UNIVERSITY OF CAPE COAST

ASSESSING THE PROSPECTS OF MUSHROOM PRODUCTION IN REDUCING YOUTH UNEMPLOYMENT IN THE ASUOGYAMAN DISTRICT OF THE EASTERN REGION, GHANA

BY

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DECLARATION

Candidate's Declaration

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

Candidate's Signature…… Date……

Name: Adipa Nicholas Eben Asare

Supervisor's Declaration

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

Supervisor's Signature…….. Date…….……

Name: Dr. Edward Nii Amar Amartefio

ABSTRACT

The purpose of this study was to assess the prospects of Mushrooms production in reducing youth unemployment. The mixed methods research approach was adopted for the study. The descriptive survey was adopted for the study. A sample of 132 youth and five farmers were selected via purposive and convenience sampling procedures. Data were collected through the use of questionnaires and interview guide. The quantitative data were analysed descriptively using frequencies and percentages while the qualitative data were analysed using thematic analysis. The study found that mushroom production was gaining roots and that the environmental conditions were favourable for mushroom production. However, even though there was awareness of mushroom production, awareness of the nutritional and medicinal value of mushrooms was minimal. Again, the study found that mushroom production was attractive and can generate employment for the youth because the capital required is small, no vast land is needed and the production can be done in teams to reduce cost. Further, it was revealed in the study that mushroom production is profitable since it can be done all year thereby providing all year round income and food security. Again, the cost of production is less than the profit gained because of the growing market for mushrooms in the district. Finally, the study found that the lack of financial support, storage facilities and negative perceptions of consumers were challenges that affect mushroom cultivation. It was recommended that the youth in the Asuogyaman District seek support from the District Office to be able to engage fully in mushroom cultivation to reduce unemployment.

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DEDICATION

To my wife Paulina Mansu Adipa.

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CHAPTER ONE

INTRODUCTION

All over the world, there is a longing for improvement and sustainability in ensuring that there is food security amidst the growing rate of unemployment. Youth unemployment is a major issue that most countries are plqued with. The desire to ensure food sustainability and reducing youth unemployment can be achieved by promoting variety in farming while at the same time developing more reliable means of income for farmers. One option that appears to be viable in the present day is mushroom farming. Mushroom production has gained much attention in so many places in the world. This study thus was aimed to assess the prospects of mushroom production in reducing youth unemployment in the Asuogyaman District of the Eastern Region.

Background to the Study

The development of nations depends on the empowerment of the individuals within the nation, most especially the young people. According to Msigwa and Kipesha (2013), youth is definitely one of the most powerful forces and resources a country may have in order to improve its social and economic growth. Regardless of their importance, youngsters confront a number of problems, one of which is the problem of unemployment. Youth unemployment is one of the most serious issues confronting both developed and developing countries across the world. However, the problem of young unemployment is particularly acute in Africa due to the high poverty levels that need all people working in order to survive (International Labour Organisation, 2011).

In Ghana, there are several young people with untapped potentials and capacities who can be empowered to contribute to national development (Twumasi, 2013). Twumasi has argued that since young people constitute the driving force of society, it will be in the interest of a country like Ghana to make the best of the most active and productive sector of the population. The need to develop the youth can therefore not be overemphasised.

In Ghana, it has been estimated based, on the 2010 population census, that youth aged between 15 and 35 years constitute 33 % of the Ghanaian population (National Youth Policy, 2010). Youth therefore refers to individuals aged between 15 and 35 years of age. This means that about a third of the population in Ghana is made up of youth. Regardless of this, there are limited employment opportunities for all these youth. As a result, most young people end up being unemployed. Plecher (2020) indicated that ILO estimates show that youth unemployment rate in Ghana ranges between 9 and 12 %. Unemployment has been a critical issue in Ghana over they years. According to Kudadjie and Aboagye-Mensah (2004), unemployment is a major issue in developing countries which affects most youth, rendering them incapable of being relevant to society. The level of unemployment in an economy can be caused by several factors such as poor governmental policies (Frimpong, 2012), abuse of alcohol and drugs (Kazi, 2013), lack of capital, and wrong attitudes like laziness and over-dependence on others (Twumasi, 2013).

Having established that unemployment is an issue particularly in Ghana, it is essential that strategies, policies, and programs are put in place to deal with the unemployment challenges of the youth (Hope Sr., 2012). In the past, there have been some government interventions in Ghana to help deal

with unemployment. Some of these have been the National Youth Policy and the National Youth Employment Programme. In recent years, the Nation Builders Corps (NABCO) programme, a government attempt to alleviate unemployment among graduates, was launched in 2018 with a focus on "health, education, agriculture, technology, governance, and revenue mobilization and collection" (NABCO, 2018).

Regarding Agriculture, Diao, Hazell, Resnick, and Thurlow (2007) stressed that Ghana has not yet met the requirements for a successful agricultural revolution, and as such the country is behind in terms of agricultural productivity. As a result, there is an increasing doubt about the relevance of agriculture in reducing unemployment and poverty especially in rural areas. Diao et al. (2007) stressed however that while parts of Ghana do not have the best natural and geographic conditions for agriculture, the lack of productivity in the agriculture sector is usually due to underinvestment in physical, institutional, and human capital.

In some developing countries, agricultural production is done at peasant levels by farmers who usually focus on their households (Mensah, 2014). Most of these farmers do so to bring diversity into their livelihood system as a way to reduce risk. However, Stephen (2001) gives evidence that rural households engaged in farming activities face considerable dangers in their income structure. In Ghana, several studies have indicated that the capacity of the food-crop sector alone to continue to sustain the livelihoods of rural households is very much in doubt (Dary & Kuunibe, 2012; Lay & Schuler., 2008; Tandoh-Offin & Awuse, 2013). From the foregoing, other alternate income sources (such as petty trading, grasscutter rearing, mushroom

production, bee-keeping, weaving, and pottery, among others) are becoming gradually vital in Ghana's rural communities, and there appears to be a move toward more “non-farming” earnings and entrepreneurial income. Providing this kind of employment leads to income diversification and ease of access to money, particularly during situations where the risks of farming are high and financial inflow from other sources is low (Dary & Kuunibe, 2012).

