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PRODUCTION AND HANDLING PRACTICES OF VEGETABLES IN THE SUPPLY CHAIN

BY

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DECLARATION

I hereby declare that this submission is my own work towards the M.Sc. and that, to the best of my knowledge, it contains no material previously published by another person, nor material which has been accepted for the award of any other degree of the University, except where due acknowledgement has been made in the text.

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ABSTRACT

Vegetables are consumed as part of a meal on a daily bases in almost every household in Ghana. Its consumption has increased as a result of education on the nutritional benefits of vegetables in recent times. Although the eating of vegetables is highly recommended, it is of a great worry how its consumption could pose a health risk to consumers. The study therefore was motivated by the desire to find ethical and unethical practices that exist in the supply chain of vegetables within the Sekondi/Takoradi Metropolis. An exploratory research design was used for this study. Purposive sampling and structured interview guide consisting of open-ended and close-ended questions were used as instrument in data collection alongside observations. Tables and charts were used for the purpose of facilitating easy classification and understanding. The study findings revealed that, no relationship existed between the players in the vegetable supply chain, which consist of farmers, suppliers, retailers and consumers. Farmers produce their vegetables with no loyal customer in mind. The vegetables are harvested anytime of the day; this affected the life span of the vegetables making it deteriorate easily. Sources of water for irrigation ranged from streams, drains and well water. Majority of suppliers and retailers of vegetables make decisions on who to buy from based on the price the farmers are ready to sell and not on factors such as where the vegetables were cultivated, the source of water used for irrigation among others. Containers for conveying vegetables from farm to the various selling destinations contribute to causing quick and easy deterioration of these vegetables. They included jute sacks, baskets and polythene bags. It was interesting to find out that although consumers eat a lot of vegetables for health reasons, most of them did not know how the vegetables they eat was cultivated, where it was cultivated and what might have been applied during cultivation. It can be concluded that, there exists certain practices in the vegetable chain of supply mainly because of lack of knowledge which emerge from lack of training. All the three main players in the chain have not received any training and this is seen as very unethical. It is recommended that Ministry of Food and Agriculture should educate these vegetable farmers on basic good agricultural practices while the Food and Drugs Authority should monitor these farmers, retailers and suppliers to ensure that good ethical practices are followed.

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CHAPTER 1

INTRODUCTION

1.1 BACKGROUND

Vegetables are essential part of diet because they play a significant role in human nutrition. They are a rich source of vitamins, minerals and trace elements as well as a major supply of dietary fibre (Rudrappa, 2009). Vegetables as a group are so low in calories that it is very difficult to gain weight even if one over eats them. Optimal nourishment is another reason why vegetables are important on a daily basis. There is also their abundance of phytonutrients. Phytonutrients include all of the unique substances that give foods their brilliant colours, their delicious flavours, and their unique aromas. They are also the nutrients most closely linked to the prevention of certain diseases. Carotenonids and flavonoids are the two of the largest groups of phytonutrients, and there is no food group that provides them in amounts as plentiful as vegetables (Zidenberg-Cherr, 2008). Dietary fibre is critical for our health, not only on a daily basis, but on a meal-by-meal and snack-by-snack basis as well.

Food cannot move through one‟s digestive tract in a healthy way unless it is fibre-rich. And, vegetables are some of the very richest sources of fibre that exist (Laura, 2014).

A recently published WHO/FAO report recommends a minimum of 400g of fruit and vegetables per day (excluding potatoes and other starchy tubers) for the prevention of chronic diseases such as heart disease, cancer, diabetes and obesity, as well as for the prevention and alleviation of several micronutrient deficiencies, especially in less developed countries. Unfortunately, confidence in vegetable consumption is decreasing as many consumers become aware of the unethical practices employed for production of conventional vegetables and the health risks associated with the consumption of their products (Oboubi et al., 2006).

In another study conducted in Ghana by (Oboubi *et al.*, 2006), found that vegetables produced in and around peri-urban centres had residues such as chemical deposits and faecal coli forms. Consumers on the other hand are increasingly becoming more and more concerned about the safety of the food and food products they purchase and consume. It was again reported by Schifferstein and Oude Ophuis (1998) that, this concern goes together with their awareness of the relation between the production practices and quality of food products. A food supply chain of food system refers to the processes that describe how food from a farm ends up on our tables. The processes include production, processing, distribution, consumption and disposal. Food choices reflect the kind of world and community we want to live in. More consumers are demanding foods that are produced in certain "ethical ways". Ethics refers to moral considerations on a human level; it includes standards or principles of what is considered intrinsically "right or wrong" in terms of rights, obligations, and benefits to individuals and to society. Furthermore, ethical considerations involve the precepts of specific virtues such as honesty and fairness, and impose obligations on conduct, including the obligation to avoid harm to others and to abstain from misrepresentation or selectively using known information (Prem, 2014).

An ethical food system is one in which production, distribution and retail of food is carried out in an environmentally sustainable manner, fair prices reflect the true costs of food, the welfare of animals is protected and every member of the population has consistent access to a variety of healthy, safe foods (Smith, 2004).

In Ghana, vegetable farming can be grouped into three different components: (1) commercial/market gardening areas sited around principal cities such as Accra, Kumasi, Takoradi and Tamale; (2) a form of truck farming in which vegetables are produced in rural areas from where they are purchased by contractors or middlemen and transported by road to

the cities; (3) a domestic or backyard gardening. Tomato, onion, hot pepper, okra and eggplant are the most popular vegetables in Ghana. Hot pepper, okra and eggplant are relatively easy to grow since they are lenient to the climatic conditions and are mostly grown as rain fed crops. Food producers sell most of their produce in primary markets (located in rural areas), with the main buyers being largely itinerant traders from the cities. Tertiary markets are those in which retailers sell to mainly Secondary markets which are mostly located in cities and large towns, with key buyers being itinerant wholesalers who sell to sedentary wholesalers and/or retailers, household consumers. In almost all market places, whether rural or urban, both wholesale and retail activities are conducted side by side.

Vegetables are sold either in the market and street corners in Ghana by fixed retailers or by mobile retailers (hawkers) who roam about in the communities with their goods and usually sell vegetables that are in season (Acheampong, 2012). Most perishable and exotic vegetables such as cabbage, lettuce and carrot are grown in the cities and supplied to the city markets. Vegetables such as tomatoes are mainly grown in the Upper East and the Brong Ahafo regions, with large quantities of it coming from Burkina Faso these days. Onions on the other hand are cultivated mainly in Niger and Mali with Upper East region and peri-urban vegetable gardens also reported to support it cultivation. Marketing channels are usually short for peri-urban production. They become more complex, and therefore more costly, when they come from the longer distance food supply areas. (FAO, 1998)

1.2 PROBLEM STATEMENT AND JUSTIFICATION

There is no doubt that consumers quest for eating more vegetables is on the increase due to its numerous health benefits meanwhile some health conscious consumers shun the eating of these vegetables for fear of perceived hazard. How safe the vegetables are therefore, is of great concern. It becomes important to find out what actually happens within the supply chain in the context of ethical and unethical practices that exist in the supply chain of vegetable. Unethical practices carried out on vegetables during harvesting, transportation, processing, distribution and marketing, or in the home can get vegetables contaminated with microorganisms ``with the potential of causing human diseases (Wiley 2006). On the farms, vegetables are contaminated by the use of unsafe water for irrigation.

About 90% of the perishable vegetables are produced in closest market proximity due to their fragile nature and the common lack of cold transport and storage. (Obuobie, 2006). Vegetable farmers use water from sources such as streams which pass through mining areas and those which pass through towns and are highly polluted as they function as natural drains for urban wastewater, with household liquid and solid waste as well as factory and other industrial wastes. Factors thought to cause and influence the occurrence and epidemiology of deteriorations include the quality of irrigation water, and other agronomic practices such as the inappropriate use of manures and bio solids, pesticides, fungicides etc. Besides this inappropriate post-harvest handling from harvesting till consumption followed by packaging, storage and transportation throughout the food supply chain plays an important role in physical, biological and chemical contamination of produce (Ahmad, 2011).

Uncontrollable use of pesticides in the cultivation of vegetables is also of great concern.

According to Horna (2008), Pesticide use has increased over time in Ghana and is particularly elevated in the production of high-value cash crops and vegetables. Acheampong (2012) also says that urban and peri-urban vegetable producers, in their effort to grow a good crop resort to various practices including the use of inappropriate pesticides that often compromise the safety of the produce. The use of these chemical pesticides in vegetable production result in the presence of chemical residues in vegetables and vegetable products.

The marketing of farm produce is a major problem facing farmers, especially vegetable cultivators. There are intense price fluctuations resulting from inequalities in supply and demand. Market women who usually buy the majority of the produce offer absurdly low farm gate prices, which are not proportionate with the effort of the farmers and, since they have no alternative, they grudgingly accept the low prices leaving the farmer with little or no profit at all, debilitating the farmer to stay in business or expand his or her business. Furthermore, in some cases the women buy the beds of vegetables on farm and deny the farmers use of the beds until the crops are harvested. (Asomani-Boateng, 2002)

Problems encountered in the supply chain of vegetable include poor postharvest handling and storage of vegetables due to inadequate facilities and infrastructure such as the absence of storage facilities including cold stores, transport facilities and networks. Vegetables are highly perishable commodities that can easily spoil or deteriorate during produce handling along the supply chain from the producer to the final retailer. (Ahmad Din 2011). The environment under which vegetables are stored either by wholesalers or retailers leaves much to be desired. Sometimes, vegetables like cabbage are stored on the bare floor, at the mercy of pest and at a temperature which leads to early deterioration of the products resulting in lose.

We often times hear people say they will never buy ready-to-eat food outside with vegetables for fear of the unknown and will only eat them if they are prepared by them at home or by trusted people. Others will not eat some vegetables at all because of some unethical practices that go on in the supply chain. This can therefore reduce the optimal benefits that one is supposed to derive from the eating of vegetables leading to malnourishment especially in children and pregnant women, causing diseases and illnesses and even death in the case of ingesting contaminated vegetables.

1.3 JUSTIFICATION

Low patronage of vegetable consumption can affect negatively those in the business of vegetable production and the nation at large. It is therefore necessary to investigate the best ethical practices to employ in the supply chain of vegetables. This will promote increased patronage of vegetables consumption which will bring boost in vegetable farming, create more employment opportunities to lift vulnerable groups out of poverty, and help build a nation with healthy and economically sound people. The research sought to add to existing knowledge in food ethics employed by producers, suppliers and retailers of vegetables. It can also serve as an educational material for persons involved in the production and distribution of vegetables. The research can again have an implication for policy and also as a source of information to people who would want to do similar work.

1.4 OBJECTIVE

The objective of the study was to assess the ethical and unethical practices employed by producers, suppliers and retailers of vegetables in the Sekondi-Takoradi Metropolis employ.

1.4 SPECIFIC OBJECTIVES

The specific objectives were to;

1. Identify ethical and unethical practices that occur in the supply chain of vegetables.
2. Assess the underlining causes of the unethical practices.
3. Examine whether unethical practices impact on the overall patronage of vegetables and the vegetable industry at large.

CHAPTER 2 2.0 LITERATURE REVIEW

2.1 The context of ethics in food supply chain

Various studies have been conducted in the area of food safety, food quality, vegetable production, nutritional composition and benefits of vegetables as well as ethical issues in food supply chain. This work on ethics in the supply chain of vegetables aims at going beyond addressing food safety and food quality issues. It intends to look at practices which are perceived as ethically wrong or right which may compromise both quality and safety of vegetables throughout the supply chain. It will again find out the kind of relationship that exist among the players in the chain since ethical issues exist in a relationship. A certain level of relationship between players in the chain, bring a sense of responsibility on all to realise full productivity at all levels of the chain. Food safety refers to all those hazards, whether chronic or acute which is capable of making food harmful to the health of the consumer. It is not negotiable.

Quality includes all the attributes that sway a product‟s value to the consumer. This includes negative attributes such as spoilage, contamination with filth, discoloration, off-odours and positive attributes such as the origin, colour, flavour, texture and the processing method employed of the food (FAO/WHO, 2003). Vegetables can become contaminated by physical, biological and chemical hazards. Some vegetables can be eaten raw or with little cooking. This makes them high risk food for microbial contamination. Pathogens can contaminate the vegetables at any point along the food chain; on the farm, packing shed, processing plant, transporting vehicle, retail store or food service operation, and the home. Raw produce can become contaminated with both pathogenic and non-pathogenic microorganisms at a number of different stages, by several means, from production through to consumption.

Understanding where potential problems exist, leads to the possibility of developing strategies to reduce risks of physical hazard can be in the form of vegetables coming into direct contact on the farm with soil, manure, polluted water for irrigation among many others. In transporting vehicles, water used by retailers for washing, contaminated containers in which they are being carried in, contaminated environment where they are stored and displayed for sale are means that vegetables can be contaminated.

Vegetables are also susceptible to biological hazard. This generally comes from microorganisms such as bacteria, viruses and parasites. Some are part of the vegetables micro flora as a result of soil and surrounding contaminants and others are introduced into or on food by poor handling practices in agricultural production or during postharvest processes. Vegetables can also be contaminated with toxic chemicals from many sources. Some of these chemicals are used intentionally, such as pesticides. While adherence to good agriculture practices (GAP) regarding their application and pre-harvest interval should assure the safety of produce, exposure to pesticides may pose unacceptable health risks. Industrial pollution from the environment can also result in the deposition of contaminants on the surface of produce, particularly in farm land near certain industrial sites and motorways. They are human made and naturally occurring chemicals that controls weeds, insects, fungi and other pests that destroys crops. Pesticides residues on food are of concern to consumers. All hazards weather physical, biological or chemical associated with vegetables poses health risk to consumers. The rational and scientific procedures for minimising food risk are still necessary, but are no longer enough (Brom, 2000). It is therefore important to look for additional measures of ensuring food safety. Human beings have moral convictions which often guide our behaviour and actions. Some of the problems with food safety can be tackled from the ethical point of view. The problems can be analysed ethically when they are viewed as such.

