal Authority and the Traditional Caterers Association. It was gathered from the responses given that CEDECOM was not actively engaged in the activities of this segment of foodservice, which is the interest area of this study whilst the Traditional Caterer's Association, meant to be the mouthpiece of this segment of catering, had actually ceased to function.

Data generated from the agencies also indicated that they did not perform the same role. With the exception of FDB which provided food safety information through seminars and training programmes, all others conducted inspection of food vending outlets. FDB's role was however not directly targeted to food vendors. The Board rather collaborated with Environmental Health Officers who received training to visit food vending outlets to ensure that sanity prevailed. The training, as reported by FDA, was usually provoked by prevailing circumstances especially after reports or through field visits.

Inspection of the outlets by the agencies concerned occurred on yearly basis except that of the EHO which was done twice a month. The assertion by these two agencies was however not evident in the data. Indeed, the regularity of their visits could not be reconciled by what the caterers reported as only 5% stated that they had contact with the agencies concerned twice in a month.. Majority were those who stated that they were visited very occasionally. It was not known as to why some were contacted more than others. However, a proprietress who stated that she received visits often was found to be very dirty and unsightly. As a result one could not conclude that the regularity of visits

was based on the extent to which one met the standards set or vice versa. In that case it becomes difficult to know what inspectors actually looked out for on their visits. It was also possible inspectors were as ignorant as the caterers whom they visited.

It also emerged that none of the agencies had direct contact with caterers, organized training programmes or in-service training for them. Any food safety information given was situational. No codified measures were used. The condition that prevailed at the time of visit determined the information to be disseminated. This meant that vendors might not have access to the same kind of information, hence the differences that existed in the level of compliance.

With the exception of the EHOs who stated that they did not encounter any problems in the performance of their duties, a contestable claim, the other three agencies had their own peculiar problems. EPA lamented on how food vendors failed to seek approval before siting their structures and more often than not the sites for the structures were found to be near places of convenience or refuse dumps which are a contravention of the standards set for food safety. Non-compliance with regulations was the problem identified by FDB and this goes to buttress the affore-mentioned concern by EPA. The problem that was encountered by GTB was quite different. According to them, chop bar operators felt that they did not take loans from anybody to establish themselves, hence they did not need anybody's advice in their operations. All four agencies viewed their approach to the dissemination of food safety

information to be adequate but then one might wonder why there was still high level of non-compliance.

A welcoming suggestion that was put across by GTB was that the Traditional Caterers' Association should be revived to advance certain interests that had been downplayed. Among other suggestions put forward by the same agency included the need for all stakeholders to coordinate their activities to avoid duplication of tasks. In addition, it was stated that a decentralization of authority was necessary since they felt the yearly contact was woefully inadequate for proper and effective enforcement. This calls for the creation of sub district offices of GTB to intensify the visits to the vending outlet. In the light of all these suggestions, logistics and funds were identified as the limiting factors. FDB also shared the same view with GTB on the problem of logistics, personnel, overlap of mandates and personality clashes. The Board also postulated that food safety is a national problem which calls for more collaborative efforts from all stakeholders. EHOs who were supposed to be closer to the operators, knew they were not complying with safety measures but did not have much to say. Meanwhile, staff of most of the chop bars visited was without medical certificates

Summary and Conclusion

The chapter looked at the level of compliance with food safety measures and the sources of food safety information to caterers. The consequence of non compliance was also examined in addition to establishing

how certain background variables influenced compliance with food safety measures through hypotheses testing.

It became evident from the findings of the study that foods sampled from the "chop bars" that were used for the study were contaminated with appreciable levels of pathogenic organisms. 'Fufu', which happened to be a popular food in the study area, was more predisposed to contamination than other food items probably due to its processing procedure and the temperature at which it was kept throughout the service period. It could also be possible that those who handled that food item were not clean and were probably carriers of the *Salmonella* bacteria isolated by the study.