Mushroom cultivation is important because it can be grown and supplied all year round. According to Brouk (1975), mushroom cultivation and production began in France in the 17th century during the Napoleonic era and has grown into a flourishing industry. Mushrooms are classified into several types. The majority of farmed mushrooms (Agaricus species) are members of the fungus families Basidiomycetes and Ascomycetes. However, the straw mushroom (Volvariella volvacea) is successfully farmed in tropical nations such as Ghana and Thailand (Addae-Kagyah, 1993). Other species, such as oyster mushroom (Pleurotus ostreatus), can be farmed in addition to button mushroom (Agaricus bisporus), by taking use of abundant wastes such as sawdust, rice straw, and bran. This is feasible in Ghana due to the availability of agricultural and manufacturing operations, notably in the food industry, which generate a large amount of trash (Senyah & Robinson, 1998). These waste products are usually high in cellulose, hemicellulose, and lignin, all of which are required for mushroom cultivation.

Furthermore, Shakil, Tasnia, Munim, and Mehedi (2014) contend that mushroom production takes minimal cash, a short period, and a trouble-free growth technique. As a result, it may be cultivated by people of diverse backgrounds. As a result, it has the potential to create a large number of job

possibilities for the jobless. Sawdust, paddy straw, wheat straw, sugarcane luggage, waste paper, used cotton, dervishes, and other components necessary for mushroom culture are always available and inexpensive, and no resources are required to be imported from overseas for its production. On this basis, any individual may readily engage in mushroom production.

Ferdousi, Al Riyadh, Hossain, Saha, and Zakaria (2019) emphasized the importance of mushroom production due to strong demand in the internal market and export potential. Its cultivation might be a "lifeboat" for landless individuals who have no other source of income except their homes. Its cultivation and sale might also provide a big opportunity for the youth to minimize unemployment. Mushroom is also nutritionally advantageous due to its high level of excellent vitamins (B1, B2, and C) and minerals such as phosphorus, salt, and potassium, as well as a smaller amount of calcium (Oei, 1996). This can help increase the nutrition level of individuals who consume mushrooms. In Ghana, the mushroom is consumed as a tasty meat-substitute and as an ingredient in soup and stew. The consumption is about a kilogram in Wa in the Upper West region (Bempah, 2011).

In spite of the prospects and profitability of mushroom production, there are some documented challenges. For instance, Mutema, Basira, Savadye and Parawira (2019) found that absence of financial support, absence of cultivation place, small market for mushrooms and inadequate training for mushroom production. In Ghana, Frempong (2000) revealed that in Ghana lack of funding was a major challenge of mushroom farming. The implication is that these are the main challenges of mushroom production.

There have been several efforts in the direction of making mushroom cultivation fundamental in Ghana. As a result of these efforts, there is a rising interest in mushroom farming in Ghana as a source of revenue and foreign cash. Based on this, the Ministry of Food and Agriculture arranges intermittent academic programmes for farmers at the Asuansi, Adidome, and Wenchi Farm Institutes, while the Agricultural Department of the University College of Education, Ashanti Mampong campus offers a mushroom growing course for students (Mohanty, Mohanty, Mandal, Ghosh, Rautaray & Kumar, 2016). Similarly, in 1990, the Ghana Export Promotion Council launched the National Mushroom Development Project (N.M.D.P.) located in Accra (G.E.P.C.) in collaboration with the Food Research Institute with the goal of making Ghana a significant exporter of mushrooms.

Agriculture is the most important economic activity in the Asuogyaman District in terms of employment and rural income creation. Approximately 75% of the those who work in the District are engaged in agriculture, primarily livestock farming, food cropping, and cash crops, with food cropping being the most prevalent (Eastern Region Co-Ordinating Council, 2020). Since Agriculture is the main economic acitivity there, residents are consistently seeking for new farming products to engage in. However, the youth in the District are rarely engaged in Agriculture. Mushroom cultivation has began gaining gradual recognition in the District lately.

Statement of the Problem

In Ghana, one of the common and most discussed issues is unemployment. The unemployment challenge is a concern for all stakeholders,

governments, labour unions and individual entrepreneurs. For the government, the bane of youth unemployment is a major worry and a threat to their political ambitions. For young people, unemployment is a major source of frustration. Labour unions and businesses also experience some form of anxiety since they are not able to ensure that unemployment is reduced.

From the foregoing, it is recognised in Ghana that unemployment is of major public concern and as such forms the basis of most policy issues of governments in such a way that it is an issue of national interest (Twumasi, 2013). The huge number of young people who are unemployed coupled with the need to have a good life can lead to misplaced utilisation of energies which can be a threat to the enforcement of law and order in the sense that they are most likely to be involved in crime for survival (Uwa, Chuke & Elton, 2016). Thus, by implication unemployment can be viewed as a real threat to the lives of young people and the extent to which they can effectively support national development.

According to a World Bank study (2020), Ghana has 12% rate of unemployment among young people and overall 50% underemployment, both of which are above the general unemployment rates in Sub-Saharan African nations. This suggests that young unemployment is a significant problem in Ghana. The unemployment situation in Ghana is of major concern because young people can get themselves involved in criminal activities such as armed robbery, stealing, drug peddling and human rights abuses. These things can affect the security of the nation and in extension affect the citizenry. The uptake of mushroom farming will be based fundamentally on the profitability of the mushroom production venture and help reduce youth unemployment in

the country. The production does not need arable land. Agricultural waste is converted into fertilizers and soil conditioners. It is an income-generating activity and provides an extra source of protein, valuable vitamins and minerals for man.

There have not been a lot of studies on mushroom production in Ghana. Frempong (2000), for example, investigated the degree to which farmers taught by the Food Research Institute were getting involved in mushroom cultivation and discovered an growing trend in output by individual farmers in the Greater Accra region. Apetorgbor, Apetorgbor and Nutakor (2005) also showed that mushrooms were cultivated in Sourthern Ghana only on small scale for household consumption. Ahuma (2010) also revealed that use of agricultural wastes as substrates for oyster mushroom production can solve the problem of malnutrition and pollution of the environment. From these studies it can be inferred that mushroom production was gaining relevance because of its benefits even though they were not done on large scale. However, these studies all appeared to be outdated. Also, these studies did not really focus on both the prospects as well as the challenges of mushroom production. This creates a gap to be bridged by the current study.

In the Asuogyaman District, it has been shown that majority of the working population (63%) were self-employed doing menial jobs but did not have employees implying that there was still a large portion of the people unemployed (Eastern Region Co-Ordinating Council, 2020). Among the unemployed are mostly the youth. This leads to a lot of criminal activities among the youth in the district. This does not speak good of the district since the district has a very good land space for farming which could help reduce

unemployment. Boateng (2019) indicated that food cropping, cash cropping, livestock farming and fishing are the main forms of farming in the district. In recent times, mushroom production is gaining recognition in the district since people from nearby districts come to buy mushrooms in bulk from the district. On the basis of this, mushroom production could be a good means to reduce youth unemployment in the district. It is against this backdrop that this study assessed the prospects of mushroom production in reducing youth unemployment in the Asuogyaman District of the Eastern Region.