Ethical analysis is not limited to describing and identifying problems, but rather it is directly at ways of handling these problems. Food safety issues should be organised in such a way that they are aimed at building trust among the players involved in the production, processing and supply of food. It should be such that everyone is cautious of his or her actions and the fact that an unethical act done could affect a fellow living being or the environment.

Trust which is a primary concept of a human relationship is needed in the food supply chain. A trustful relationship is one that takes the other‟s concerns, interest and wishes to heart. For trust to be maintained, payers in a chain must acknowledge that their relationship with those whose trust they want is a moral relationship.

2.3 Vegetables and its Benefits

There are more than 200 plant species of vegetables all over the world. They can be grouped according to the part of the plant that reprocesses it. For instance it could be the fruit, seed, leaves, edible pods, roots, tubers etc. They differ in their composition from other crops. They contain a lot of water, protein, micronutrients and vitamins than cereals and other crops. Each vegetable group contains an exceptional combination and amount of phytonutriceuticals, which distinguish them from other groups and vegetables within their own group.

The chief nutrients in vegetables are vitamins, minerals, micronutrients, dietary fibre and many more. Vegetables are living, breathing parts of plants and contain 65 to 95% water.

Once they are harvested their internal food and water reserves decline over time and vegetables deteriorate and rot. The increased rate of deterioration can be due to high temperature, low humidity, incorrect atmosphere and/ or physical damage. Currently, there is high demand

globally, for vegetables due to dietetic potentiality. This has increased the annual production and also enhanced the exports and imports of these horticultural commodities around the globe (Vegh, 2011).

According to Hughes (2007) vegetables are the best resource for overcoming micronutrient deficiencies. They are full of water, especially when eaten raw, and when eaten the body does not need to use some of its own water to digest them. This means that the body uses less energy and resources to digest the vegetable and can then assimilate the entire nutrient of the vegetables much faster. This means less pressure is put on the digestive systems (Pedavaoh Mary-Magdalene, 2014).

Vegetables are consumed or used in food preparation not only for their nutritional benefits but also for their unique flavour which increases appetite. Some vegetables provide volatile essential oils that supply aroma and taste to stimulate appetite. Their use in daily diet has been strongly associated with improvement of gastrointestinal health, good vision, and reduced risk of heart disease, stroke, chronic diseases such as diabetes, and some forms of cancer.

It has also been documented that some phytochemicals found in vegetables are strong antioxidants and are thought to reduce the risk of chronic disease by protecting against free radicals which are known human chemical hazards. These antioxidants modifying metabolic activation and detoxification of carcinogens, influences processes that alter the course of tumour cells (Dias, 2012). According to Dias (2012), all vegetables have potential to offer protection to humans against chronic diseases. The micronutrients including vitamins and dietary minerals such as zinc and iodine, present in vegetables are necessary for the healthy functioning of all body systems, from bone growth to brain function. If micronutrient deficiencies occur during childhood it affects a child‟s physical and mental growth.

The promotion of healthy vegetable products has coincided with a rising consumer interest in the healthy functionality of food. There is an increasing awareness among the general public of the advantages of diets rich in vegetables to ensure an adequate intake of most vitamins and micronutrients, dietary fibers, and phytochemicals that promote health. Consumers" interest in whole foods with improved nutritional qualities is on the increase now more than ever before, and consumers are choosing foods on the basis of their health benefits.

It has been documented that, Ghanaians eat more vegetables as compared to fruit. Most Ghanaians eat one or two vegetables every day (Nti *et al*. 2011). How safe these vegetables are is of great concern since most of these vegetables are eaten raw and the general information out there is on how beneficial these vegetables are to the human body.

A study conducted by Acheampong (2012) shows that some consumers were ignorant of any such risk associated with the consumption of vegetables and some of the ignorant consumers could not understand how vegetables could cause diseases since vegetables supply good nutrients to the body.

There is also a report that consumer confidence in vegetable consumption is declining because some healthy conscious consumers have become aware of the unethical practices employed in the production of vegetables and the health risks associated with the consumption of such products. It was found out in a study conducted by Oboubi *et al. (*2006) that vegetables produced in and around peri-urban centres had residues such as chemical deposits and faecal coli forms. Apart from the nutritional benefits of vegetables to human life, its cultivation create

job opportunities for many people who rely on vegetable farming to support their family and themselves

2.4 Vegetable Production in Ghana

Vegetables are important cash crops, as well as staple food consumed by majority of Ghanaians in both rural and urban communities across the country (Amoah *et al*, 2014). The worldwide production of vegetables has doubled over the past quarter century and the value of global trade in vegetables now exceeds that of cereals. As of 2007, a total volume of over 880 million tonnes of vegetables were being produced globally and it was expected to reach
1.2 billion tonnes by 2015 [16].

This is in line with the utilitarian theory of ethics. This theory is based on the principle "the greatest good for the greatest number" greatest good for greatest people should be maintained first because customers‟ satisfaction is the primary goal of a business. Therefore the increase in production is a fulfilment of this ethical principle. Although many people have embraced the campaigns on promoting the eating of fruit and vegetables because of it deictic benefits, it has been found that factors such as sensory appeal, familiarity and habit, cost, availability among other factors affects the consumption (Ting Meng, 2014).

It is of a great concern that the vegetable industry in Ghana is largely not institutionalized. Neither is it well planned or organized like other places in the western world where the industry is well institutionalized and with improved storage and distribution channels (Baourakis 2005). Vegetables are either cultivated conventionally with the full complement of agrochemicals, particularly pesticides, or with very little or none, in which case they are said to be cultivated organically.

Most exotic vegetables are grown in urban and peri-urban farming areas whiles local vegetables such as pepper, garden eggs, okra and nkontomire are cultivated in the hinterland. The peri-urban vegetable farmers usually cultivate on open space in and around the cities which are normally lands that belong to government institutions and undeveloped lands of private companies and individuals. Backyard gardens are also cultivated.

In Ghana women are the leading front in food production and they play a key role not only in farming but in the total food chain. Studies have shown that about 70% of total food production is contributed by women (Amoah *et al.* 2014). Interestingly however, peri-urban vegetable farming seems to be male dominated with majority of them cultivating exotic vegetables such as cabbage, lettuce, green pepper and the like whiles women seem to dominate the marketing sector of vegetables. About 90% of the perishable vegetables are produced in closest market proximity due to their fragile nature and the common lack of cold transport and storage (Oboubi *et al.* 2006). Urban and peri-urban vegetable producers often resort to various practices including the use of inappropriate pesticides, unsafe water for irrigation and many other practices that often compromise the safety of the produce.

2.5 The supply chain of vegetables

The supply chain of food in general has undergone a lot of developments throughout mans‟ history. From the hunter-gatherer to the primitive agricultural stage to the developed agricultural economies in which various agricultural revolutions took place from the scientific agriculture, then industrial agriculture, and now towards genetic agriculture. The supply chain of food when well managed comes with advantages such as reduction of product losses in transportation and storage, better control of product safety and quality, better information about

the flow of products, markets and technologies, transparency within the supply chain leading to easy tracking and tracing to the source of product. Value creation potential of individual players can be enhanced, in some cases, through a more collaborative relationship among themselves and consumers, provided that trust and commitment is developed. Studies have shown that the effectiveness in the supply chain has a relation with the satisfaction level of final customers.

Conscious consumers are more fascinated in dietary issues. They consume more fruit and vegetable. Food safety has also become a very significant issue. Consumers demand higher quality of the food they consume and they are interested in the taste, appearance or shape of the fruit. They want to be informed about the food they are consuming through appropriate labelling tracking and traceability schemes.

It is consumers‟ dream to get fresh, nutritious and quality supply of vegetables for their consumption. The supply of such vegetables is a responsibility on all the players in the value chain. The players or stakeholders in the chain can be said to be the farmer that produces the vegetable, the distributors (supplier and retailer) and finally the consumer. For instance the quality of vegetables is very much dependant on factors such as production practices which have a tremendous effect on quality of vegetables at harvest, postharvest as well as its shelf life (Earles, 2000). The handling and storage methods employed by all players in the chain can affect the quality, safety and shelf-life of vegetables.

The term “Food Chain” usually refers to the total supply process from agricultural production, harvest/slaughter, through primary production and/or manufacturing, to storage and distribution to retail sale or use in catering and consumer practice. The food sector in these

times, recognise and appreciate the benefits of working in partnerships as this ensure a safe, wholesome and efficient food supply business. (Adebanjo 2009).

There exists intricacy in the production, processing, and marketing systems of food especially in many developing countries. They are highly incoherent and dependent upon a large number of small producers. Although this may have socioeconomic benefits, the large quantities of food passing through a multitude of handlers and middlemen, poses the risk of exposing food to unhygienic environments, contamination and other unethical means of handling food. Problems occur as a result of poor postharvest handling, processing and storage of food and also due to inadequate facilities and infrastructure such as the absence or shortage of safe water supply, electricity and storage facilities including cold stores, transport facilities and networks among others (FAO/WHO, 2003).

Moreover, there is little or no appropriate knowledge and expertise in the application of modern agricultural practices, food hygiene, and good food handling practices as well as proper ethical practices to be applied among a majority of food producers and handlers within the food supply chain.

Vegetables are perishable in nature and cannot be stored for longer periods because they contain high percentage of water in their fresh forms. Hence carrying out their physiological function of respiration since they are living, thereby absorbing and releasing gases and other materials from and to their environment. These activities lead to their deterioration in transit and storage, which is more rapid under conditions of high temperature and humidity. As a result, heavy losses are encountered in these crops and trading in it is quite sensitive and complicated. Trading of this commodity poses big challenges to suppliers, processors and traders. They require certain careful and effective post harvest handling for better quality. Due

to their perishable nature, supply chain losses are very high in the case of fruits and vegetables as compared to other agricultural commodities. Both quantitative and qualitative losses occur in horticultural commodities between harvest and consumption. Qualitative losses, such as loss in edibility, nutritional quality, caloric value, and consumer acceptability of fresh produce, are much more difficult to assess than quantitative losses

Major issues that exist in the supply chain of vegetables include the losses during post harvest handling, processing, packaging, transportation, product traceability, cold storage facilities and insufficient infrastructural facilities. The loss of vegetables during transportation is said to be in the range of 20 - 30% in countries like China and India which are the two largest producers of fresh fruits and vegetables in the world. The situation can be said to be worst in Africa, particularly in Ghana, where there is evidence of lack of logistics and storage facilities. Minimising wastage requires a focus on quality and some ethical practices throughout the supply chain. Post harvest losses mean that production resources such as land, water, energy, fertilisers, labour and effort are wasted, and ultimately, profitability for growers is reduced (Vegetable Industry Development Programme).

Post harvest management is about maintaining quality right from production to the vegetables being placed on a plate for consumption. Maintaining vegetable quality requires good systems and communication throughout the supply chain as each step is influenced by the previous. It is a chain of interdependent activities.

The following activities and conditions affect quality of vegetables throughout the supply chain. Vegetables that are harvested at the wrong maturity stage results in Poor flavour and storage life which eventually result in poor quality of the product. Water lost after harvest which may be as a result of bad storage throughout the supply chain, causes shrinkage, loss of

weight and increases susceptibility of vegetables to diseases. Mechanical damage during harvesting, grading, re-packing, stacking of boxes, retail handling as a result of careless handling of vegetables and containers causing splitting, internal bruising, on the surface grazing, and crushing of soft produce lead to entry points for diseases, increased water loss and increased respiration.

Increased respiration throughout the supply chain increases use of stored energy resources (starch, sugars) leading to ageing and death when mineral deposits are exhausted. Stress due to mechanical injury, diseases or temperature fluctuations can increase respiration rates and cause faster use of stored energy and increased water loss. Poorly ventilated, guarded atmosphere or modified atmosphere storage reduces oxygen supply and can lead to accumulation of damaging carbon dioxide, „suffocating" vegetables. This leads to stress that increases respiration and water loss. Stressed vegetables may release more ethylene and carbon dioxide into the storage atmosphere, which promotes ageing.

M. F. Stringer (2007), found that it is becoming increasingly important to study and manage various aspects of food production in relation to the total food chain implications and not one stage in isolation since the new age consumers are becoming more health conscious in terms of hygiene, source of the food, ingredients of processed food and caloric content. It has also been documented that confidence in the safety and integrity of the food supply chain is an important requirement for consumers. (FAO/WHO, 2003)

In the food sector, the supply chain starts from the farm-gate collection of raw materials, then processed and prepared and the finished goods continue down to regional and global distribution centres and finally enter retail stores, where they come into contact with the customers for consumption. Supply chain management in general, is one entity, which helps

foster to manage and meet customer needs by improving every element of the supply chain, whereas, the role of food safety, quality requirements and their evaluation in international trade is also receiving more and more attention. Among the components of consumer behaviour, intentions related to safety and ethics are getting stronger and as a result, an increasing attention is given to the interrelations of food safety, quality, ethical issues and supply chain.

Grimsdell (1996) also examined the supply chain of various horticultural commodities which was developed efficiently by British Field Products Ltd, over the years. He outlined six requirements which are fundamental for an efficient supply as scale of operation; strategic alliances, production, flexibility, continuity of supply, quality control and communications and concluded that mutual awareness by all the stakeholders was one of the best ways forward for sustainability.

In Ghana, vegetable cultivation and trading is not systematic and does not follow a particular trend. In most cases especially in the Sekondi / Takoradi Metropolis, some retailers purchase directly from the farm gate whiles some farmers themselves retail at the market. Other retailers get their supply from Kumasi, Accra and other neighbouring countries like Burkina Faso and Togo. The vegetables are sold to consumers mostly by retailing at open-market and by hawkers.

2.6 Ethics and Food

The relevance of ethics in the context of vegetables supply chain is to explore the farming practices vegetable farmers employ which can be viewed as ethical or unethical, the supply chain managerial practices of both the suppliers and retailers and whether the final consumer

benefits. Therefore the concept of ethics must be looked at as the bases and what should guide the actions of the players in the supply chain.