It appeared from the evidences gathered that caterers had little capacity to access and interpret food safety information through sources like leaflets, websites and newsletters since majority of them had either very low educational background or no formal educational at all.

CHAPTER SIX

SUMMARY, CONCLUSION AND RECOMMENDATIONS

Introduction

The main aim of this study was to examine the food handling practices of caterers in the traditional catering establishments using the Cape Coast Municipality. This chapter gives a brief summary of the main research findings gathered from the study and its implications for policy. The chapter is organized in two sections. The first section provides a brief summary of empirical evidence identified in the study in relation to compliance with food safety measures by caterers in that segment of the foodservice industry as well as conclusions drawn from the findings. Recommendations for further research and policy formulation constitute the next section.

Summary of Evidence

The study sought to profile the background characteristics of traditional caterers and assess how these influenced their food handling practices. The role of regulatory agencies in enforcing and monitoring compliance with regulations by caterers was also examined. The study was based on one hypothesis and two assumptions and these were:

1. there is no significant relationship between compliance with food safety measures and background variables of caterers.

2. compliance (27 codes of hygienic practice) is not related to status of chop bars.

3. compliance (27 codes of hygienic practice) is not related to contamination of food with salmonella bacteria.

(a) Compliance with food regulations was a requirement that had to be met by all food vendors. Contravention of regulations attracted a fine or closure of

a premise. At other instances contravention could lead to ceasure of license until regulations were satisfactorily met. In spite of the existence of these regulations, food handling practices of caterers were found to be generally poor with females being worst offenders.

(b) Lack of food safety information on the part of caterers was traced to irregularity of visits from regulatory bodies that were to offer advice on how to maintain sanitary conditions to enhance food safety. This consequently led to ignorance and furtherance of traditional ways of handling food which compromised food safety. Also regulations were not codified into measures to enhance understanding and compliance.

(c) One major source of food safety information identified by the conceptual framework used for this study was a local caterers' association. Unfortunately, this association was in existence just in

name as all activities that had to be organized had come to a stalemate due to a myriad of concerns including lack of logistics.

(d) It was also evident from the data that four bodies were involved in the regulation of activities of this segment of foodservice. These are EHO, GTB, FDB and EPA. Problems encountered in the performance of their duties included lack of co-ordination, inadequate technical personnel and logistics, which impeded the effective achievement of set goals.

(e) It was assumed that formal education, professional and in-service trainings had implications for compliance. Examination of the syllabus of vocational education from the vocational schools through to the High National Diploma level revealed that food safety is given little or no attention at all. Stroke 1 and 2 had an hour a week to tackle issue on personal, food and kitchen hygiene for two years. The concentration seemed to be on the product and not the process; meanwhile it is believed that the process determines what is to be expected in the product as far as hygiene is concerned. Quite apart from that, majority of the caterers were found to be illiterate.

(f) Both caterers and their clients had low economic backgrounds. Apart from 2% of caterers who did not disclose their income, almost all the rest earned 100,000 – 500,000 cedis a month. About 45% of clients were students at various levels of the education ladder who depended on their pocket money or money for lunch and this could not have been

any substantial sum. However, the fact remains that no matter the calibre of people who patronize chop bars, they have the moral right to enjoy quality service.

(g) Although specific laws had been passed to regulate the activities of the foodservice sector, "chop bars" were not accorded the needed attention. At least, it became evident that no training programme had ever taken place for quite a long period of time as at the time of data collection. Meanwhile, a workshop was organized for hoteliers and restaurant employees in 2005 in Cape Coast by CEDECOM. Also, a series of training programmes was reported to have been organized for selected food vendors within the Kumasi Metropolis but none of these was extended to Cape Coast.

(h) The major source of information regarding the importance of compliance and changes in legislation is through advisory visits from Environmental Health Officers

(i) Food safety legislation does not specify the level of training that is necessary for food handlers and food handlers do not go through any rigorous procedures before securing a job.

(j) Penalties meted out for non-compliance with food safety regulations, although not severe, were not religiously applied.