Objectives of the Study

The purpose of the study was to assess the prospects of mushroom production in reducing youth unemployment. The specific objectives were to:

1. Investigate the prospects of mushroom production in the Asuogyaman District of the Eastern Region.
2. Determine how mushroom production reduces unemployment in the Asuogyaman District of the Eastern Region.
3. Examine the profitability of mushroom cultivation in the Asuogyaman District of the Eastern Region.
4. Examine the constraints associated with mushroom production in the Asuogyaman District of the Eastern Region.

Research Questions

The following research questions were posed to guide the study:

1. What are the prospects of mushroom production in the Asuogyaman District of the Eastern Region?
2. How does mushroom production reduce unemployment in the Asuogyaman District of the Eastern Region?

3. How profitable is mushroom production in the Asuogyaman District of the Eastern Region?
4. What are the constraints associated with mushroom production in the Asuogyaman District of the Eastern Region?

Significance of the Study

This study is significant in several ways. In the first place, the results of the study will highlight the prospects, profitability and challenges of mushroom production so that the Ministry of Food and Agriculture together with the Ministry of Youth would be enlightened as to how mushroom production can be used to reduce youth unemployment. Also, the results of the study would be beneficial to the Asuogyaman District Coordinating Council in the sense that they would be enlightened as to how to encourage mushroom production among youth in the District.

Further, the youth in the Asuogyaman District would also be enlightened as to how to profitably enage in mushroom production. Finally, the results would add to the literature on mushroom production in Ghana. This would aid researchers who would want to conduct further study on this subject.

Delimitations of the Study

The study was limited to the Asuogyaman District located in the Eastern Region of Ghana. Issues relating to mushroom production systems and youth unemployment in Asuogyaman District were investigated. The study was also limited to the prospects of mushroom production in reducing youth unemployment in Ghana.

Limitations of the Study

In carrying out this study, several challenges were encountered. Firstly, the descriptive nature of the study meant that the findings of the study study were mainly self-reported from the respondents in the study. This could affect the findings obtained from the study. Secondly, most of the respondents scheduled for the interview kept postponing which actually delayed the data collection process. This was a methodological lapse in the study.

Definition of Terms

The key terms used in the study are defined in this section:

Mushroom production: This refers to the process of cultivating mushrooms mainly for commercial purposes.

Unemployment: This is used to refer to the state of not working for pay even though a person has the qualification and desire to work.

Youth: This is used to refer to individuals between the ages of 15 and 35 years.

Organisation of the Study

The research was divided into five chapters. The first chapter comprises the study's introduction, which includes the issue description, research questions, goals, scope, and rationale. Again, the limits and structure of the study were discussed in chapter one. The second chapter reviews pertinent material from previous publications on the subject. The third chapter discusses the study's methodology. It entails the research design, the study region, the population, the sample and sampling, the data collecting equipment, the data collection process, and the data analysis. The fourth chapter is devoted to the examination and discussion of field data. The fifth

chapter contains a summary of the results, conclusions, and suggestions. The chapter also includes suggestions for more research.

CHAPTER TWO

LITERATURE REVIEW

Introduction

This chapter presents a literature review of the study. The review covers the theoretical framework, concepts relating to mushroom production as well as topics relating to the main objectives of the study.

Theoretical Framework

The theories that inform the current study are reviewed in this section. Two main theories are reviewed. These are the Neoclassical Theory of Unemployment and the Keynesian Theory of Employment.

Neoclassical Theory of Unemployment

Neoclassical theory emerged in the late nineteenth century as a result of the works of "William Stanley Jevons, Carl Menger, and Léon Walras". An earlier assumption of neoclassical economics was that the most noteworthy component in evaluating the worth of a product or service was usefulness to consumers rather than the cost of production (Kenton, 2020). In terms of unemployment, neoclassical theory holds that it is voluntary (Emerson, 1988). The term voluntary unemployment refers to a person who is unwilling to work for the wage being offered and would prefer to stay without a job (due to the belief that a better job would be available soon – job search), or to an employer who decides not to hire the individual because his salary cannot be decreased because of general and shared arrangements (Arestsis & Skott, 1995).

According to the idea, the incapacity of the market to work under perfect competition is caused by either "monopolistic trends" in the labour

market or employees having insufficient knowledge about vacancies. As a result, wage inflexibility and an absence of knowledge can cause intability in the labor market balance, i.e., perpetual unemployment. The neoclassical theory's solution is to create circumstances for the presence of perfect competition, which can cause the price-salary mechanism to affect the equilibrium of the market eradicate unemployment (Kenton, 2020).

Furthermore, the typical neoclassical approach seeks to view unemployment as a phenomena connected to external causes rather than growth itself. The theory also holds that unemployment is caused by either a desire not to decrease wages or the presence of flaws in the labor market. In essence, the neoclassical view contends that the labor market's inability to work in perfect competition causes unemployment. According to neoclassical theory, therefore, employment policies should strive to produce more labour market flexibility with the eventual objective of generating perfect competition, that can also contribute to solving the unemployment problem (Chletsos, 1996).

The theory is relevant in the study because it gives insight into unemployment by explaining that imperfections in the labour market led to unemployment. Also, the theory’s depiction of volunatry unemployment is relevant to the study because it explains that if a person is willing the person can make use of any available resource in the environment to create a job for him or herself.

Keynesian Theory of Employment

Keynesian economics was developed in the 1930s by the British economist John Maynard Keynes as a means to gain understanding into the Great Depression (Ntisha, 2015). The Great Depression demonstrated that market forces cannot achieve equilibrium on their own, and hence require external assistance to do so. It had withstood all previous attempts to put a stop to it. The Keynesian theory of employment arose as a result of this. The theory is classified as a "demand-side" hypothesis since it focuses on short-run economic developments. Keynes' theory was the first to distinguish between economic behavior and markets based on individual motivations. On the basis of the theory, Keynes requested for more government spending and reduction in taxes so as to generate demand and cause a lifting in the economic standing of the world out of the economic collapse (Barnier, 2020).

The Keynes theory of employment held that the elements of production, such as capital goods, labor supply, technology, and labor efficiency, remained constant when determining the amount of employment (Amadeo, 2021). As a result, Keynes opined that the degree of employment is determined by national income and productivity. Furthermore, Keynes argued that a rise in national income would result in rising rates of employment, and vice versa. As a result, Keynes' theory of employment is often referred to as the “theory of employment determination” and the “theory of income determination” (Ntisha, 2015).