Ethics is the science of rightness or wrongness of human actions. It is the science of the moral evaluation of the voluntary actions of persons (Aydin, 2011). The ideal involved with human life includes truth, good and beauty. There are two aspects to ethics. That is being able to determine what is right or wrong, good or bad and committing to doing what is right and good. To be ethical is more than understanding what the right thing is to do. It means doing what is right and good as well as avoiding what is wrong or bad. Failure to be ethical can be construed as being unethical. Values one holds are reflective in ones ethical stands. They are beliefs one holds that guides attitude and behaviour. Ethics define how a moral person should behave whiles values are the beliefs that detects a person‟s action (Santa Clera University, 2010).

The players in a supply chain need to hold ethical values such as trustworthiness, respect, responsibility, fairness and caring for each other. Being trustworthy requires honesty, integrity, reliability and loyalty. Responsibility means being willing to make decisions and choices and to be accountable for them. Caring means to be genuinely concerned about the welfare of others. In the past, the concept of ethics seemed to be taken for granted, and it may have been assumed that ethics and ethical behaviors were operational in the actions and decisions of people and businesses (Rack *et al.* 2008). Things are different now, in the developed countries ethics is seen as a very important consideration in anything that has to do with humans, animals and the environment in general. For instance in farming, producers are assessed to be ethical or not by the way they exploit workers and the respect they have for them as well as how they reward them and treat them in fair and equitable manner. Their produce is to be free from contamination from poor sanitation, free from known and excessive harmful residues, both

natural and chemical, and avoidance of misrepresentation of any kind. Product safety is assured by all stakeholders linking up to ensure the chain of identity of product is preserved. This includes conforming to the use of Good Agricultural

Practices (GAP‟s), labeling of product to give consumers enough information about the products as well as elements of traceability (Nath, 2004).

The role of ethics in an organization or any business is important because its reputation is mostly dependant on how society views them ethically. This is quite different from what happens in Ghana, it is difficult to trace a product to its source of production. Most fresh agriculture products are not labeled and producers do not see it as their ethical obligation to provide such information and so consumers have little or no information about the vegetables they consume. Information such as who, where and how vegetables are produced is not readily available to the consumer. Meanwhile, traceability is considered as a very important method of ensuring food safety and as a means of connecting suppliers and consumers.

Quality assurance and safety control systems are necessary throughout the chain and food manufactures and processors including those in the service industry are required by law to have the necessary information from their supplier that indicates compliance and safety status of the raw materials being supplied and after production produce distributed are equally to be recorded so as to be able to follow the product a “step up” (Ababio, 2013). Traceability is a system employed as part of management plan in ensuring a food operation has the capability to trace product externally and internally as applicable. It is a system designed to keep record on products or product attributes through the supply chain. The source of water for irrigation and farming practices employed by farmers for instance should be made known to consumers. Quality of a product includes not only its traits but also the way it is produced. Therefore

information on the quality of food is about ways of producing, craftsmanship, the technology applied and the place of production. It is said that the food we eat and the way it is prepared is linked to our identity that is why information about quality, food production and processing are of importance to consumers (Brom, 2014).

The action of each stakeholder in the supply chain is important because it affects other people in the chain directly or indirectly. (Earles and Bachmann 2000), in their studies showed that farm management practices affect postharvest quality of vegetables in that vegetables that have been stressed by too much or too little water, high rates of nitrogen, or mechanical injury (scrapes, bruises, abrasions) are particularly susceptible to postharvest diseases. The supplier and retailer bear the cost of these losses that were initiated by the farmer. The consumer later pays for it either by being supplied with poor quality vegetable or paying more for quantities which could have otherwise been more. This is not fair as it is unethical to pay for prices that are not worth the cost of the food item.

After harvesting vegetables, its freshness decrease over time. Retailers should therefore be equipped with the necessary facilities to keep the vegetables as much as possible. When the freshness is lower than a customer‟s expectation, the customer is less likely to buy this product. In this case, retailers are forced to reduce the original price they intended to sell it. In actual practice, sellers normally reduce the prices of fresh agricultural products as the freshness lowers. In this way, it increases customers‟ purchasing desire and quickly reduces the stock of fresh agricultural products to lower sales cost, putting the retailer at a disadvantage.

Men and women who trade in vegetable supply often incur losses as a result of the use of unsuitable packaging containers in the transporting process vibration resulting from the transport vehicles as they traverse undulation and irregularities on the roads (Idah *et al* 2007). The discussion so far reveals that vegetables and its benefits to human life are inevitable. Consumers all over the world are increasingly eating vegetables for its numerous nutritional benefits and its cultivation has also increased as a result. Meanwhile other health conscious consumers‟ confidence in vegetable consumption is dwindling as they become aware of the unethical practices employed in the production of vegetables and the health risks associated with the consumption of such products. It is therefore necessary to find out both the ethical and unethical practices that exist in the supply chain, what are the underlining causes of these practices and how this affect the consumption of vegetables.

CHAPTER 3

MATERIALS AND METHODS

3.1 Study Area

The study was conducted at the Sekondi-Takoradi Metropolis which is one of seventeen districts in the Western Region with a land area of about 49.78 km^2 and some selected vegetable farming sites in Kumasi Metropolis since most of the vegetable retailed in the Sekondi/Takoradi Metropolis comes from Kumasi. The twin city is bordered to the East by the Shama District, to the North by the Mpohor Wassa East District, to the West by the Ahanta West District and to the South by the Gulf of Guinea.

The type of vegetable farming system practice in most cities in Ghana are market production which is normally done on undeveloped urban land and subsistence production which is involves cultivated at the house either backyard or front yard farming. In the Sekondi/Takoradi metropolis, there exist a number of urban and peri-urban irrigated vegetable production sites where a considerable amount of vegetables is produced. These are located in areas commonly known as Cocoa Villa, Poly, Air force, Airport Ridge, PTC,

Anaji, Jemima, as well as other place in Sekondi such as Sekondi Ridge and Sekondi Prisons. Most of these farm lands are owned by government and private agencies and the farmers cultivate them free of charge. Vegetable cultivation is done all year round.

„Market circle" is the biggest local market in the metropolis and is the main centre for sale of food stuffs including vegetables. Retailers get their supply from local farms in the metropolis but the larger supply comes from Kumasi in the Ashanti Region of Ghana.

3.2 Research Design

The study design is a qualitative one aimed at creating understanding from data as the analyses proceeds (Miller 1991). An exploratory research design was also used for this study. Exploratory research design is used to gather ideas and insight concerning a situation, an issue or a problem, (Awasthi, 2012). This design enables the researcher to gather enough information to achieve the objectives set for the research which is to analyze the ethical and unethical practices producers, suppliers and retailers of vegetables in the Sekondi Takoradi Metropolis employ.

3.3 Population

The metropolis has few farming sites for vegetables cultivation. A greater percentage of its vegetables retailed that comes from Kumasi. The target population therefore were all vegetable farmers within the metropolis. Almost each farming site has more than one person farming on it. The largest farming site being „Air force" had close to 30 people farming on it. These farmers, the suppliers and retailers were interviewed. Some selected vegetable farmers in Kumasi were included. The ratio of targeted population used is as follows; 80 farmers, 50 suppliers, and 70 retailers. A total of 50 consumers were also interviewed to find out how unethical practices along the chain affect patronage of vegetables. The farmers" interview was based on some agricultural practices they engage in during cultivation and harvesting, and whether they get fair prices for their produce. Whiles suppliers and retailers interview was on how these vegetables are handled during transporting; storing and retailing before it get to the final consumer. In majority of the cases, the farmers supply the vegetables directly to the retailers with few buying wholesale and supply to the hotels and restaurants in the metropolis.

3.4 Type and Source of Data

Primary data was collected from those with the information needed which in this case are the four stakeholders in the supply chain of vegetables namely the farmers/producers, suppliers/wholesalers, retailers and consumers. A secondary data from CODEX on handling and hygienic practices of specific vegetables was used alongside the primary data during data analysis

3.5 Sampling Procedures and Sampling

Due to time and financial reasons, the study was limited to 250 respondents within the study population. Both farmers involved in market production and those involved in subsistence vegetable farming as well as middle men who serve as suppliers, retailers who have permanent selling post at the market and those who sell by hawking were all targeted for the study in the twin city. Farmers and suppliers numbering 20 and 30 respectively at Kumasi were among the selected population. Purposive sampling which is a form of non-probability sampling was used. Purposive sampling is used when decisions concerning the individuals to be included in the sample are taken by the researcher, based upon a variety of criteria which may include specialist knowledge of the research issue, or capacity and willingness to participate in the research (Oliver 2006). This sampling technique used helped the researcher to concentrate on key informants who gave particular rich sources of data needed. Thirty retailers in the Takoradi market with permanent sites inside the market and 20 at Sekondi market were interviewed. Thirty retailers who sell by hawking were also interviewed. Five farmers on 4 farming sites each in Kumasi and Takoradi were interviewed, than 30 suppliers both in Kumasi and Takoradi were also interviewed and observed.

3.6 Instruments for Data Collection

The study employed both qualitative and quantitative research methods in sourcing primary data to address the research objectives and questions. The data collection instruments used was questionnaires, interviews and observations. Four different set of questionnaires was administered to the four groups of people within the supply chain: namely the farmers, suppliers, retailers and consumers.

To better appreciate the respondents‟ attitudes and behaviours towards the subject matter, some of their socio-demographics were examined. These factors are considered important as they may impact on or influence respondents‟ attitudes, behaviours, habits, and values towards ethical handling of vegetables. As a result the questionnaires took this form; section „A‟ and „B‟.

Section „A‟ which was closed ended question type to elicit information on personal data of all the four groups of interviewees and section „B‟ took a form of open ended questions which will be centred on answering the research questions and objectives. Interviews were done with the help of an interview guide because the interview was a more naturally effective way to acquire that kind of information needed. Personal observation was also employed to seek information from the above mentioned people where they refuse to talk or give out information. Structured and unstructured or semi-structured forms of interviews were used.

Questionnaires were read out to interviewees because preliminary investigations showed that most of them have difficulty in reading and expressing themselves in English. Open-ended type of questions was given to respondents to enable them express their views on the subject under study.

Some of the questions asked also demanded a check of 'Yes" or "No" to be made against each question to indicate whether or not ethical practices are employed. All these data collection

instruments used measured both the ethical and unethical practices that producers, suppliers and retailers in the supply chain of vegetables employ as against the acceptable standards available in literature and that of CODEX Standards for fresh fruit and vegetables.

3.7 Data Analysis

Data on demographic information or personal records of respondents was analysed with the help of tools in Microsoft excel and Statistical Package for Social Sciences (SPSS). The analysis of the other data‟s was than by group focus. That is data collected from the four different groups (farmers, suppliers/wholesalers, retailers and consumers) were analysed differently and later explored to identify the connections and relationships between them. The open-ended questions were analyzed by looking at how each individual responded to the questions asked. According to Taylor-powell (2003), data is organized by question therefore the researcher looked at all answers by respondents, to identify consistencies and differences, after which all the data from each questions was put together. This information gathered was categorized by coding or indexing. This was done by identifying themes or patterns and organizing them into coherent activities that summarized and brought meaning to the text. A descriptive name for each category was created. The themes and connections from the data were used to explain the findings. Descriptive statistics such as frequencies, tables, charts and percentages was used to aid in explaining the findings.

CHAPTER 4 RESULTS AND DISCUSSION

4.1 DEMOGRAPHY OF FARMERS

This section shows the demographic characteristics according to gender, age, educational level, marital status, number of children and any additional work being done by the respondents‟ (farmers). The data collected was analyzed using the statistical package for social sciences (SPSS) in the form of frequency table for easy interpretation and understanding.

Table 4.1 represents the demographic characteristics of the farmers. In all, eighty (80) farmers were engaged for the study. From Table 4.1, it can be observed that majority of the respondents in this research work were males (73 representing 91% of the total respondents) whiles the remaining 8 respondents representing about 9% were females.

In relation to age category of the farmers, it was found that 28 (35%) of the respondents were between the age range 40-50 years, 21 (26%) of the respondents were in the age range of 26-30 years with the least 12 (15.0%) respondents falling in the age range of 18-25. It can however be deduced that majority of the farmers (65%) were in their youthful age.

With respect to educational level, Table 4.1 shows that 33(41.2%) and 35 (43.8%) of the respondents‟ have completed Primary and JHS whereas 6 (7.5%) have completed SHS and Tertiary level of education respectively. On the issue of marital status, it was revealed that majority of the respondents 61 (76.2%) were married with the remaining 19 (23.8%) not married.

Table 4.1: Summary of Response on Demographic Characteristics of farmers

Attributes	N	Frequency	Percentage
Gender	80		
Male		73	91.2
Female		7	8.8
Age	80		
18-25		12	15.0
26-30		21	26.2
31-40		19	23.8
40-50		28	35.0
Educational level	80		
Primary		33	41.2
JHS		35	43.8
SHS		6	7.5
Tertiary		6	7.5
Marital Status	80		
Yes		61	76.2
No		19	23.8
Number of children	80		
1		5	6.2
2		10	12.5
3		20	25.0
4		22	27.5
5		15	18.8
6		8	10.0
Do you do any additional work aside farming	80		
Yes		22	27.5
No		58	72.5

From table 4.1, it can be observed that 17 respondents representing 34% had completed only secondary school. On the contrary, 20 respondents representing 40% are diploma holders and 13 respondents representing 26% were degree holders. This signifies that most of the participants had attained higher educational qualifications in various fields of study.

On the issue of the number of children of the respondents, Table 4.1 depicts that 22 (27.5%) of the respondents had 4 children followed by 20 (25.0%) of the respondents had 3 children with the least 5 (6.2%) of the respondents had one child. However, 8 (10%) of the respondents had the highest number of children which was 6.