Recommendations

Based on the findings of this study the following recommendations have been made for policy relating to food safety regulation and compliance and "chop bar" operation.

(a) A further study should be conducted which will take swabs of employees' hand and cut of their dresses for coliform and salmonella test to establish the source of faecal contamination. Findings of such a study should be disseminated to the appropriate areas for redress.

(b) A project where operators express their willingness to meet a set criteria by local partnerships (local authorities, consumer groups, operators and the local association) should be initiated. Criteria should be divergent and should include sampling of food, containers, utensils, clothing and hands of food handlers for rapid coliform test. An agreed logo by partners should be displayed at vending sites where all food safety practices were not observed. This inspection should be repeated at regular interval to sustain it. This will promote clean premises and deter inspecting officers from compromising food safety.

(c) Hazard Analysis Critical Control Point (HACCP) principles should be made an integral part of any food safety programme of the foodservice establishments. These principles should be religiously disseminated to the major actors of the industry.

(d) Food safety law should be reviewed to incorporate the informal sector. If possible a new food law should be drafted to specify a government

institution to do the regulation and monitoring of the sector and roles of key players specified to avoid duplication of tasks.

(e) Laws and regulations should be codified into measures at the local levels for easy adoption and application by traditional caterers.

(f) The formation of consumer associations should be encouraged at the local level and charged with the responsibility of reporting such issues as unsafe food and unhygienic food establishments. Additionally, they should be made to disseminate food safety information to consumers.

(g) Food protection does not only involve the enactment of sound law but also the development of an appropriate infrastructure to include adequately paid and trained inspectors and adequate and appropriate laboratory facilities. The food control system should therefore be provided with adequate support to help them function effectively.

(h) Financial institutions could make loans available to proprietors and proprietresses once their operations are formalized to help improve their services. The government could also put up decent structures, considering the tourism potential of the segment and the nations move to develop tourism. Once recognized formally, the government could then formulate sound operational guidelines, for instance the government could set the hours of operation for a worker within a day and the minimum wage to be paid to avoid the exploitation that is currently going on.

Re-organization of the local food associations should be encouraged and sustained to further the interest of the group.

(i) Another area of research should be to subject other background characteristics that were not examined in this study to analytical test to ascertain whether those variables have any significant relationship with compliance with food safety measures.

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APPENDIX I

UNIVERSITY OF CAPE COAST

DEPARTMENT OF GEOGRAPHY AND TOURISM STUDY ON TOURISM AND FOOD SAFETY IN THE CENTRAL REGION: TRADIONAL CATERERS' COMPLIANCE WITH FOOD SAFETY MEASURES

INTERVIEW SCHEDULE FOR TRADITIONAL CATERERS

A. PERSONAL PROFILE OF RESPONDENTS

A1. Age

A2. Sex: 1. Male 2. Female

A3. Religious affiliation

1. Orthodox
2. Pentecostal
3. Moslem
4. Traditional
5. Pagan (No religion)
6. Spiritual

A4. What is your highest educational level?

1. None
2. Primary
3. Middle School/J.S.S.
4. Secondary

5. Comm./Tech/Voc

6. Training

7. Tertiary

8. Others specify.....

A5. Which ethnic group do you belong to?

1. Fanti

2. Other Akan

3. Ga/Adangbe

4. Ewe

5. Guan

6. Hausa

7. Mole-Dagbani

8. Other (specify).....

A6. Where do you live in Cape Coast?.....

A7. Where did live during your growing years?

A8. Have you ever had professional training in food preparation?

1. Yes

2. No

A9. At which level did you have that training?

1. None

2. Middle School

3. Vocational/Technical

4. Polytechnic

5. Training College

6. University

A10. At what level did you have training in large-scale food preparation?

1. None

2. Vocational/Technical School

3. Polytechnic

4. Apprenticeship

5 On the job training

A11. How frequent have you had medical examination as part of your work?

1. None

2. Quarterly

3. Bi-annual

4. Once a year

5. Once in two years

6. Once in five years

7. Occasionally

A12 Any history of health-related problems over the last few months? –

.....