Keynesian economics is a macro economic theory which investigates general economic expenditure and its impact on production, employment, and inflation (Barnier, 2020). Following that, Keynesian economics was adopted

as a reference to the idea that ideal economic performance might be attained by influencing aggregate demand through government economic intervention programs. Keynesians also think that the fundamental driving factor in an economy is consumer demand.

Overall, the Keynesian Theory of Employment stated that increasing government expenditure would boost demand, and so government spending is required to sustain full employment. The theory is important to the current study because it explains how government expenditure on infrastructure, unemployment compensation, and education would raise consumer demand and aid in the maintenance of full employment. On this basis, if government can provide the necessary resources for young people to engage in mushroom production then it is likely that youth unemployment will reduce.

Historical Background of Mushroom Production and Consumption

The mushroom was first cultivated in 600 A.D with wood ear mushroom. Later, the white button mushroom (*Agaricus bisporus*) cultivation started in around 1650 A.D in France. The cultivation rapidly spread after the Second World War when reliable spawn became commonly available in many countries (Oei, 1991). Mushroom cultivation is a unique agricultural system in which industrial waste can be transformed into a soil conditioner. For this reason, mushrooms are deemed more valuable than most crops and may be consumed locally or exported (Chang & Wasser, 2016).

According to Gianotti, Cleaver, Cleaver, Bailey and Holliday (2012), the breakdown of cellulose is the foundation of mushroom cultivation. Mushrooms' fiber structure is made up of cellulose and hemicellulose. This structure is protected by lignin, a structural component. Like plastic wrap,

lignin wraps around the cellulose fibers. As a result, mushrooms have a highly robust structure and can thus stand for an extended length of time (Gianotti et al., 2012). This is because only a few organisms can breakdown all the protective structures that surround the mushroom.

Oyster mushrooms are the most frequent of the closely related species complex, which includes several species from the genera *Hypsyzygus* and *Pleurotus*. Oyster mushrooms of various kinds have grown in a variety of locations across the world (Sawyerr, 1991). According to Royse (2003), global output has grown more than 18-fold. The United States produced 393,197 metric tons of mushrooms between 2001 and 2002. This accounted for around 7% of total global mushroom production. In 1997, it was discovered that oyster mushrooms accounted for around 14.2 % (875,600 tonnes) of total world edible mushroom output (6,161,000 tonnes) (Royse, 2003).

In tracing the history of mushroom cultivation, it must be pointed out that even though Mycophagy, the act of consuming mushrooms dates back several years, the first reliable evidence of mushroom consumption can be traced to 700BC in China. This happened because of the Chinese value mushrooms for medicinal properties as well as for food. Aside from the Chinese, ancient Romans and Greeks, especially the upper class also ate mushrooms.

The Roman Caesars had a food taster who tasted the mushrooms before the Caesars' ate in order to ensure that they were not poisonous. Different cultures around the world have used and continued psilocybin mushrooms for spiritual purposes as well as medicinal purposes folk medicine (Wikipedia, 2011). Over the past few decades, mushroom consumption in the

United States has increased. Normally used as a vegetable, the per capita consumption of this fungus crop has quadrupled since 1965. The total per capita use of mushrooms in 2001 was about 3.94 pounds (0.79kg) compared with about 0.69 pounds (0.31kg) in 1965. Fresh market consumption was 742 million pounds ($3.36868x10^8$kg) in 2001 - 2002 (Gary, Allshouse, & Biin-Hwan, 2003).

Concept of Mushroom Production

Issues relating to mushroom production are discussed in this section.

Level of World Production of Mushrooms

Royse (2003) presents that within the last 32 years, there was an increment in mushroom production across the world from about 350,000 metric tonnes in 1965 to about 6,160,800 metric tonnes in 1997. That is almost an 18-fold increase. The majority of that increment occurred in the last 15years. A major shift has occurred in the mushroom supply's composition of genera. In 1979, *Agaricus bisporus* (button mushroom) output accounted for more than 70% of global yield. By 1997, *Agaricus bisporus* accounted for just 32% of global production. China is the world's leading producer of edible mushrooms, producing around 3,918,300 tonnes per year (almost 64% of the total). China also produces slightly more than 85% of the world's supply of oyster mushrooms (*Pleurotus spp.*).

A mushroom's total production comprises all fresh market and processing sales, as well as the quantity picked but not sold (shrinkage and dumped, etc.). From 617kg in 2001 to 730kg in 2002, the average production from each oyster mushroom farm grew to 113kg (18.3 %) each week (Afetsu, 2014). From 881214kg in 1996 to 1936310kg in 2002, the output of oyster

mushrooms (*Pleurotus* spp.) in the United States increased by 14 % each year. This rise was the consequence of a multinational effort to boost agricultural output. In 1997, oyster mushrooms accounted for 14.2 % (875,600 tonnes) of total world production (6,161,000 tonnes) (Afetsu, 2014).

The United States had to increase production as the product was in high demand and farmers were well-compensated for the product (Royse, 2003). Royse (2003) presents a report by the Department of Agriculture of the United States states that per kg of fresh oyster mushrooms, farmers received an average of $2.00 which is almost 60.6 % higher than what growers of *A. Bisporus* who received for the same quantity of their product in the 2001–2002 planting season. The higher price received for fresh oyster mushrooms was a result of the under-developed and unreliable technology available to farmers for cultivating these plants.

In Ghana, Bempah (2011) reported that the BemCom Youth Association of Techiman in the Brong Ahafo Region raises about 3,700 to 4,500 oyster mushroom composted bags in a week and sells 50kg a day. This is due to the availability of electricity and enough water pressure being used to spray the compost bags. According to Apetorgbor, Apetorgbor and Nutakor (2005), in Southern Ghana, mushrooms are packaged and sold on weight or bundle basis. Growers of *Volvariella volvacea (oil palm mushroom)* produced 5 to 10kg per week and sold them at GH¢ 3 per kg to customers and *Pleurotussajor-caju*is sold at GH¢3 per kg and growers produced about 5-50kg per week.

Nutritional Importance of Mushrooms

Mushrooms are quite significant in terms of nutritional value. Dry mushrooms typically provide 19-40% high-quality proteins, which comprise the essential amino acids required for optimal health. Lysine, an important amino acid, is abundant in mushrooms (Sawyerr, 1991). Oyster mushrooms, according to Bempah (2011), contain 10-30% protein. Aside from protein, mushrooms have a modest fat content (1-8 % dry weight), which is primarily made up of unsaturated fatty acids. These unsaturated fatty acids are far safer than the saturated fatty acids found in animal fat (Oei, 1991). Mushrooms are also a good alternative for diabetics and weight watchers because they have low sugar and no starch. (Oei, 1991).