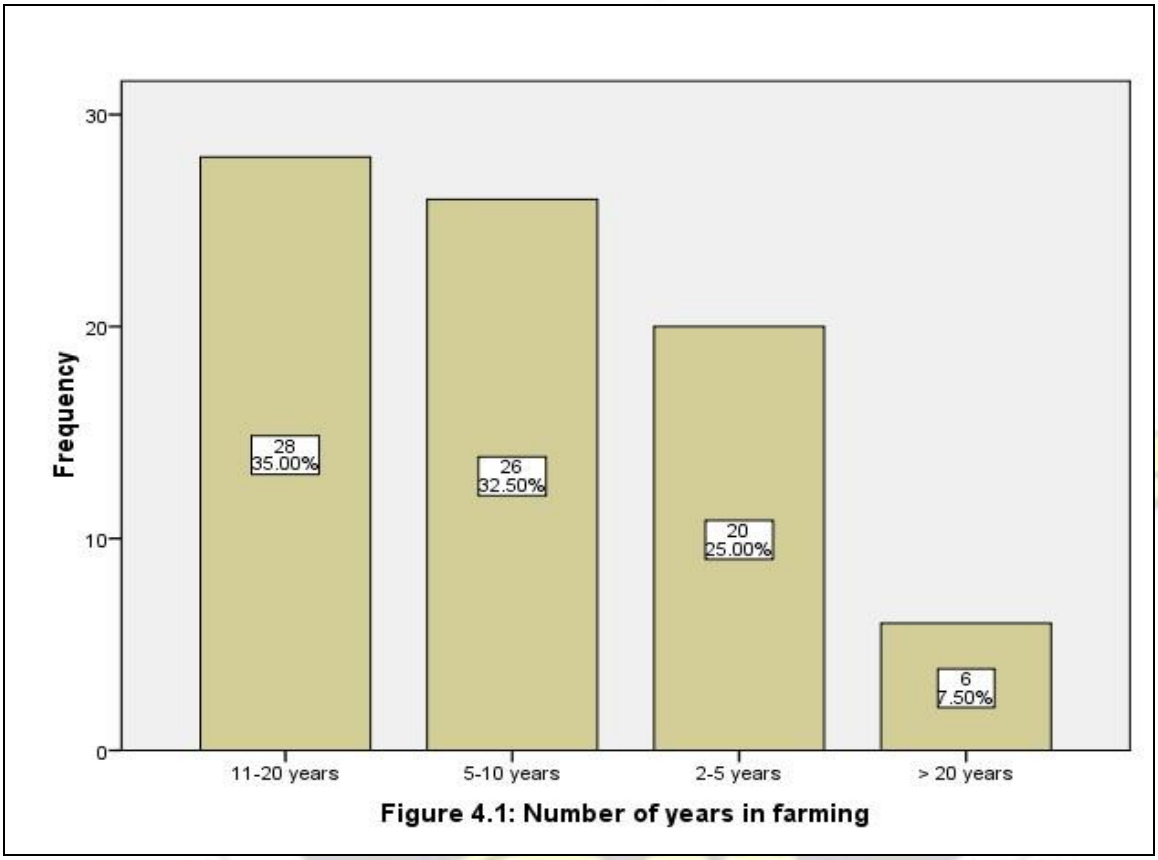

Figure 4.1: Number of years in farming

When respondents were asked, do you do any additional work apart from farming, majority of the respondents (58 representing 72.5%) alluded to "No" whiles 22 (27.5%) said "Yes," they were engage in other income earning activities.

Respondents were further asked to indicate the number of years they have been farming and the results is shown in Figure 4.1 below. Figure 4.1 however, shows that 28 (35%) of the respondents have been in farming between 11-20 years, followed by 26 (32.5%), 20 (25%) and 6 (7.5%) have been farming between 5-10, 2-5 and more than 20 years respectively.

4.2 DESCRIPTIVE STATISTICS IN RELATION TO FARMERS

This section introduces the descriptive statistics and how the data collected is distributed. It is done based on research statements for realizing the objectives set. It presents the analyses of data collected from respondents to achieve the set objectives and/or research questions and also to draw conclusions for which recommendations would be suggested

1. The ethical and unethical practices that occur in the supply chain of vegetables.
2. The underlining causes of these unethical practices.

4.2.1 THE ETHICAL AND UNETHICAL PRACTICES THAT OCCUR IN THE SUPPLY OF VEGETABLES

Table 4.2: When are Vegetables Harvested against Respondents Level of Education

Attributes		What is your highest level of Education?				Total
		Tertiary	SHS	JHS	Primary	
When do you harvest your vegetables?	When it matures	1	3	18	14	**36**
	When it ripens	5	3	17	19	**44**

	Total	**6**	**6**	**35**	**33**	**80**

Table 4.2 depicts a cross tabulation of when respondents harvest their vegetables and the level of education of the respondents. The study found out that 36 out of the total respondents of 80 indicated „when it matures". Out of this number, 1 had completed tertiary institutions; 3, Senior High School respectively; 18, JHS and 14 from Primary school whiles 44 indicated „when it ripens". Out of this number, 5 have completed tertiary institutions, and 19 graduation from Primary schools. The finding in Table 4.2 shows that respondents were adhering to the ethical practices of harvesting vegetables – when they mature or when they were ripe.

Table 4.3: Time of the Day Vegetables is Harvested against Respondents Educational Level

Attributes		What is your highest level of Education?				Total
		Tertiary	SHS	JHS	Primary	
At what time of the day do you harvest your vegetables	Morning	6	4	14	10	4 **34**
	Afternoon	0	0	0	19	**42**
	Any time there is demand for it	0	2 a	21		
	Total	**6**	**6**	**35**	**33**	**80**

.

Table 4.3 shows that 34 out of the total respondents interviewed indicated that they harvest their vegetables in the morning with counts within the various level of education, 6, Tertiary; 4, SHS; 14, JHS and 10 from Primary. 4 of the respondents indicated afternoon whiles 42 said they harvest their produce anytime there was a demand for them. This indicates that majority of the respondents

do not adhere to the ethical practices of harvesting vegetables early in the morning. The best time to harvest vegetables is early in the day, after the morning dew drops have disappeared, but before the sun reaches its highest, hottest point. The vegetables become limp and never will recover. This make them wilt and deteriorate more quickly when they are not harvested in the coolest time of the day.

Respondents further indicated why they harvest at the stipulated time period as shown in Figure 4.2 below.

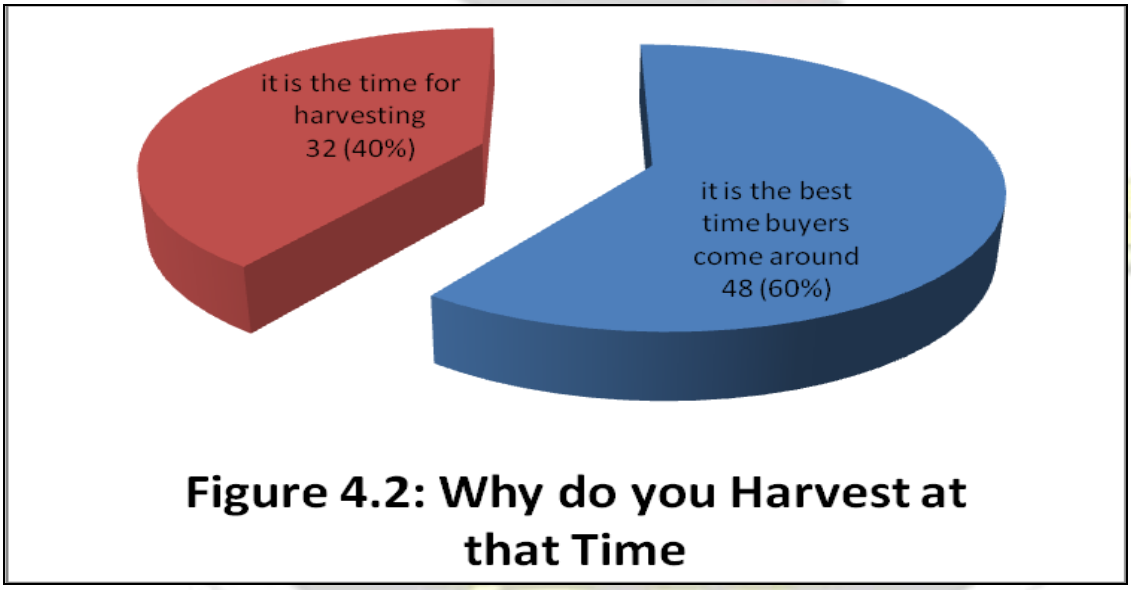

Figure 4.2: Why do you Harvest at that Time

From Figure 4.2, it can be observed that majority of the respondents (48 representing 60%) indicated they harvest their produce at the said time interval (see Table 4.3) because it was the best time buyers come around to buy whereas 32 (40%) were of the view that it was the time for harvesting. It should be noted that respondent who asserted harvesting early in the morning are the farmers who send their produce to the market centres themselves usually on market days

whereas those who asserted they harvest anytime the buyers arrive normally wait on the farm for these buyers to come.

Table 4.4: Lapse between Spraying and Harvesting time against Level of Education

Attributes		What is your highest level of Education?				Total
		Tertiary	SHS	JHS	Primary	
How many days‟ intervals do you harvest your vegetables after spraying?	One day	6	6	20	17	**49**
	Two days	0	0	2	1	**3**
	Three days	0	0	13	15	**28**
	Total	**6**	**6**	**35**	**33**	**80**

Table 4.4 represents the number of day(s) interval‟s respondents harvest after spraying their farm against their level of education. From the table, it can be observed that majority of the respondents (49) indicated one day, 3 indicated 2 days whiles 28 indicated three days within counts of the various level of education.

Application of pesticides to vegetables may leave residues in or on it. Some of these chemical residues, especially the derivatives of chlorinated pesticides, exhibit bioaccumulation which could build up harmful levels in the body. Pesticides use in the United States is registered with the Environmental Protection Agency (EPA). This process ensures that all pesticides have been adequately tested and evaluated for possible adverse effects on man‟s health and the environment before they can be licensed and sold (Fraser, 2008). They group the pesticides into restricted and

non – restricted. To use pesticides describe by EPA as restricted, one must be certified to do so. This means that the individual must pass a written exams that test his knowledge about the proper handling of pesticides and the laws governing it use.

Table 4.5: Source of Water for Irrigation against Level of Education

Attributes		What is your highest level of Education?				**Total**
		Tertiary	SHS	JHS	Primary	
What is the source of for irrigation?	Stream water	0	2	14	14	**30**
	Drain	0	0	6	10	**16**
	Well	6	4	15	9	**34**
Total		**6**	**6**	**35**	**33**	**80**

.

Table 4.5 shows that out of 80 respondents engaged in the study, 30 of them indicated they used streams as their source of water for their vegetables, 16 said drains whilst 34 indicated wells. From Table 4.5, it can be observed that majority of the respondents (46) were not adhering to the ethical practices of using safe water for irrigation. It can also be observed from the table (Table 4.5), that 24 of the respondents had completed Primary, 20 from JHS and 2 from SHS within the counts of the educational level not adhering to ethical practices of safe water for irrigation.

Some anthropogenic sources of heavy metals in food include sewage sludge, pesticides, organic matter, composts and fertilizer supplements ((S. B. Agrawal, 2007). Vegetables can absorb heavy metals from contaminated irrigation water. Certain vegetables take up heavy metals from contaminated water used for irrigation. The consumption of vegetables that have been contaminated by toxic heavy metals directly or indirectly causes possible health hazards. The non-

biodegradable and persistent nature of these toxic heavy metals makes them accumulated in the tissues of human beings (Stasinos, 2013).

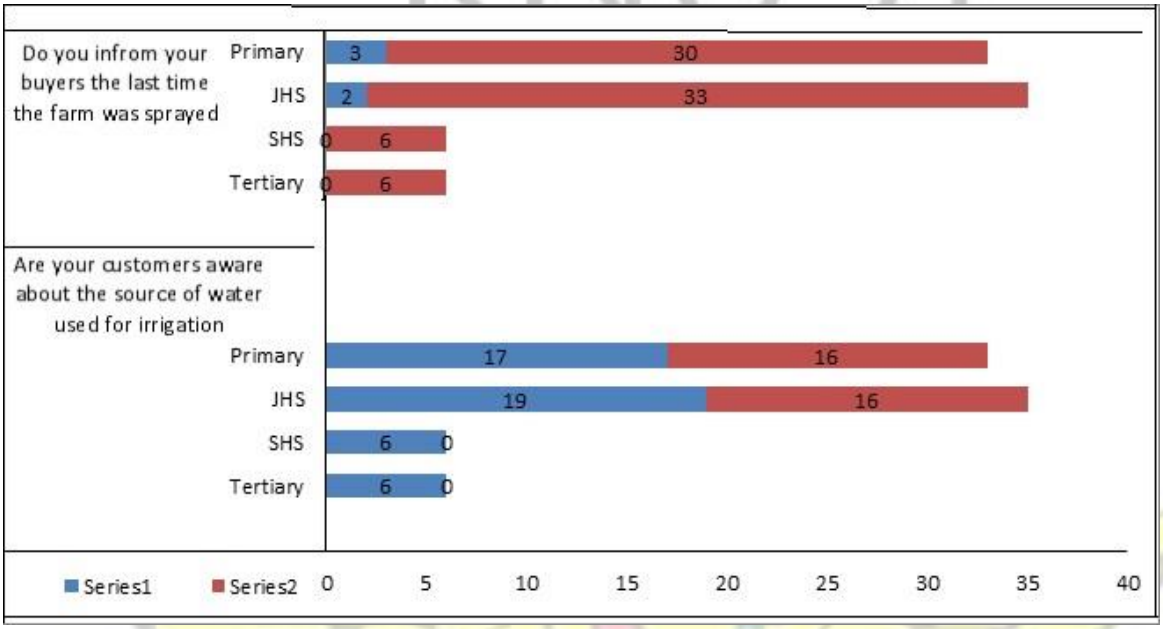

Figure 4.3: Disclosure of Information to Buyers

Figure 4.3 shows a pie chart on disclosure of information by respondents to buyers. From the figure (Figure 4.1), Series 1 and 2 represents „No" and „Yes" respectively. It can be observed that majority of the respondents (75) asserted „No" to the question, "do you always inform your buyers about the last time the farm was sprayed"? However, 5 of the respondents said „Yes".