A13. How much do you receive as income per month?

.....

A14. Why have you chosen to work in a chop bar?

.....

B. FOOD HYGIENE

B1. What is the source of your water for cooking?

1. Well
2. Borehole
3. Standing pipe
4. Stream/pond/dugout
5. Rain harvesting

B2. How do you treat your water before using it?

1. No treatment
2. Boil
3. Allow it to stand for sometime
4. Filter

B3. Where do you buy the raw materials for your food from?

1. Market
2. Shop or store
3. Farm gate
4. Tenders

B4. How is purchasing done?

1. In bulk
2. In bits

B5. What are some of the signs of spoilage you look out for when purchasing raw food items?

.....

B6. For how long are the raw food items kept before replenishment?

1. A day
2. Two days
3. Three days
4. Four days
5. Any other specify.....

B7. Explain what is done to the food when there is an old stock?

.....

B8. How is prepared food kept before service?

1. In warmers
2. In the pans on fire
3. In pans but not on fire

B9. What is done to the left over of your food, if any?

1. Thrown away
2. Kept in the fridge for next day
3. Kept in the freezer for next day
4. Heated and left for the next day
5. Any other specify

B10. For how long are food items prepared ahead of service?

.....

B11. How do you handle cooked food?

1. With bare hands
2. With gloves

B12. What do you serve food in?

1. Earthenware bowls
2. China plates
3. Melamine plates
4. Plastic plates/bowls
5. Stainless steel
6. Ceramics
7. Any other specify

C. PERSONAL HYGIENE

C1. Do you have uniforms for work?

1. Yes
2. No

C2. How many times in a week do you change your uniforms?

1. Each day of the week
2. Every other day
3. Once in a week
4. Twice in a week
5. Any other specify.....

C3. What do you use in cleaning your hands before touching food?

.....

C4. Are you allowed to wear nail varnish for cooking?

1. Yes
2. No

C5. Are you allowed to use grown nails for cooking?

1. Yes
2. No

C6. If not why .....

C7. What do you do to your hair when cooking?

1. Nothing
2. Cover with cup
3. Tie it with band
4. Cover with hair net/scarf
5. Any other specify

C8. Are you allowed to handle food when sick?

1. Yes
2. No

C9. Have you ever had a wound or cut during food preparation?

1. Yes
2. No

C10. How did you manage it with your work?

1. Covered it and worked
2. Did not work at all
3. Worked with it uncovered
4. Any other specify

C11. Are you allowed to work when you have a cold?

1. Yes

2. No

C11b. If no, why not? .....

C12. Have you ever been allowed to work when you had diarrhoea?

1. Yes

2. No

C13. If no, why? .....

D. KITCTEN/ GENERAL SANITATION

D1. Where do you keep your dustbin?

.....

D2. How regularly do you empty the dustbin?

.....

D3. How regularly do you clean the dustbin?

1. As often as possible

2. Twice a day

3. Once a day

4. Every other day

5. Any other specify

D4. How are the serving dishes cleaned?

1. Hot water

2. Warm water

3. Cold water

4. Disinfectant

5. Any other specify

D5. How are the plates, pans etc kept after service?

1. Stacked on a table
2. Put in a basket/uncovered containers
3. In a covered containers
3. Disinfectant
4. Any other specify

D6. How many kitchen towels/napkins are used by customers a day?

1. One
2. Two
3. As many as possible
4. Any other specify

D7. How regularly are the kitchen napkins laundered in a week?

1. Once a day
2. Twice a day
3. Every other day
4. As often as dirty

D8. With what are the kitchen towels laundered?

1. Cold water + detergent
2. Warm water + detergent
3. Hot water + detergent
4. Disinfectant

D9. What material is your work surface made of?

.....

D10. With what do you clean work surfaces?

1. Cold water + detergent
2. Warm water + detergent
3. Cold water + detergent
4. Disinfectant
5. No cleaning is done
6. Any other specify

D11. How regularly do you conduct general cleaning?