Furthermore, mushrooms have twice the quantity of nutrients present in most vegetables and are significantly richer in minerals than several meats. They may include every mineral found in the substrate on which they grow, including significant amounts of phosphorus, potassium, and calcium. Magnesium, sodium, manganese, aluminum, iron, zinc, and copper are some of the other mineral salts present in mushrooms (Sawyerr, 1991). Mushrooms are also high in vitamins, including niacin (vitamin B12), thiamine (vitamin B1), riboflavin (vitamin B2), biotin, and ascorbic acid (vitamin C). They also have a high folic acid content, more than any other vegetable or meat save liver (Oei, 1991).

General Life Cycle of Mushroom

The life cycle of mushroom (Figure 1) starts with the microscopic spore produced from the underside or gills of the fully opened mushroom. The spores are carried on air current to considerable heights and for many hours.

The spores of some species are also taken away on visiting insects or animals which feed on them. When the spores are deposited on a favourable substrate that has enough nutritious food, sufficient moisture and favourable temperature, they germinate. After germination, they send out small delicate, white filament called hyphae which grows horizontally and intertwine with the hyphae of surrounding spores to form mycelium. During their development, the hyphae produce a chemical that digests the food around them and the strands thus grow very quickly through the substrate and form a thick living mass known as the spawn. The first tiny mushroom appears in the form of tiny white pinheads to the surface. These soon form the spherical shapes of the tiny immature mushrooms which develop into fruit bodies (Sawyerr, 1991).

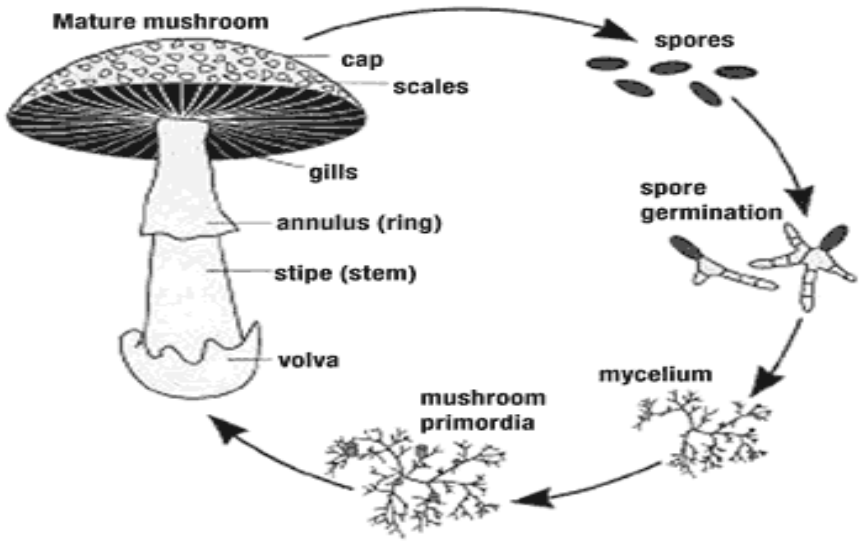

Figure 1: Life cycle of mushroom

Mushroom Production System

The cultivation system adopted in Ghana is a standard method used in many parts of the world. The procedure begins with the preparation of the compost. The most popular material is sawdust, which ideally should first be decomposed. The compost is then put into heat-resistant plastic bags about

33cm long and is heated to kill microorganisms that might compete with the mushrooms for nutrition. When the compost is fully sterilized, the mushroom spawn is inserted. The bags are then kept in a darkened room for several weeks. When the mycelium has spread over the compost, the room is ventilated and a small amount of light is let in, causing the mycelium to develop into mushrooms. Finally, the bags are opened and the mushrooms cropped (Sawyerr, 1991).

According to Maher et al. (2000), mushroom fertilizer can be produced from wheat straw and poultry manure with the inclusion of water and gypsum (calcium sulphate). These undergo composting and refinement processes.

After these processes, the compost is selected for the mushroom fungus. The compost is then generated with mushroom mycelium filled into polyethylene bags, each bag is filled with 20kg of compost and sent to mushroom farms. The bags are laid on a concrete floor in a heatproof polyethylene-clad tunnel. When the mushroom mycelium has colonised the compost, a 5cm layer of peat mixed with ground limestone is placed on it. This casing layer instigates the development of the sporophore or mushrooms. After a week, reaping the mushrooms begins and goes on for about 4 - 6 weeks. The entire task lasts for 10-12 weeks permitting about five crops in a given year.

Management Practices during Mushroom Production

According to Sawyerr (1991), the greatest attention in mushroom production should be paid to cleanliness as diseases thrive in an unclean house. After two months of flushing, all the compost bags are removed and sprayed with 2.5kg of fresh neem seeds or leaves and mixed with 15 litres of

water. The neem seeds or leaves are pounded, mixed with water and strained. The mixture is left to stand overnight and it is used to spray the cropping house. Ventilation is necessary for the cropping house so that the oyster mushrooms would not develop an abnormally big stalk with a small funnel-shaped cap resembling the mouth of a trumpet. The door of the cropping house is opened at night for aeration. Also, sufficient light is provided in the cropping room to prevent the stalk of the mushroom being long and the cap being small (Sawyerr, 1991). The floor of the cropping house, the mats and the top of the bags should be moist by watering their surfaces. The watering frequently depends on the surrounding atmospheric humidity. If the humidity is low, watering is done more often and vice-versa. Watering is done at least twice a day depending upon the atmospheric humidity (Sawyerr, 1991).

The best time to harvest is when the cap begins to emerge from the veil. The harvesting is done in the morning. The mushrooms retain their freshness for at most two days while the open ones will deteriorate after 24hours (Oei, 1991). During harvesting, a pair of scissors or knife is not used to cut the stalk. Twist off the buttons carefully with the hand without disturbing the attached pinheads which occurs together with them in clusters (Sawyerr, 1991). According to Oei (1991), stumps are not left for soft rot bacteria and green mould to grow on, as the leftover portion would decay and spread to succeeding crops causing a drastic reduction in yield due to disease infections.

Prospects of Mushroom Production

Mushroom production all over the world is beginning to gain roots and its profitability is increasingly being recognized. In Ghana, mushroom farming

does not always need a large initial investment because mushrooms may be cultivated in cane baskets and the kitchen (Sawyerr, 1991). Several research studies have been carried out to determine the economics of mushroom cultivation. Frempong (2000) conducted research to evaluate the degree to which farmers taught by the Food Research Institute had taken up mushroom cultivation, as well as the profitability of mushroom production. According to the study, there is a rising trend in mushroom cultivation by individual farmers in the Greater Accra Region, and the bulk of the Food Research Institute's trainees are involved in mushroom production. Concerning profitability, the study revealed that mushroom cultivation is profitable in the Greater Accra region. Shakil, Tasnia, Munim, and Mehedi (2014) explored the situation in Bangladesh with the major goal of reducing poverty, unemployment, and malnutrition through mushroom cultivation and sale. The study relied on secondary data. The study discovered that mushroom farming, which does not need cultivable land and could be cultivated in a room by racking vertically, might provide a new option for landless and jobless people. The study demonstrated once again that there was a good possibility that a person might benefit from mushroom growing by investing a little amount of cash and labour.