On the other hand majority of the respondents (48) indicated „Yes" to the question, "are your customers aware of source of water used for irrigation?" whilst 32 asserted „No" to same. This shows that most farmers do not adhere to ethical practices of communicating vital and necessary information to buyers. For instance majority of the respondents asserted that they harvest their vegetables 24 hours after spraying and whether the prescribed dosage of pesticide was used was

another worry. One can therefore say that there could be pesticide residues on these vegetables which could pose health risk to consumers. Buyers (wholesalers and retailers) can thoroughly wash these vegetables to reduce these pesticide residues if they are made aware of such things.

Table 4.6: Summary of Response on Handling of Vegetables after Harvesting

Attributes	N	Frequency	Percentage
Into what do you harvest your vegetables	80		
Polythene		15	18.8
Basket		13	16.2
Plastic bowl		21	26.2
Any other thing the buyer comes with		31	38.8
Do you wash the vegetables after harvesting	80		
Yes		26	32.5
No		54	67.5
How do you preserve your vegetables	80		
Air Drying		7	8.75
Do not preserve them		73	91.25

Table 4.6 show the summary of response on handling of vegetables after harvesting by farmers. It can be observed that 15 (18.8%) of the respondents indicated polythene, 13 (16.2%) said basket whilst 21 and 31 of the respondents asserted plastic bowl and any other thing the buyer comes with to the question: into what do you harvest your vegetables. Majority of the respondents (54 representing 67.5%) when asked "do you wash the vegetables after harvesting?" said „No", whilst the remaining 26 (32.5) indicated „Yes" to the same question. This indicates that majority of the respondents do not persevere their vegetables after harvesting (see Table 4.2).

4.2.2 THE UNDERLYING CAUSES OF UNETHICAL PRACTICES

From Table 4.7, it can be observed that majority of the respondents (70 representing 87.5%) indicated "not always" to the question, "do you get buyers from your produce?" 9 (11.2%) said „yes‟ whilst 1 (1.2%) asserted „no‟ to same question.

Table 4.7: Summary of Response on Challenges Faced by Farmers

Attributes	N	Frequency	Percentage
Do you get buyers for your produce	80		
Yes		9	11.2
No		1	1.2
Not always		70	87.5
Do you get profit from the work you are doing	80		
Yes		8	10.0
No		10	12.5
Not always		62	77.5
What determines the cost of your vegetables			
Cost of inputs	80		
Level of demand		59	73.8
		21	26.2

When asked, "do you get profit from the work you are doing?" 62 (77.5) said „not always‟, 10 (12.5%) and 8 (10.0%) indicated „no‟ and „yes‟ respectively to the same question. The high rate of the respondents not getting profit could be generally attributed to the non availability of ready market although other factors could contribute to it. This was peculiar to farmers in Sekondi/Takoradi although some few farmers in Kumasi also asserted so. Respondents (farmers), however, gave their views on what determines the cost of the vegetables they produce.

59 (73.8%) said „cost of inputs" and 21(26.2) indicated „level of demand". This shows that majority of the respondents were of the view that cost of input is what determines the cost of the vegetables they produce. Some of the farmers indicated that although cost of input was generally what determines the price of their vegetables, level of demand also contribute to the price at which their vegetables were sold. They said when the demand is high they are able to recover the money invested but when demand is low they do not even get the money invested in the production.

Table 4.8: Training Received on Vegetable Cultivation against Level of Education

Attributes		What is your highest level of Education?				**Total**
		Tertiary	SHS	JHS	Primary	
Have you receive any training on vegetable cultivation	Yes	6	6	33	28	**73**
	No	0	0	2	5	**7**
	Total	**6**	**6**	**35**	**33**	**80**

Table 4.8 presents the level of training on vegetable cultivation against level of education of the respondents. It can be observed that majority of the farmers (respondents) indicated that they have received some form of training that aid them on the practices of vegetable cultivation within the various count of level of education. It can be seen that, 6 of the respondents indicated „yes" were from tertiary and SHS respectively, 33 from JHS and 28 from Primary. However, 7 indicated „no" to same question with 2 from JHS and 5 from Primary. It was realized that, the type of training these farmers receives was in the form of pieces of advice from their predecessors and colleague farmers. They said they hardly see staff of Agricultural Extension Officers coming to them. But few of them said they rather fall on these officers when they need expect advice.

Respondents were further asked to indicate how long they have been in vegetable cultivation with respect to training received on vegetable cultivation. The findings are shown in a clustered bar chart in figure 4.4 below.

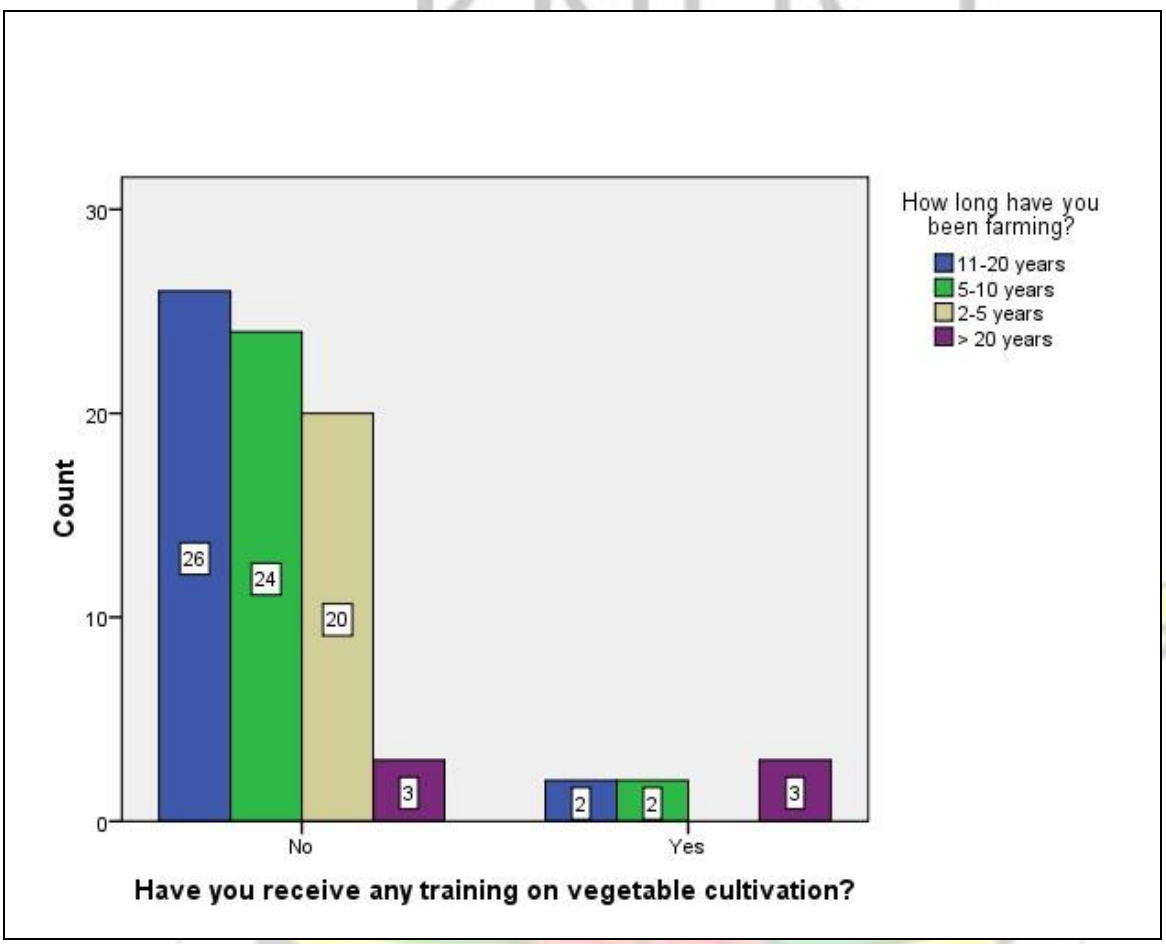

Figure 4.4: Training Received on Vegetable Cultivation against the Number of Years Worked

From Figure 4.4, it can be observed that majority of the respondents (73 representing 91.3% of the total respondents) indicated „yes" to the question "have you received any training on vegetable cultivation?" against how long have you been farming, whiles 7 (8.7%) said „no" to same question.

Figure 4.4 above however, shows the counts on the level of training received against how long respondents have been farming.

4.3 DEMOGRAPHY OF RESPONDENTS IN RELATION TO SUPPLIERS

Table 4.9 shows the summary of the demographic characteristic of the suppliers. Out of the 50 suppliers interviewed 20 (40.0%) of them were males while the remaining 30 (60.0%) were females. This indicates that women were engaged in the supply of vegetables than men which can easily be seen in the local market.

Table 4.9: Summary of Response on Demographic Characteristics of Suppliers

Attributes	N	Frequency	Percent
Gender	50		
Male		20	40.0
Female		30	60.0
Age	50		
18-25		12	24.0
26-30		13	26.0
31-40		15	30.0
41-50		10	10.0
Level of Education	50		
SHS		20	
JHS		11	22.0
Primary		12	24.0
Tertiary		15	30.0
		12	24.0
Marital Status	50		
Married		38	76.0
Not Married		12	24.0
Number of children	50		
1		2	6.0
2		3	8.0
3		25	50.0
4		13	26.0

5 and above	5	10.0

The age composition shows that majority of these suppliers were between the ages of 31-40, representing 30% followed by the ages of 26-30 which constitute about 26% (13 out of 50), 1845 and 40-50 representing 24% and 10% respectively. About 24% had completed Junior High School, 30% had received Primary education whiles 22% and 24% had completed the Senior High School and Tertiary respectively. This shows that, almost all of them had some level of education which enables them to do their work more effectively. It can also be seen that 76% were married whiles 24% were not married.

Table 4.10: Age of Respondent by Marital Status

Marital status	26-30	31-40	41-50	Total
Married	14	14	10	38
Not married	9	3	0	12
Total	**23**	**17**	**10**	**50**

For the suppliers who were married, 28 out of 38 married suppliers were within the age bracket of 26-40 whiles the remaining 10 are within the ages 41-50. A total of 12 unmarried suppliers can be

observed with 9 in ages 26-30, 3 in 31-40 and zero in 41-50. We can see that most of the suppliers (76%) are married.

4.4 DESCRIPTIVE STATISTICS IN RELATION TO SUPPLIERS

4.2.1The ethical and unethical practices that occur in the supply chain of vegetables

Table 4.11: Time of the Day Suppliers goes to buy the Vegetables with Reasons

Response	Frequency	Percentage
Morning (it is the best time)	31	62.0
Afternoon (prices are reduced)	7	14.0
Evening(it is the best time)	6	12.0
Anytime	6	12.0
Total	**50**	**100.0**

From the table above, 62% (31 out of 50) go to buy the vegetables in the morning and did indicate that the morning is the best time as one will get them fresh. Fourteen percent go in the afternoon because the price at that time is reduced. Six percent go in the evening and another 6% go at any time of the day with no specific reasons. Since a higher percentage of the suppliers go to buy the vegetables in the morning when it is fresh, we can identify such practices as being ethical.

Table 4.12: Time of Purchase of Vegetables against Level of Education

Time of purchase	Primary	JHS	SHS	Tertiary	Total
Morning	9	7	9	6	31
Afternoon	0	4	1	2	7
Evening	2	1	1	2	6
Anytime	4	0	0	2	6

Total	**15**	**12**	**11**	**12**	**50**

From the table, it could be seen that out of the 31 who answered „morning" to the question, 9 have completed Primary, 7 have completed JHS, 9 have completed SHS and 6 Tertiary, but we can also observed that those answered afternoon and evening have a total of 19 being educated. Since all the educated people go to buy the vegetables at different times, we cannot say that their decision is influenced by level of education.

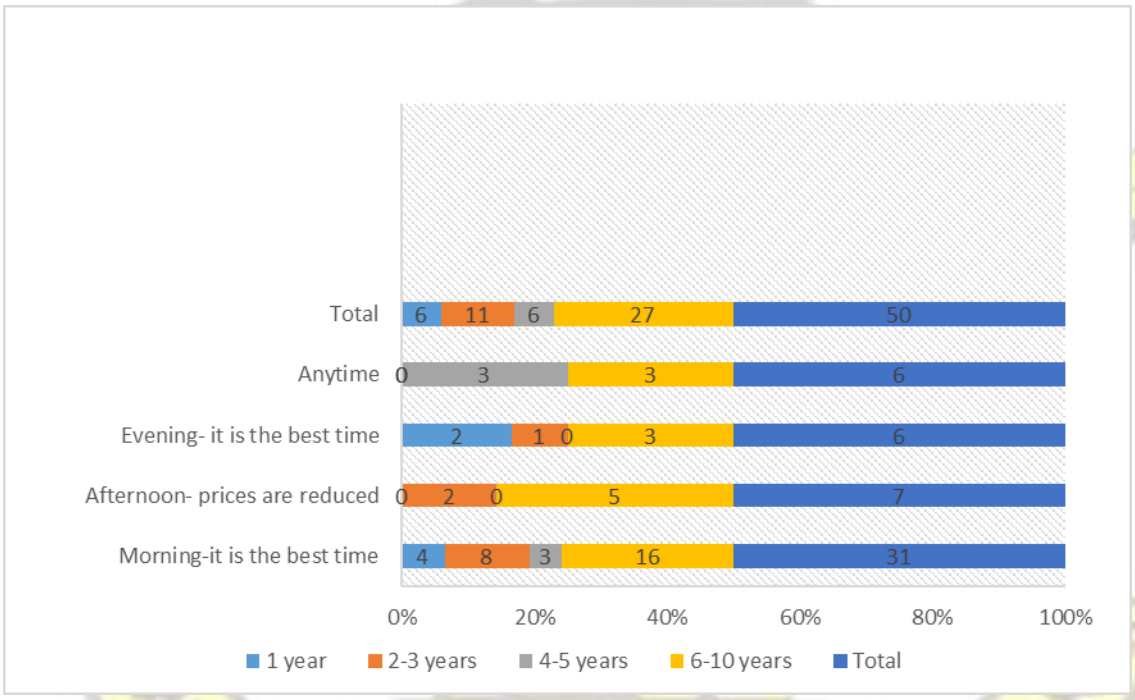

Figure 4 5: Time of purchase of vegetable by number of years

From figure 4.5 we observed that majority of the most experienced are those who buy their vegetables in the morning whiles those who do buy the vegetables at different times were those

with less number of years in the business. We can therefore conclude that the number of years in business has an influence on the time suppliers go to purchase the vegetables.