1. Once
2. Once in two weeks
3. Once a month
4. Occasionally
5. Any other specify

D12. How do you dispose of your liquid waste?

.....

D13. Do customers have unrestrained access to the kitchen area?

1. Yes
2. No

D14. Do you have a toilet facility on your premise?

1. Yes
2. No

D15. How far is the nearest toilet facility? .....

E. FOOD SAFETY RESOURCES AVAILABLE TO THE CATERER

E1. Do you belong to any association(s)

1. Yes
2. No

E2. Which associations do you belong to? (Multiple response)

1. Traditional caterers association
2. Hawkers association
3. Association of restaurant keepers
4. Any other specify

E3. If no, why are you not in any association?

1. Not aware of any association
2. Do not have money to join
3. Seem unimportant
4. Made up of only elite
5. Any other specify.....

E4. What roles do the associations you belong play in relation to food safety? (Multiple response)

1. Organize workshops
2. Provide in-service training
3. Organize forums

7. Any other specify.....

E8. In what ways do the agencies assess the level of comprehension of the participants?

1. Through practical exams
2. Verbal test
3. Observation
4. Any other specify

E9. What measures are put in place to monitor compliance with food safety measures taught? .....

.....

E10. Which agencies conduct inspection on your premises?

1. Environmental Protection Agency
2. Municipal Authority/ EHP's
3. Ghana Tourist Board
3. Any other specify.....

10b. What is the purpose of their visit?.....

.....

10c. How regularly do they visit?

1. Quarterly
2. Twice a year
3. Once a year
4. Once in two years
5. Occasionally

6. Any other specify.....

11. Do you face any problems with regard to the operation of your chop bar? .....

.....

APPENDIX II

UNIVERSITY OF CAPE COAST

DEPARTMENT OF GEOGRAPHY AND TOURISM

STUDY ON TOURISM AND FOOD SAFETY IN THE CENTRAL REGION: TRADITIONAL CATERERS' COMPLIANCE WTH FOOD SAFETY MEASURES

INTERVIEW SCHEDULE FOR CLIENTS

A. SOCIO ECONOMIC CHARACTERISTICS

A1. Sex a. Male b. Female

A2. Age

A3. Educational background

1. None
2. Basic
3. Secondary
4. Post secondary
5. Tertiary

A4. Marital status

1. Single
2. Married
3. Separated
4. Divorced
5. Widowed

A5. Nationality

1. Ghanaian
2. Non-Ghanaian

A6. If non-Ghanaian specify country

A7. Which ethnic group do you belong to if Ghanaian?

1. Akan
2. Ga Adangme
3. Ewe
4. Northerner
5. Any other specify.....

A8. What is your occupation?

1. Schooling
2. Government employee
3. Self employed
4. Private employer employee
5. Any other specify.....

A9. What type of clientele are you?

1. Government worker
2. Traveller/Tourist
3. Pupil/Student
4. Trader
5. Any other specify.....

A10. How much do you receive as income? .....

B FOOD SAFETY AWARENESS

B1. What type of food did you eat from the chop bar?.....

B2. Why do you prefer eating this particular food over the others?

1. It is cheap
2. It is difficult to prepare at home
3. It is a tribal delicacy
4. Any other specify.....

B3. Which factors do you consider in selecting a food-vending outlet?

1. Price of food
2. Taste of food
3. Sanitation of the environment
4. Level of service
5. Any other specify

B3b. How do you rank the above factors in influencing this choice?

1. Very important
2. Important
3. Fairly important
4. Not important
5. Very unimportant

B4. Have you ever had any stomach upset after taking food from any eating spot?

1. Yes

2. No

B5. If yes, describe the symptoms you experienced.(Multiple response)

1. Vomiting
2. Stomach ache
3. Diarrhoea
4. Any other specify.....

B6. Where were you treated?

1. At home
2. At a herbalist
3. At a drug store
4. At the hospital

B7. Are you aware of the existence of a consumer association?