Furthermore, Shakil et al. (2014) argue that mushrooms should be farmed since they may be grown on a small, medium, or big scale for personal or commercial consumption. In addition, mushroom production does not take long and may be sold fresh from the farm or at the market. According to Mamaland Mushroom Farm's (2016) research, mushroom farming in Tanzania might help alleviate poverty, undernutrition, and unemployment. This is

possible since mushroom farming does not require a large amount of land, and for small-scale mushroom growers, it does not require a large initial investment but may result in a lucrative and quick return. Again, mushrooms may be used as a meat substitute (chicken, pig, and beef), and their nutritional content is equivalent to that of numerous vegetables (Mamaland Mushroom Farm, 2016). Mushrooms may be a beneficial supplement to many people's diets, which are often imbalanced.

According to Seraj (2017), mushroom farming can be a profitable business with low capital investment. The income derived from the mushroom enterprise contributes remarkably to food security in households and allows women to achieve a level of financial independence within the family account (Ninfaa, 2011). Again, the mushroom industry, even though is considered to be relatively recent and small, is constantly growing (Haimid, Rahim, & Dardak, 2013).

Profitability of Mushroom Production

According to Thakur (2014), mushroom growing substantially helps to the livelihoods of rural and peri-urban residents by providing food and money. Mushroom growing is a suitable small-scale economic option that cooperative and community organizations may pursue. Thakur said that mushroom cultivation may be extremely gratifying because it improves food security and revenue creation while requiring no significant capital commitment or access to land.

The mushroom dish is a popular menu item at most large hotels (Bhupinder & Ibitwar, 2007). There are significant variations in flavor and appearance. Consumer demand for foods that are easy to cook has increased

rapidly over the past few years. Supermarkets gradually increased the quantity of packaged sliced fresh mushrooms on sale as there is a high demand for sliced mushrooms among pizza and pie producing companies. In view of this, 5 to 25% of fresh mushrooms were supplied to supermarkets as slices (Brennan & Gormley, 1998). Between 1999 and 2001, mushroom producers sold an average of 859 million pounds which is 3.89986 x 10^8 kg (Gary et al., 2003).

The worth of the 2001-2002 specialty mushroom crops in the United States reached a total of $37 million, down 12% from the 2000–2001 seasons. The number of oyster mushrooms sales from the 2000–2001 seasons went up 11%, with a total of 51 farmers producing 1.94 x 10^6 kg of the mushrooms in the 2001–2002 seasons (Royse, 2003). Individual mushroom farmers in Ghana are making from GH¢4.00 to GH¢20.00 or more a day and selling about 10kg a week (Bempah, 2011). Women are experts in the use, processing and marketing of vegetables including mushrooms. This is because these are essential resources to sustain the family and ensure the good health of the household. The business of selling is an economic venture for people, especially women having little capital. The incomes derived from this enterprise contribute remarkably to food security at the household level and enable women to reach a degree of financial independence within the financial forecast of the family (Ninfaa, 2011).

Potential of Mushroom Production Reduce Unemployment

Mushroom production or cultivation has been seen to have great potential in reducing unemployment. According to Apetorgbor, Apetorgbor and Nutakor (2005), mushrooms are sources of food, income and of medicinal

value. They are harvested at the onset of the rains and sold in markets and along roadsides in Southern Ghana. Mushroom can be cultivated on small and large scale and as such can provide people with alternative livelihood and thus easing the pressure on the young unemployed people.

Atikpo et al. (2008) has indicated that mushroom cultivation can be very attractive to small farmers throughout the world. This is because mushroom cultivation can be done even under adverse conditions and with limited resources. On this basis, unemployed youth with limited resources can enter into mushroom cultivation. This makes mushroom cultivation a very good means of reducing youth unemployment.

In addition, Ahuma (2010) opined that mushroom cultivation can be done with much ease. On most occasions, agricultural wastes are used and this makes mushroom cultivation less of a difficulty. In this sense, mushroom production can help reduce youth unemployment.

Challenges of Mushroom Production

Several challenges have been identified as facing mushroom farmers. These challenges make the venture of mushroom cultivation difficult. Shakil, Tasnia, Munim, and Mehedi (2014) have revealed that growers face a lot of challenges such as unavailability of spawns or seeds, inadequate loans, lack of promotion among others. Frempong (2000) conducted another research to evaluate the extent to which farmers taught by the Food Research Institute had taken up mushroom cultivation, as well as the profitability of mushroom production. From the farmers' point of view, the restrictions to mushroom growing were enumerated and graded in decreasing order of significance. In that order, the three most significant obstacles identified to be militating

against mushroom production are inadequate marketing, a lack of finance, and a paucity of water. The study demonstrated once again that marketing limitations may be eliminated by intensifying market research and disseminating market knowledge to manufacturers, as well as raising the proportion exported. It was also discovered that farmers might handle the finance problem by creating savings and loan groups, and that investment in rainwater collecting and storage facilities could help mushroom growers solve their water problem.

Agyei et al. (1993) also reported that inadequate storage facilities do not allow farmers to maintain some kind of food security. Adequate storage and suitable facilities are required to make it possible to store produce including mushrooms under appropriate conditions for long periods. It was observed that due to inadequate storage facilities for mushrooms, the producers were very anxious to dispose of their produce soon after harvest to minimize postharvest losses. This might result in price fluctuations and instability in the marketing of the produce. Again, according to the Food and Fertilizer Technology Centre (2007), postharvest losses can ensue when there is a surplus of produce in the market due to inadequate storage facilities and where no buyer can be found.

According to Seraj (2017), in Bangladesh, the unpopular state of mushroom production might be because of the social mindset or misconceptions about cultivated mushrooms. Thakur (2014) also identified some challenges of mushroom production. These include non-awareness about nutritional and medicinal values of mushrooms through mass media, low

consumer awareness, lack of mushroom processing units and absence of proper mushroom marketing channels for mushrooms.