4.2.2: The Underlying Causes of Unethical Practices

From the bar chart above, it could be observed that only 3 out of 50 suppliers (6%) have received some form of training on how to store and preserve the vegetables. Majority of them have no training on how to handle, store and preserve vegetables therefore the vegetables might not be properly stored and preserved as expected.

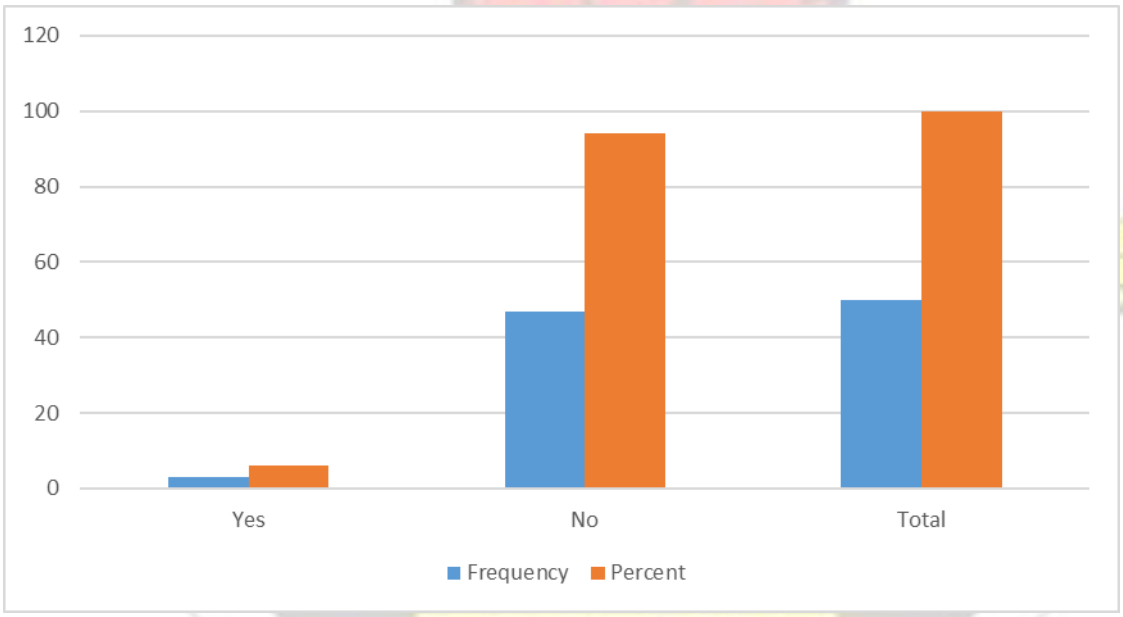

Figure 4.6: Have you received any form of training on how to store and preserve vegetables?

The retailers stand the risk of losing some of the vegetables through poor handling and storage conditions. This can bring about loses which may affect the retailer‟s business greatly. This can be seen as a major cause of these unethical practices.

Table 4.13: Training Received by Level of Education

Training	Primary	JHS	SHS	Tertiary	Total
Yes	2	0	0	1	3
No	13	12	11	3	47
Total	**15**	**12**	**11**	**12**	**50**

From table 4.13 It can be seen that even majority of the respondent who are educated have not received any form of training about the handling of vegetables. This may be due to the fact that those with high education feel their educational background is enough for them, forgetting that vegetable production required special skills and training. We can say that level of education contribute to their inability to acquire the requisite training on the job they do.

Table 4.14: The Transporting of Vegetables

Response	Frequency	Percent
By car(public Transport)	39	78.0
On foot	11	22.0
Total	**50**	**100.0**

From the above, 78% of the suppliers transport their goods by car whiles the remaining 22% supply the vegetables on foot to their customers. The vegetables as they are transported through public transport compete for space with other goods in the car. This coupled with vibration causes bruises and other damages to the vegetables. Those vegetables that are transported on foot can also wither as a result of scorching from the direct sunlight in which the vegetables are being exposed. This can also be identified as a cause of these unethical practices in the business.

Table 4.15 shows the summary of the demographic characteristic of the retailers. Out of the seventy retailers interviewed 34 (48.5%) of them are males while the remaining are females. This indicate that women are more involved in the retailing of vegetables than men; this gives a picture of what goes on in the various market centres. The age composition depicts that majority of these retailers are between the ages of 26-30, representing 37% (26 out of 70) followed by the ages of 18-25 also forming about 30% (21 out of 70), making a total of 67%.

4.5 Demography in Relation to Retailers

We can say that a greater portion of them are the youth. For Education, about 50% (35 out of 70) of the retailers have completed Junior High School, 27% have received primary education whiles 17% and 5% have completed the Senior High School and Middle School respectively.

Table 4.15: Summary of Response on Demographic Characteristics of Retailers

Characteristics	N	Frequency	Percent
Gender	70		
Male		34	48.6
Female		36	51.4
Age			
18-25	70	21	30.0
26-30		26	37.1
31-40		19	27.1
41-50		4	5.7
Level of Education	70	20	
SHS		12	17.1
JHS		35	50.0
Primary		19	27.1

MSLC		4	5.7
Marital Status			
Married	70		
Not Married		49	70.0
		21	30.0
Number of children	70		
1			
2		11	15.7
3		18	25.7
4		26	37.1
More than 5		12	17.1
		3	4.3

This shows that a majority of them have some education which enables them to do their work more effectively. It can also be observed that a higher percentage (70) is married women with an average of 3 children.

Table 4.16: Sex of Respondent by Educational Background

Gender	SHS	JHS	Primary	MSLC	Total
Male	2	13	19	0	34
Female	10	22	0	4	36
Total	**12**	**35**	**19**	**4**	**70**

Further analysis from table 4.16 shows that out of 12 respondents who have completed Senior High School, 10 who are the majority (83%) are women with the remaining 17% being men. 22 out of 35 respondents are females and the rest males. In terms of Middle School and Primary Education, there are hundred percent respondents representing both sexes. That is, all nineteen

who has attained primary education are all males whiles all four respondent who got to middle school are females.

4.6 DESCRIPTIVE STATISTICS IN RELATION TO RETAILERS

This will be applied based on the objectives and research questions set for the study. The analysis is carried out using mean, standard deviation, and represented on frequency distribution tables and bar charts as well cross tables. In further analysis the researcher wanted to find out if the educational background as well the number of years spent in the vegetable business by respondents has an influence on these ethical and unethical practices identified.

4.2.1: The Ethical and Unethical Practices that Occur in the Supply Chain of Vegetables

From Table 4.17, it could be observed that 42% say „yes", 21.4% says „no" and 35.7% say „sometimes" with a mean value of 1.93 and standard deviation (0.890) indicating that the average retailer sort and grade vegetables before they are sold to the general public. This conforms to the ethical issues regarding the selling of vegetables, thus promoting good ethical practices in the supply chain of vegetables production. Tables 4.4 show the cross tabulation of the question „do you sort your vegetables" against education background of respondents.

Table 4.17: Sorting or Grading of Vegetables for Sale

Response	Frequency	Percentage
Yes	30	42.9%
No	15	21.4%
Sometimes	25	35.7%
Total	70	100%
Mean (1.93)		
Standard deviation (0.890)		

Table 4.18: Do you sort your vegetables by educational background

Response	SHS	JHS	Primary	MSLC	Total
Yes	9	12	5	0	30
No	0	11	4	0	15
Sometimes	3	12	10	4	25
Total	**12**	**35**	**19**	**4**	**70**

From table 4.18 above, it can be observed that 75% (9 out of 12), 25% (3 out of 12) and 0% of the respondents who have completed Senior High education answered „yes", „sometimes" and „no" respectively. In the JHS category 11 out of 35 representing 31% of the respondent said „no" and the rest 69% said „yes" and „sometimes". In total only 21.4% of the respondent answered „no" with 11 and 4 respondent attaining JHS and MLSC education respectively whiles the remaining 78.6% said „yes". These figures show that their educational background had a greater impact on their decision to sort out the vegetables.

Figure 4.7 is the bar chart showing the response to the question „do you sort or grade your vegetables?" against the number of years one has been in the vegetable business.

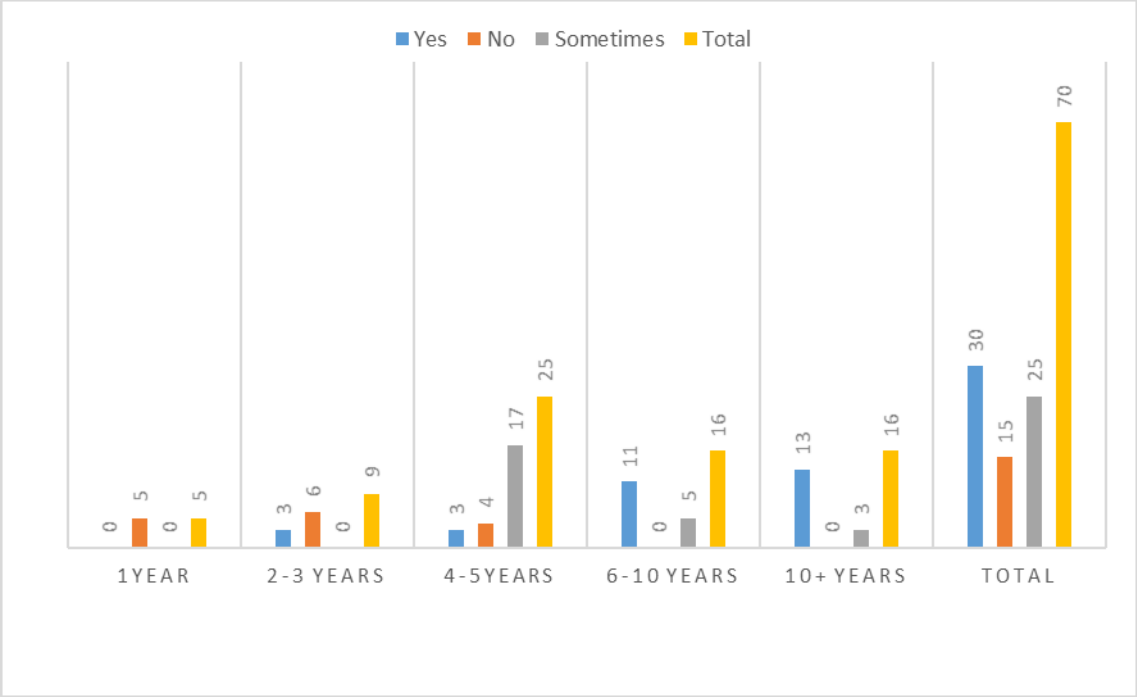

Figure 4.7: Do you sort or grade vegetables against number of years in business

We can see that majority of the respondents (80%) who answered „yes" were those who have been in the vegetable business for more than 6 years whiles all those who answered „no" were those with less than 5 years of experience in the business. We therefore conclude that the more experience you have the more ethical practice you observe in the vegetable business

Figure 4.8 show how the retailers preserve the vegetables which they could not sell in time.

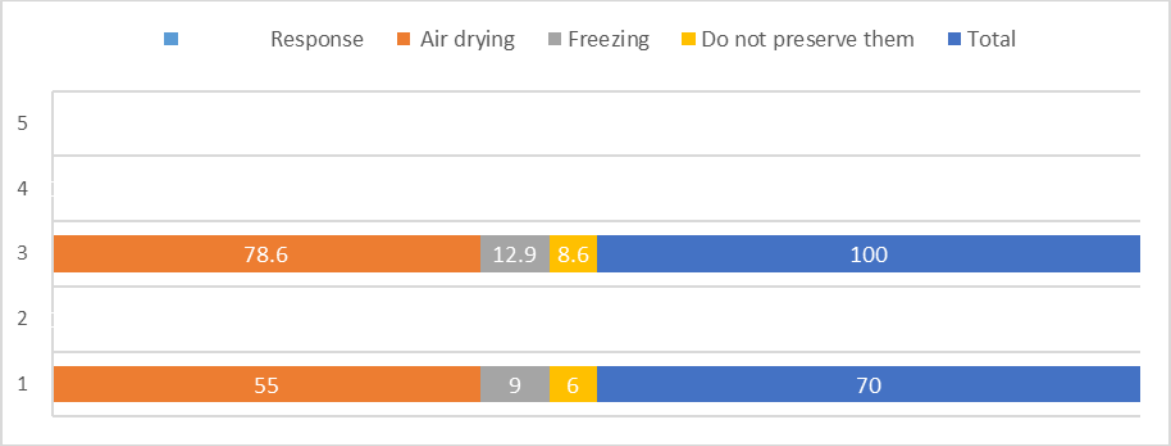

Figure 4.8: How retailers preserve their vegetables

From 4.8 we can say that 64 out of 70 retailers (91.5%) have means of preserving their vegetables, thus 55 (78.6%) air-dry their vegetables while 9 (12.9%) use freezing as the method of preservation. It can be observed that majority of the retailers air-dry the vegetables which is not the best. Almost all the retailers sell more than five different types of vegetables. Each vegetable and how it should be stored. Storing all vegetables at room temperature is not the best. It exposes them to environmental pollution which destroy the vegetables easily. This can be identified as an unethical practice.