1. Yes
2. No

B8. Are you a member of the association?

1. Yes
3. No

B9. What do you do when you meet?

.....

B10. What in your opinion could be done to improve chop bar environmental sanitation and food hygiene?

APPENDIX III

UNIVERSITY OF CAPE COAST

DEPARTMENT OF GEOGRAPHY AND TOURISM

STUDY ON TOURISM AND FOOD SAFETY MEASURES IN THE CENTRAL REGION: TRADITIONAL CATERERS COMPLIANCE WITH FOOD SAFETY MEASURES

QUESTIONNAIRE FOR THE REGULATORY AGENCIES

1. Name of the regulatory agency or institution

   .....

2. What role do you play in ensuring the safety of food served in chop bars?

   .....

3. How regularly do you carry out this assignment?

   1. Once a year
   2. Twice a year
   3. Once every two years
   4. Any other specify

4. What methods do you adopt in carrying out this role?(Multiple response)

   1. Seminars
   2. Workshops
   3. conferences

4. Training programs

5. Any other specify

5. Do you think the learners get the message targeted at them?

1. Yes

2. No

6. Do you review the methods used in carrying out your assignment?

1. Yes

2. No

6. Why and how do you do that? .....

7. Do you have any code of conduct to aid you in your regulatory activities?

1. Yes

2. No

8. Are there other agencies that perform the same task?

1. Yes

2. No

8b. If yes, name them .....

9. Do you coordinate activities to avoid duplication of task?

1. Yes

2. No

9b. If yes, in what ways? .....

9c. If no, why not? .....

10. Do you sometimes encounter problems in the performance of your regulatory task?

    1. Yes

    2. No

11. What are some of the problems you encounter?

    .....

11. What suggestions do you have to help address problems you encounter in your regulatory activities?

    .....

12. General comments

    .....

    .....

APPENDIX IV

FOOD AND DRUGS LAW, 1992

IN Pursuance of the Provisional National Defence Council (Establishment) Proclamination, 1981, this Law is hereby made:

PART I – FOOD

Prohibition against sale of any Unwholesome, poisonous or adulterated food

(1) Any person who sells or offers for sale food that:-

(a) has in or upon it any poisonous or harmful substance;

(b) is unwholesome or unfit for human consumption;

(c) consists in whose or in part of any filthy, putrid, rotten, decomposed or diseased substance;

(d) is adulterated;

(e) is injurious to health; or

(f) is not of the nature, substance or quality prescribed by commits an offence

(2) Food offered as prizes, etc.

In determining whether an article of food is injurious to health, regard shall be had not only to the probable effect of that article on the health of a person

consuming it, but also on the probable cumulative effect of articles of substantially similar composition on the health of a person consuming such article in ordinary quantities.

(2) (a) Section 1 of the Law shall apply to any food intended for human consumption that is:-

(i) offered as a prize or a reward in connection with any entertainment to which the public is admitted whether on payment of money or not; or

(ii) offered as a prize or reward or given away for the purpose of advertisement or in furtherance of any trade or business, as if the food were exposed for sale by the organizers of the entertainment or the person offering or giving away the food.

(3) In this section "entertainment" includes any public or social gathering, amusement, exhibition, performance, sport or game.

Food shall be deemed to be adulterated if:-

(a) any constituent as a whole or in part

omitted or abstracted;

(b) damage or inferiority has been concealed in any manner;

(c) any substance has been substituted wholly or in part of it;

(d) any substance has been added to it or mixed or packed with it so as to increase its bulk or weight or reduce its quality or strength or make it appear better or of greater value than it is;

(e) in contains any additive not expressly permitted by the regulations for the food concerned, or is in excess of the quantity permitted;

(f) any constituent exceeds the amount stated on the label or permitted in the regulations; or

(g) is nature, substance and quality has been injuriously affected.

Deception of consumers:

(4) Any person who labels, packages, sells or advertises any food in matter that is false, misleading or deceptive as regard its character, nature, value, substance, quality, composition, merit or safety commits and offence.