In terms of how to deal with the challenges of mushroom cultivation, Thakur (2014) indicated that the challenges of mushroom cultivation can be managed by implementing rural social support policies, bringing up specific policies to assist in the marketing of mushrooms. Creating incentives for financial institutions to lend to small or community-run companies, as well as making financing available to the rural poor and small-scale entrepreneurs, can also aid boost mushroom farming.

Chapter Summary

As clearly spelled out in this literature, mushroom is an economically valuable product in terms of nutrition and income. It is even a foreign exchange earner and if it is taken seriously as an economic venture, it could to some extent reduce the youth unemployment situation in most rural districts and peri-urban areas where youth unemployment is pushing up.

CHAPTER THREE

RESEARCH METHODS

Introduction

This chapter focused on the procedures used for the study. It covered areas such as the research design, study area, population, sampling procedure, data collection instruments, data collection procedure, and data processing and analysis.

Research Approach

For the study, a mixed methods research technique was employed. Creswell (2009) defines mixed methods research as the philosophical assumptions of qualitative and quantitative techniques, as well as the combining of both approaches in a study. Within the pragmatist paradigm, the mixed method model was employed. According to Creswell (2009), pragmatism does not adhere to any one philosophical framework. As a result, the mixed methods model in this study depended on both quantitative and qualitative assumptions. In essence, I picked research methodologies, strategies, and processes from both quantitative and qualitative sources that best suited the study's objectives. To elaborate, the mixed methods research strategy is viewed as more than just gathering and evaluating both types of data; it also entails the use of both methodologies in tandem such that the total strength of a study is higher than either qualitative or quantitative research (Creswell & Plano-Clark. 2007).

The mixed techniques approach of concurrent triangulation was utilized. In this method, the researcher gathers both quantitative and qualitative data at the same time and then analyzes the two to see if there is

convergence, difference, or any mix of the two. This might take the form of confirmation, denial, cross validation, or corroboration. This paradigm often employs distinct quantitative and qualitative methodologies to compensate for the shortcomings of one method with the strengths of the other.

Research Design

In carrying out this study, the descriptive survey research design was used. The descriptive survey design according to Creswell (2013) helps to give a description of trends, attitudes, perceptions or views of a population by investigating a sample of that population. The emphasis of this design is on objective measurements analysis of data collected through surveys. According to Babbie (2010), the descriptive survey design focuses on obtaining data and generalizing it across groups of individuals, and so is fundamental for all forms of research in analyzing the situation as a prerequisite for findings and generalizations. As a result, descriptive surveys are ideal for descriptive, explanatory, and exploratory purposes. They are intended to offer a picture of how things are at a certain point in time, with no attempt to alter or modify factors (Kelley, Clark, Brown & Sitzia, 2003).

The descriptive survey was chosen because, studies based on survey require less time and produce quick answers. Again, an advantage of survey is the breadth of coverage of many people or events which means it is more likely to obtain large data and can therefore be generalisable to a population.

One criticism leveled against the descriptive research design is that the instruments could lack clarity and could be misleading such that the survey results could vary significantly depending on the wording of the items (Frankel, Wallen & Hyun, 2012). Finally, that respondents may delay or fail to

meet deadlines, others might not complete and return them at all; whilst some may even throw the questionnaire away. Regardless, of this weakness of the descriptive survey design was used because of its advantage of providing a lot of information from a large number of respondents.

Study Area

The study was carried out in the Asuogyaman district in the eastern region of Ghana. The Asuogyaman district is "located approximately between latitudes 6º 34º N and 6º 10º N and longitudes 0º 1º W and 0º14E. It is about 120m above Mean Sea Level (MSL)". The dstrict has an "estimated surface area of 1,507 sq. km, constituting 5.7 % of the total area of the Eastern Region". In terms of bordering districts, Afram Plains South District can be located in the north and the Upper and Lower Manya districts in the south and west respectively. Asuogyaman is a "traditional district situated between the Volta Region and Eastern Region of Ghana and share borders to the east with Kpando, North Dayi, Ho and the North Tongu Districts of the Volta Region".

The district's terrain is usually undulating. It is hilly in the west and east, with low-lying plains in the middle. The Volta River carves between such hills, forming a canyon suitable for the construction of the Volta Dam at Akosombo. The tallest peaks in the District range in elevation from 700 to 800 meters above sea level on average (Ghana Statistical Service, 2014).

The Asuogyaman District is located in the Dry Equatorial Climate Zone, which receives a significant quantity of precipitation. This is distinguished by a double maximum rainfall, with the major season occurring between May and July and the minor season occurring between September and November. Annual rainfall typically begins in April, with June being the

wettest month, and concludes in November. The dry season begins in November and lasts until March. The annual rainfall ranges between 67mm and 1130mm, and temperatures are mild all year, with a high monthly mean of 37.2^{o}C and a low of 21.0^{o}C. Relative humidity is typically high, ranging from 98 % in June to 31% in January. Asuogyaman District has a total population of 98,046, accounting for 3.7% of the Eastern Region's population. Females outnumber males by 52.0 % (48.0 %). Approximately 71% of the population lives in rural areas. The sex ratio in the district is 92.2. The district's population is primarily young, with more than half (64%) of the population under 30 years old, and children (0-14 years) accounting for 37.4 %. The total age dependence ratio for the District is 75.9, with males having a greater age dependency ratio (79.6) than females (72.6). (Ghana Statistical Service, 2014).

The statistics presented here are very interesting since everything discussed or presented by Ghana Statistical Service favours mushroom production; good weather condition, good location of Asuogyaman district in terms of market accessibility, with access to about ten (10) market centers. There are many restaurants and local food joints popularly known as “chop bars” which use a lot of mushrooms in their menu. Talk of the hotels like Volta hotel, Royal Senchi hotel, Akosombo Continental hotel among others that use mushroom for various dishes, eg. Pizza.

Population

According to Osuala (2005), the population in research is the sum of units that have specific established features. Thus, it is the group of interest to the researcher; the group to whom the researcher wishes to generalize the findings of his/her study. The target population for this study is the youth and

the mushroom farmers in the Asuogyaman district. The total number of respondents for the study was an estimated 200 youth and five (5) mushroom farmers. The population of youth were people who were unemployed and had expressed interest in mushroom farming. This was the reason for using them for the study. These people formed the frame from which the sample was selected for the study.

Sample and Sampling Procedure

Sample has been defined by Ofori and Dampson (2011) as the portion of a population that is chosen and used for an investigation. The sample was drawn out of the population. The sample size for the study is 132 youth and five mushroom farmers. The sample size of 132 was chosen based on the sample size determination table of Krejcie and Morgan (1970). According to Krejcie and Morgan's (1970) table for determining sample size, a sample of 132 is suitable for a population of 200. The sampling procedures used were purposive, convenience and census sampling procedures. Creswell (2002) revealed that in purposive sampling, researchers use intentional means in chosing specific individuals and study areas to explore and understand a subject of interest. Purposive sampling was used in sampling unemployed youth who were interested in mushroom farming.