Tables 4.18 show the cross tabulation of the question „how do you preserve your vegetables?" against education background of respondents"

Table 4.19: How do you preserve your vegetables? By educational background

Response	SHS	JHS	Primary	MSLC	Total
Air drying	5	29	17	4	55
Freezing	7	0	2	0	9
Do nothing	0	6	0	0	6

Total	**12**	**35**	**19**	**4**	**70**

From Table 4.19, it could be seen that most retailers who preserve their vegetables by air drying were those that have at least completed JHS. That is, out of the 55 respondent who answered „yes", 5 have completed SHS, 29 of them has finished JHS and 17 of them completed primary education. It could be deduced that their educational level has no influence on their method of preservation.

Table 4.20: How do you preserve your vegetables? By number of years in business

Response	1 year	2-3 years	4-5 years	6-10 years	10+ years	Total
Air drying	0	5	22	12	11	55
Freezing	5	0	0	4	5	9
No Preservation	0	4	2	0	0	6
Total	**5**	**9**	**24**	**16**	**16**	**70**

From table 4.20 above, we can conclude that the method used for preserving the vegetables is not affected by the retailer"s number of years in the vegetables business since most of the experienced people in the vegetable business preserve their product by air-drying which has been identified as unethical in the supply chain of vegetables.

4.2.2: The Underlying Causes of the Unethical Practices

Table 4.21 shows the response to the question asked to find out if the retailers have received any form of training in handling of vegetables. It could be observed from the table that 68 out of a total of 70 retailers representing a high percentage of 97.1 answered „no" to the question, thus showing

that majority of the retailers have not received training concerning the handling of the vegetables which can be identified as one of the underlying causes of unethical practices since there are technicalities involved in the handling of the vegetables which need to be acquired by the retailers.

Table 4.21: Training Received in Handling of Vegetables

Response	Frequency	Percentage
Yes	2	2.9
No	68	97.1
Total	**70**	**100**

Figure 4.9 shows whether the educational background influenced their decision to acquired knowledge about the vegetable production

From figure 4.9 we can see that majority of the respondent who are educated have not received any form of training on handling of vegetables.

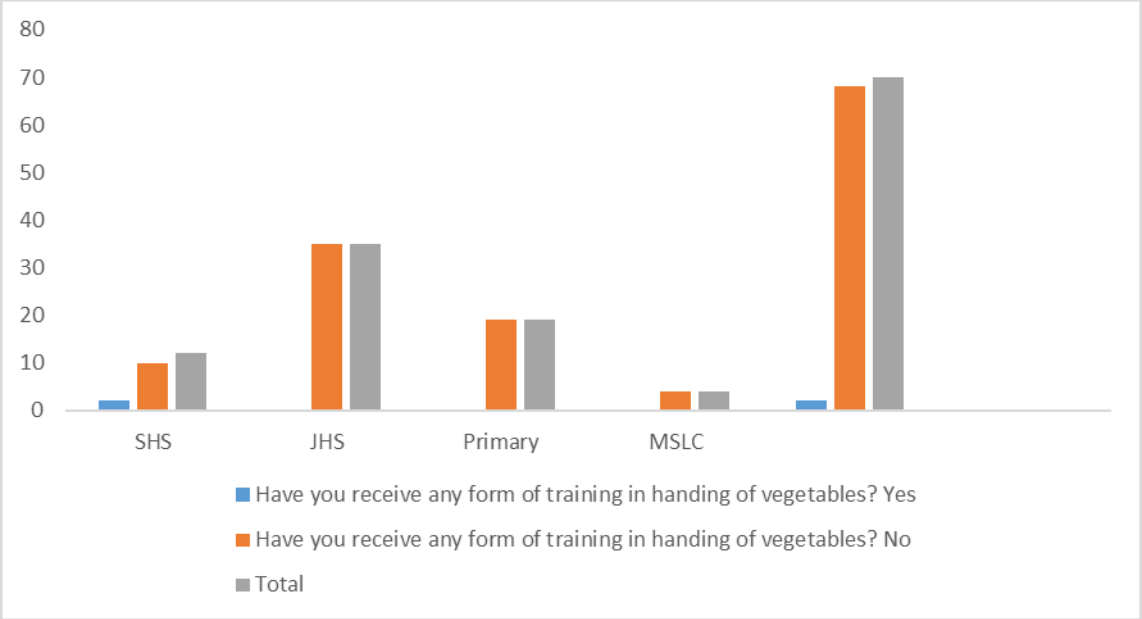

Figure 4.9: level of education by training received

This may be due to the fact that respondents may feel reluctant to acquire any training concerning the vegetables because they might think they have some sort of knowledge about the vegetables due to their educational background forgetting about the fact that vegetable production required special skills and training. This is also one of the causes of unethical practices.

Table 4.22 below shows the cross tabulation of training received and number of years in the vegetable business.

Response	1 year	2-3 years	4-5 years	6-10 years	10+ years	Total
Yes	0	9	0	2	0	2
No	5	0	24	14	16	68
Total	**5**	**9**	**24**	**16**	**16**	**70**

From 4.9, we can observe that majority of those who answered „no" are the retailers who have been in the vegetables business for more than 5 years. This decision may be influenced by the fact

that they may believe that their experience might give them skills and the knowledge about the handling of vegetables. We can therefore conclude that respondents‟ number of years in business have contribute to their inability to receive any form of training on how to handle vegetables

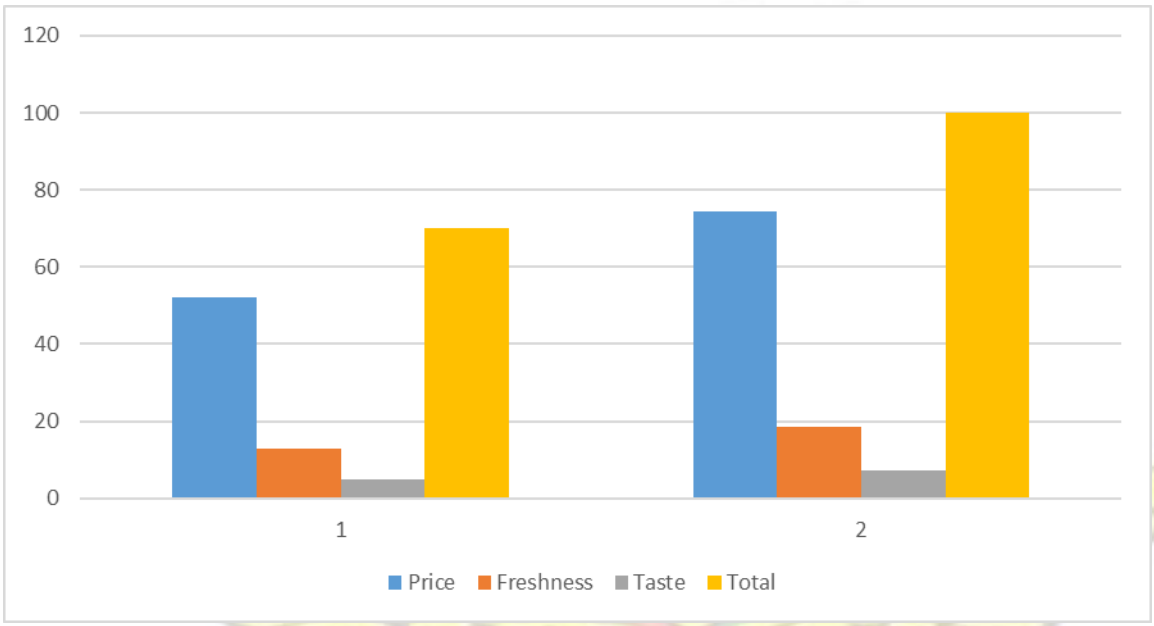

Figure 4.10: What customers look out for from retailers before they buy from them

From figure 4.10, we can observe that 52 out of 70 (74.3%) of customers buy from retailers based on the price of their vegetables, 18.6% look out for the quality of the vegetable and 7.1% look out for the taste of the vegetables before they purchase them. Here we can deduce that customers (consumers) buy from retailers whose prices are lower but not those with quality vegetables whose prices may relatively be cheaper, hence undermining the quality of the vegetables. This can also be identified as a cause of unethical practice in the supply chain of vegetables.

Table 4.23: What Customers Look out for when Buying Vegetables; By the Education of Retailers

Response	SHS	JHS	Primary	MSLC	Total
Price	5	30	13	4	52
Quality	2	5	6	0	13
Taste	5	0	0	0	5
Total	**12**	**35**	**19**	**4**	**70**

Observing the table above, we can conclude that the educational background of retailers has no effect on what the consumers look out for before they buy from them.

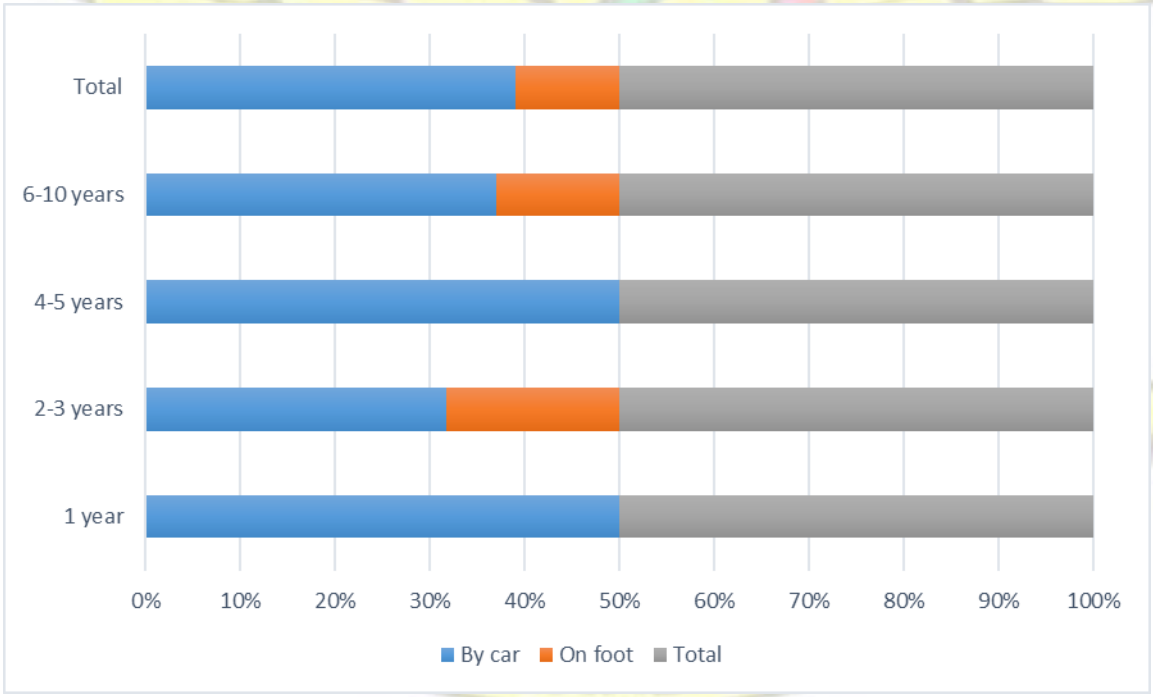

Figure 4.11: Transport of vegetable by members of years in business

From the graph we see that the more experienced people are those who transport the vegetables by car showing their means of transportation is being influenced by the number of years they have been in the vegetables business.

4.7 DEMOGRAPHY IN RELATION TO CONSUMERS

Table 4.24 shows the summary of the demographic characteristic of the consumers. Out of the 50 suppliers interviewed 25 (50.0%) of them were males and 25 (50.0%) females. This indicate that women consume vegetables at the same rate as their men counterpart. The age composition shows that a greater number of them are between the ages of 41-50, representing 48% followed by the ages of 26-30 which constitute about 38%, 18-25 and 31-40 representing 4% and 5% respectively. In terms of education, about 10% have completed Junior High School, 5% have received Primary education whiles 34% and 50% have completed the Senior High School and Tertiary respectively. It can also be seen that 50% are married whiles 50% are not married.

Table 4.24: Summary of Response on Demographic Characteristics of Consumers

Characteristics	N	Frequency	Percent

Gender	50		
Male		25	50.0
AgeFemale	50	25	5 0.0
18-25		2	4.0
26-30		19	38.0
31-40		5	10.0
Level of Education	50		
Primary		3	6.0
JHS		5	10.0
Tertiary		25	50.0
Marital Status	50		
Married		25	50.0
Not Married		25	50.0
Number of children	50		
1		6	12.0
2		14	28.0

Table 4.25: Sex of Respondent by Level of Education

Sex	Tertiary	SHS	JHS	Primary	Total
Male	14	5	3	3	25
Female	11	12	2	0	25
Total	**25**	**17**	**5**	**3**	**50**

From the table, it can be observed that both males and females have the same level of education. For tertiary there are 12 males and 11 females, 5 males and 12 females have completed the senior high school, 3 males and 2 females for junior high school and 3 males, but no females at the primary level.

4.8 DESCRIPTIVE STATISTICS OF CONSUMERS

4.2.3 Unethical Practices and its Impact on Patronage of Vegetables and the Vegetable

Table 4.26: Consumption of vegetables

Frequency	Frequency	Percent	Valid Percent	Cumulative Percent
Daily	38	76.0	76.0	76.0
Once a week	3	6.0	6.0	82.0
Not regular	9	18.0	18.0	100.0
Total	50	100.0	100.0	

Table 4.27: Reasons for Eating Vegetables

Why people eat vegetables	Frequency	Percent	Valid Percent	Cumulative Percent
Health reasons	44	88.0	88.0	88.0
No reason	6	12.0	12.0	100.0
Total	50	100.	100.0	

Out of the 50 consumers interviewed 88% (44) of the respondents gave health reason as why they eat vegetable while 12% said they have no reason for eating vegetables.