(5) Where a standard has been prescribed under any enactment for any food, any person who labels, packages, sells or advertises any food in such a manner that it is likely to be mistaken for food of the prescribed standard commits an offence.

(6) (a) Any person who sells to the prejudice of purchaser any food that the purchaser was not prejudiced by reason that he brought the food for analysis or some purpose other than for consumption.

(b) It is not a defence to an offence under subsection (1) to plead that the purchaser was not prejudiced by reason that he brought the food for analysis or some purpose other than for consumption.

(7) No person licensed under the Manufacturing Industries Act, 1971 (Act 356) shall manufacture any food for sale unless the food is manufactured under the supervision of a person with appropriate knowledge and qualification who can ensure the Purity and wholesomeness of the food.

(8) (a) Any person who:-

(i) sells, or offers or exposes for sale, or has in his possession for sale; or

(ii) deposits with or consigns to any person for the purpose of sale, any food intended

for, but unfit for human consumption commits an offence.

(b) Where food in respect of which an offence under paragraph (a) of subsection (1) has been committed was sold to the person charged by some other person, that other person shall also be guilty of the offence.

(c) Where a person is charged with an offence under paragraph (b) of Subsection (1) or under subsection (2), it is a defence for him to prove:-

(i) that he gave notice to the person to whom he sold, deposited or consigned the food in question that it was not intended for human consumption; or

(ii) that, at the time when he delivered or dispatched it to that person, either it was fit for human consumption or he did not know, and could not with reasonable diligence have ascertained that the food was unfit for human consumption.

(9) (a) Any person who is found guilty of an offence under this Part is liable on conviction to a fine not exceeding ¢500,000.00 or imprisonment for a term not exceeding two years or to both and shall in the case of a continuing offence be liable to a further fine of ¢5,000.00 for each day on which the offence continues.

(b) In proceedings of an offence under this Part in respect of any food containing some extraneous matter, unless the presence of the

extraneous matter has rendered the food injurious to health, it if a defence for the accused to prove the presence of that matter was an unavoidable consequence and forms part of the process of preparation or collection of that food.

(c) In any proceedings under this Part consisting of the advertisement for sale of any food, it is a defence for the accused to prove that the publication was received and made in the ordinary course of his business as a publisher.

(10) The Secretary shall on the advice of the Board order the closure of any premises where food is manufactured, prepared or sold if the Board has reason to believe that the food is exposed to the risk of contamination and the Secretary may make such further order as he deems appropriate in the circumstances.

APPENDIX V

CAPE COAST MUNICIPAL ASSEMBLY BYE-LAWS, (2000) (AN EXTRACT)

Cape Coast Municipal Assembly (Drainage and Waste Water)

In exercise of the powers conferred on the Cape Coast Municipal Assembly by Section 79(1) of the Local Government Act, 1993 (Act262) these Bye-laws are hereby made.

1. Every household owner or occupier of premises shall connect a linkage drain for waste except sewerage to the main drain or culvert whenever available.
2. The linkage drain should be made of concrete and shall also be covered.
3. No person shall carry on any business in or upon premises within the area of authority of the CCMA without business permit of the CCMA.
4. On a Health Day, Bar-keepers. Chop Bar keepers, Market traders and Shop/Store keepers using their own resources shall undertake the cleaning flushing of markets, chop bars etc.
5. Any person who contravenes any provision of these bye-laws shall on summary conviction be sentenced to a term of imprisonment not exceeding 3 months or liable to pay 200,000.00 cedis.

APPENDIX VI

CODE OF HYGIENIC PRACTICE FOR THE PREPARATION AND SALE OF STREET FOOD

- Food ingredients correspond to the organoleptic properties and do not show signs of decay.
- Foods are maintained at adequate temperature.
- Food products are purchased in quantities that correspond to storage space.
- Food ingredients are well labeled or identified and stored separately from non-edible products like soap, disinfectant pesticide and other poisonous substances.
- Food products are rotated on first in first out basis.
- Food preparation area is free from any source of contaminants (rubbish, waste water, animals).
- Equipment is made of easy to clean and disinfect materials.
- Water used is potable and kept in clean containers.
- Waste water properly disposed of.
- Hair of food handlers is completely covered during food handling.
- Nails of food handlers are short and not painted.
- Food handlers wear appropriate clean clothing and protect themselves with an apron, which is changed everyday or as often as necessary.
- Food handlers refrain from spitting, sneezing, smoking or habits that can compromise food safety.

- Food handlers do not wear rings or bracelets when handling food.
- Food handlers do not handle food and money at the same time.
- All food contact surfaces are cleaned appropriately and adequately after each instance of food preparation, before final food preparation or the handling of ready-to-eat foods, and immediately after their use.
- A waste bin kept far from food handling area and has a well fitting lid.
- Waste water collected separately from solid waste and disposed of through direct linkage into the public drainage system and not thrown unto the ground or into surface waters.
- Quantity of food cooked, just enough to be sold in a day.
- Leftover foods used or reheated just once for consumption.
- Good condition maintained at the premise' surroundings- free from litter, protected from contaminants originating from traffic, pedestrians and domestic animals.
- Sales area free from personal belongings, such as clothes and footwear.
- Serving dishes washed cleaned and disinfected after each use.
- Toilet facility at the premise.
- Proximity of public toilet facility and refuse dump to premise.
- Adequacy of equipment for the running of the place.
- Unrestrained access of rodents and customers to the premise

APPENDIX VII

Logistic Regression Table

Dependent Variable	Independent Variable
How cooked food is kept	1 - Non-licensed
1 - kept warm	0 - Licensed
0 - kept cold	1 - No formal education
How cooked food is handled	0 - Formal education
1 - with gloves	Professional training
0 - bare hands	1 - Yes
	0 - No

APPENDIX VIII

OBSERVATION TABLE

Item	Licensed Bar			Non-licensed Bar		
	Yes	No	N/A	Yes	No	N/A
1.	10.7	55.4	33.9	20.0	67.1	12.9
2.	26.8	60.7	12.5	34.3	64.3	1.4
3.	69.4	21.4	8.9	54.3	38.6	7.1
4.	0.0	0.0	100.0	0.0	0.0	100.0
5.	33.9	44.6	21.4	45.7	41.4	12.9
6.	10.7	51.8	37.5	10.0	75.7	14.3
7.	0.0	100.0	0.0	17.1	72.9	10.0
8.	21.4	75.0	3.6	25.7	64.3	10.0
9.	25.0	12.5	62.5	44.3	55.7	0.0
10.	0.0	0.0	100.0	0.0	0.0	100.0
11.	82.5	0.0	17.5	82.9	7.1	10.0
12.	0.0	0.0	100.0	0.0	0.0	100.0
13.	3.6	5.4	91.1	14.3	65.7	20.0
14.	90.4	9.6	0.0	89.6	10.4	0.0
15.	21.4	30.4	48.2	14.3	67.1	18.6
16.	3.6	3.6	92.8	5.7	2.9	91.4
17.	12.5	0.0	87.5	25.7	64.3	10.0
18.	19.6	17.9	62.5	24.3	75.7	0.0
19.	75.4	15.6	9.0	77.1	22.9	0.0

Item	Licensed Bar			Non-licensed Bar		
	Yes	No	N/A	Yes	No	N/A
20.	26.8	48.2	25.0	57.1	40.0	2.9
21.	21.4	60.7	17.9	22.9	77.1	0.0
22.	30.4	10.7	58.9	15.7	60.0	24.3
23.	0.0	0.0	100.0	0.0	0.0	100.0
24.	12.5	0.0	87.5	10.0	0.0	90.0
25.	37.5	0.0	62.5	0.0	70.0	30.0
26.	3.6	21.4	75.0	4.8	30.2	75.0
27.	32.1	65.2	5.4	20.0	2.9	7.1