Table 4.28: Knowledge on Source of Vegetables

Response	Frequency	Percent
Yes	11	22.0

No	39	78.0
Total	**50**	**100.0**

From the table, it can be seen that only 22% (11 out of 50) know the source of vegetables they buy. All the 78% consumers do not know where the vegetables they eat come from. To find out whether level of education has an effect on this unethical practice, we refer to table 4.7 below. From the table we observe that the level of education of the respondent has no influence on the fact that consumers do not know the source of the vegetable they purchase since most of them answered „no" to the question.

Table 4.29: Knowledge on Source of Vegetable against Level of Education

Response	Tertiary	SHS	JHS	Primary	Total
Yes	7	1	3	0	11
No	18	16	2	3	39
Total	**25**	**17**	**5**	**3**	**50**

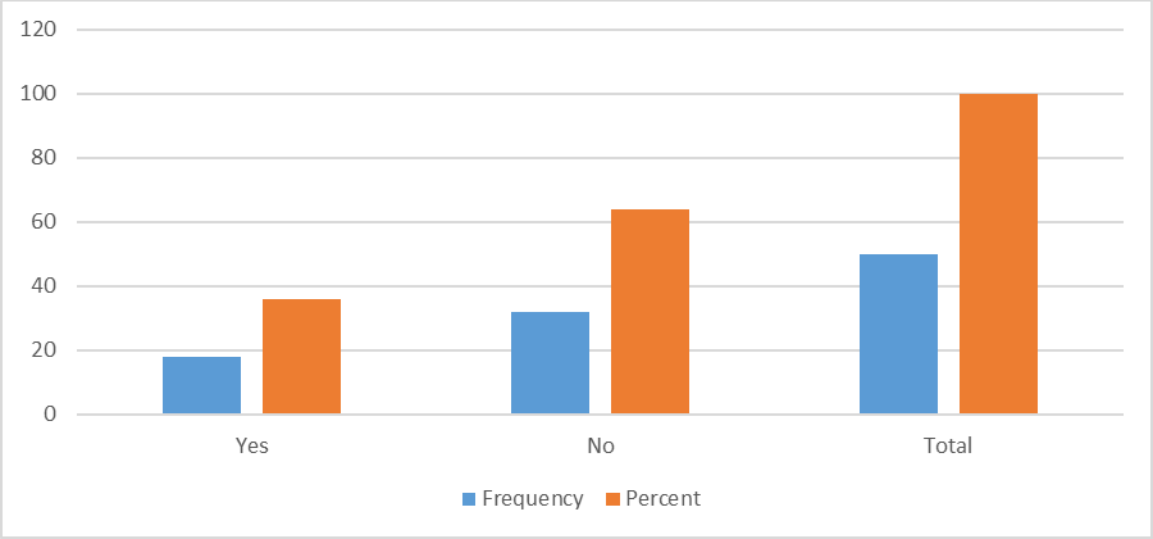

Figure 4.12: Knowledge on farming practices employed by farmers

From the bar chart above, we can see that only 18 out of the 50 (36%) consumers have knowledge about the farming practices used by the farmers. This means majority (64%) of the consumers do not inquire about the farming methods and practices employed by the farmers in the vegetable production. It is unethical for consumers not to know about how the vegetable they eat was produced.

Table 4.30: Unethical Practices Consumers are Aware of

Unethical Practice Heard	Frequency	Percent
Spraying vegetables with chemicals	16	32.0
Washing vegetables with dirty water	19	38.0
Watering vegetables with dirty water	10	20.0
Vegetables are not washed	4	8.0
Bad storage facilities	1	2.0
Total	50	100.0

When the consumers were asked to say the unethical practices they have heard in the cultivation and handling of vegetables, the result is as shown in the table above. From the tables 16 (32%) identified the spraying of vegetables with chemicals, 19 (38%) says the washing of vegetables with dirty water, the watering of the vegetables with dirty water was identify by 20% (10 out of 50) of the consumers. Four consumers and one consumer representing 8% and 2% respectively also said that vegetables not washed and bad storage facilities are the unethical practices they have heard about the cultivation and the handling of vegetables.

4.9 DISCUSSION

The discussion is based on the result gathered from the four major players in the supply chain. The study was intended to identify and analyse the ethical and unethical practices involved in the supply chain of vegetables. Highlighting some benefits associated with good ethical practices along the supply chain of vegetables. The following was therefore used as a guide for achieving the objectives set.

1. Ethical and unethical practices that occur in the supply chain of vegetables
2. Underlining causes of the unethical practices
3. How unethical practices impact on the overall patronage of vegetables and the vegetable industry at large

The discussion is done according to the research questions set for the study.

4.2.1 The first objective was to find out the ethical and unethical practices that exist in the supply chain of vegetables and the following major issues emerged.

4.9.1 Vegetable Farmers

It was realized that most of the farmers (60 %) harvest vegetables at any time of the day. When vegetables are harvested anytime other than the coolest time of the day - which is normally early in the morning or late evening when the sun has not appeared or is set - they loss their water. This causes shrinkage, loss of weight among others. Leafy vegetables like lettuce wilt easily and never recover. The life span of the vegetables therefore becomes shortened than it should be.

The findings showed that information flow between farmers and buyers (suppliers and retailers) was not the best. Farmers did not inform their buyers about practices such as the last time the farms were sprayed and the source of water used for irrigation. This makes traceability impossible. Buyers are not given options to choose from. They do not know who used well or drain water for irrigating. This happens in situations where the farmers send their vegetables to the market. Interestingly some buyers were met buying from farms where drains were used for irrigation. Some farmers in Sekondi/Takoradi said there are times when the vegetables are left on the farms to rot because there are no buyers and they have no storage places as well. Running a business at a loss just because of lack of basic logistics can be said to be unethical. The farmers at this sector seem to be neglected by the government. Other farmers especially those in the cocoa sector are given a lot of support which boost their business and keep them in business. This is not the case in vegetable farming, and the importance of vegetables as discussed in the first chapter cannot be taken for granted especially as most of our Ghanaian diet is basically starchy. As eating of vegetables being encouraged so should be its cultivation.

4.9.2 Vegetable Suppliers

It was found out that people who supply retailers, restaurants and fast food joints vegetables fixed the price of the vegetable they buy from these farmers by strategically going to the farm gate at certain times of the day. They intentionally go to the farms at a time when the farmers have no hope of buyers coming and so are forced to sell their produce at the price the buyer is willing to pay. This act affects the quality of vegetables in a way. The best time to harvest most vegetables is early in the morning when the sun has not appeared and the weather is cool. A follow up question was asked if these buyers think they have paid a good price for the farmer to continue in business and it was realised that some of them did not see why that should be a border to them.

The means of transporting these vegetables from the farm gate to various designation points and even containers that the vegetables were carried in was not the best. Some of the vegetables like cabbage, carrot and green pepper were packed in jute sacks. Lettuce was mostly carried in polythene bags. The vegetables get bruised and wilt before it gets to its destination. Some especially green peppers get rotten on its way to the retailers.

4.9.3 Vegetable Retailers

Some unethical issues that were found with vegetable retailers are as follows.

The vegetables were stored under poor and unhygienic conditions. Most of the retailers who sell inside the market kept the vegetables in their sheds on the bare floor. The market and for that matter the shed are infested with mice, cockroaches and other insects whose contact with these vegetables could be dangerous to human health. The retailers have no proper means of preservation.

A greater percentage of them only air-dry the vegetables at their various sheds inside the market with only a few giving refrigeration as a means of preserving their vegetables.

It was also found out that most retailers do not sort, wash or grade their vegetables according to size and quality for sale. These practices dispose the vegetables to faster deterioration resulting in both quantitative and qualitative losses. This affects not only the retailer but the consumer as well. Whilst the retailer incurs losses from rotten vegetables, the consumer also loses by buying these vegetables at an undeserved price.

4.9.4 Consumers of Vegetables

Consumers gave the use of polluted water for irrigating vegetables and inappropriate use of pesticides as some of the unethical practices they have heard of. This indicates that consumers were aware of some of the unethical practices that are associated with vegetable production.

4.2.2 The second objective was to find out the underlining causes of these unethical practices and the results is as follows.

The main underlining factor found to be the cause of these unethical practices among the players in the supply chain is lack of education. All the three main players (farmer, retailer, suppliers) were found not to have received any special attention in the form of education in the area of their work. Almost all the farmers interviewed had not received any training from a professional or those with technical ideas which in this case is staff of Ministry of Agriculture (MOFA). All suppliers interviewed had not received any form of training and so all they do is what they feel and think is right. The retailers just like the farmers and suppliers had not had any opportunity of being trained in the handling and preservation of vegetables.

Lack of a sense of responsibility on the part of players was found to be another cause of these unethical practices. The farmers, for instance, did not communicate information such as type of water used for irrigation, pesticides application and other farming practices they employed to their customers. Their disposition suggested that they did not feel accountable to anyone and that no one will hold them accountable for any undesirable outcome that might result from the consumption of their vegetables. They did not really care about what will happen to consumers after they have consumed their vegetables. This attitude of indifference on the part of the farmers can be attributed to the lack of traceability system in Ghana.

Another underlining cause was found to be that customers do not put retailers to task. They do not ask the source of the vegetables, the environment and conditions under which they are stored, how and where they are displayed for sale. From the analysis done so far it can be seen that consumers are aware of some unethical practices that have to do with the production of vegetables but interestingly, one cannot understand why these consumers do not put the players in the chain (farmers, suppliers and retailers) to task by asking them such questions as the source of the vegetables and what went into their production, how they are transported and where they are stored after harvesting. This is a deviation from the trend in the western world where consumers are so cautious and suspicious about the food they consume to the extent that they ask questions about the welfare of even the workers involved in the production of the food they consume

4.2.3. The third objective was to find out how the unethical practices impact on the overall patronage of vegetables.

This objective was centred on the consumer and it was realized that although consumers were aware of some unethical practices involved in the supply chain they did not hesitate to eat vegetables. Almost all the consumers interviewed confirmed they ate vegetables on daily basis. It can be said that consumers have embraced the preaching on the eating of vegetables for good health however they are consuming vegetables subjected to unethical practices because they have no better option.

4.9.5 Implication for Existing Theory

Findings in this study identifies the lack of potable water for irrigating vegetable farms and lack of ready market among many others as some of the factors generating unethical practices with vegetables right with the farmer before it gets to the next stage of the chain. This goes to confirm the work others have done in this area. A supply chain is supposed to be interplay of activities, a system of good communication among the players within the chain. This is not the case in this study. There exist no relationships and transparency within the chain making tracking and tracing of the source of vegetables difficult or impossible. Findings in other studies show that consumers are cautious and alert about the food they consume. They are more concern about the safety of the food and food products that they purchase and consume. Their concern goes to the extent of being interested in the relation between the production practices and quality of food products. The situation was different here. Consumers in the study area were not cautious and much concern about the food they consumer. They failed to ask basic questions about the vegetables they consume. Some were not aware of the production practices employed.

CHAPTER 5 CONCLUSIONS AND RECOMMENDATIONS

CONCLUSION

This study was carried out to investigate the ethical and unethical practices that exist in the supply chain of vegetables at the Sekondi/Takoradi Metropolis. The respondents for the study was 250; 80 of them were farmers, out of these 60 were from the Sekondi/Takoradi metropolis and the 20 were from Kumasi. 50 of the respondents were suppliers, 70 were retailers and 50 of them were consumers. The study found out among other things that there were indeed certain unethical practices that existed right from the farm through to the consumer. Each section of the chain had its own peculiar ethical issues. The study found that farmers were involved in some practices that were seen as unethical. Streams and drains that were heavily polluted were used for irrigating this vegetable farms.

It was also realised that the farmers had no sense of responsibility towards their customers. They did not communicate vital information about their product to the buyers. Among the suppliers, it was found out that they determined the price of the vegetables they buy from farmers by acting in certain unethical ways such as strategically going to the farm gate late enough for the farmer not to have any choice than to sell it at the price the buyer wished to pay. Again with the suppliers, it was realized they that they had not received any training in the business they were engaged in. Retailers were also found to be indulging in some practices that can be termed as unethical. The environment and conditions under which retailers keep their vegetables are very unhygienic. They were found not have had any training in how vegetables are to be handled and the correct temperature at which each vegetable they sell should best be stored. On the part of consumers it was found that they are very much aware of some of the unethical practices within the chain especially that of farmers but they still patronised the vegetables. They gave reasons for patronising these vegetables because of its numerous benefits to the body.

It can be concluded that these unethical practices exist in the chain mainly because of lack of knowledge which emerge from lack of training. All the three main players in the chain have not received any training and this is seen as very unethical. Firstly, the people involved in this generally have low level of education and do not understand how some of these practices they were found to be indulging in could pose problems to human health. That is why state agencies responsible for these people should be running educative programmes for them to enlighten them. Secondly, lack of proper storage facilities for farmers, retailers and suppliers is also a contributing factor. There is no demand or pressure on the players within the chain (farmer, suppliers and retailers) to do the right thing.

RECOMMENDATION

Based on the findings and conclusions of the study it is recommended that:

1. The Ministry of Food and Agriculture and Food and Drug Authority both should educate farmers, suppliers and retailers of vegetables. The education should be focused on the core duties of each one of them to enlightening them on the consequences of their actions. This education should be regularly organised for them. Consumers who are main drivers of change should be sensitized by the Consumer Protection Agency to demand for vegetables in good conditions by asking questions about the source of the vegetables, how it was grown, the conditions under which was being stored, etc.
2. Finally it is recommended that in order to ensure good ethical practices within the supply chain there should be public private partnership in the vegetable industry as well. Vegetable farmers should be resourced by the government (especially small scale vegetable farmers) and contracted to produce high quality vegetables for specific companies that are capable of processing these vegetables and are licensed to buy from the farmers. The retailers and other suppliers can then buy from these companies who are in a better position to handle these vegetables properly. This means individual suppliers and retailers will have no business dealing with farmers directly. Farmers will not worry about how to get market for their produce but concentrate fully on how to get good yield.

SUGGESTION FOR FURTHER STUDIES

It is recommended that there should be further studies by government and nongovernmental agencies into areas of appropriate storage facilities for vegetable dealers;

improved ways of packaging for sale and other possible ways of reducing microbial contamination.

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