Convenience sampling was adopted in sampling the five mushroom farmers to be interviewed. Convenience sampling according to Ofori and Dampson (2011) is a sampling procedure in which the researcher uses respondents who are simply available. This approach is mostly used when the population is difficult to reach. Since the mushroom farmers were mostly busy, this sampling procedure was considered appropriate.

Data Collection Instrument

This study included a questionnaire and a semi-structured interview guide. A questionnaire is a research tool used in surveys that consists of carefully crafted questions designed to elicit self-reported responses regarding general and personal topics (Gravetter & Forzano, 2009). Despite the drawback of being restricted to a population who have the intellectual ability in reading and writeing, the questionnaire was deemed acceptable for the study since it is less expensive and time efficient. There is also the benefit of maintaining anonymity because there is no face-to-face interaction as in an interview (Kumar, 1999).

The questionnaire that was used was a self-designed questionnaire. The questionnaire had six sections. Section A covered the socio-demographic data of respondents. The Section B solicited information from the respondents on the prospects of mushroom production. The Section C also sought to find out how mushroom production reduces unemployment. Section D also sought to find out the profitability of mushroom cultivation. The last section, which is Section E, solicited information on the constraints associated with mushroom production. The questionnaire was a four point likert-type scale including Strongly Agree, Agree, Disagree and Strongly Disagree. The questionnaire was administered to the unemployed youth in the study.

A semi-structured interview guide, according to Ogah (2013), is an instrument used to collect data through interaction between an interviewer and an interviewee that is guided by a few general questions whose follow-up questions depend on the direction of flow of discussion. The interview guide was used in collecting data from the mushroom farmers.

Validity

My supervisor content verified the questionnaire. According to Nitko (1996), content-related validity is based on a determination of how well the items, tasks, or questions on a test sufficiently reflect the topic of interest. According to Ogah (2013), content validity is also concerned with quantity and coverage. My supervisor content verified the questionnaire since, according to Nitko (1996), expert opinion is utilized to offer proof of content validity.

Reliability

In the view of Nitko (1996), reliability refers to the consistency or stability of the scores that we get from a test or assessment procedure. In establishing the reliability of the questionnaire, internal consistency method was used. The Cronbach alpha co-efficient was used in estimating the internal consistency. The reliability figure was obtained after the pilot testing. The reliability figure obtained was 0.76 Cronbach alpha co-efficient. This implies that the questionnaire was reliable for the study.

The reliability of the semi-structured interview guide was obtained by using inter-rater reliability. In using inter-rater reliability, more than one rater transcribed the interview data and the data was compared to ascertain the degree of consistency among the data of the raters. The interview guide was deemed reliable based on the consistency among the data of the raters.

Pre-Testing

The instrument was pre-tested in the Lower Manya district. This district was chosen because of the similarity of characteristics between the Lower Manya district and the Asuogyaman district. Specifically, 30

unemployed youth and two mushroom farmers took part in the pre-testing. They were selected using convenience approach. The pre-testing helped to establish the reliability of the of the instrument. Also, from the pre-testing, it was realized that there was no need to add a section of the employement details as part of the questionnaire since all the youth were unemployed. The earlier questionnaire used for the pre-testing had that portion as part.

Data Collection Procedure

The Department of Management Studies provided an introduction letter to be taken to the study location. This made it easier to obtain authorization from the authorities in the region of research. The respondents' consent was then requested in order to carry out the study. The study's participants were also promised that ethical problems such as anonymity, confidentiality, and autonomy would be taken into account. The names of the respondents were not required, information provided was used for only academic purposes for which it was taken and respondents chose to be a part of the study on their own and were not forced. Two weeks were used in collecting the quantitative data while another two weeks were used in collecting the qualitative data. At each session of data collection, the purpose of the study was explained to the respondents and given the opportunity to ask questions and seek clarifications. The data obtained from the interview was kept in private and not exposed to others.

Some advantages of an interview as opined by Ogah (2013) include its ability for collecting richer data and getting the opportunity to seek clarifications and thereby gathering more accurate data. The lack of anonymity always presents a disadvantage but it was still appropriate because it afforded

the respondents the opportunity to clearly explain and respond to the questions.

Ethical Issues

Consent, anonymity, autonomy, and secrecy were all considered ethical problems. Before collecting data from the respondents, the researcher acquired their permission. Again, the researcher ensured that there was participant autonomy. The respondents were made to choose whether to be involved in the study or not. The researcher also ensured that there was participant anonymity. The identity of the respondents was not exposed or made known to others. Further, the researcher ensured that there was confidentiality. In doing this, the data obtained from the respondents were stored securely and kept from any third party. Finally, the researcher used the American Psychological Association (APA) style of referencing in properly crediting any information that was used in the study to their right authors. This helped in avoiding plagiarism.

Data Processing and Analysis

The quantitative data collected were manually checked for errors, then coded and entered into the Statistical Product and Service Solution (SPSS) version 21 software**.** The data was analysed by using descriptive statistics such as frequencies and %ages. The results were then presented in tables. The qualitative data obtained was analysed using thematic analysis. The results were discussed in relation to relevant literature.

Chapter Summary

This chapter discussed the technique used to carry out the study. For the investigation, a descriptive survey was used. Purposive, convenience, and

census sampling techniques were used to choose a sample of 132 youth and five farmers. Questionnaires and an interview guide were used to collect data. The questionnaire has a reliability coefficient of 0.76. Data was collected over a two-week period. The quantitative data was descriptively analyzed using frequencies and percent ages, whilst the qualitative data was analyzed using theme analysis. The findings were discussed in light of the relevant literature.

CHAPTER FOUR

RESULTS AND DISCUSSION

Introduction

This chapter presents the results and discussion of the data collected and analysed. The reslts and discussion are presented together.

Background Characteristics of Respondents

The demographic characteristics of the youth in the study are presented in this section. It covers the sex, age, level of education and employment status of respondents. It is shown that 70% of the respondents are males while 30% of the respondents are females. In terms of age, the respondents sampled were categorized according to their ages, with the minimum age being 18 years and maximum age being 35 years which are the age cut-off for youth in Ghana. It was shown that 55% of the respondents are between the ages of 26 and 35 while 45% are between the ages 18 and 25. In terms of education, it was found that 45% of the respondents have basic level of education while a 20% of the respondents had tertiary level of education.

The qualitative data was obtained from interviewing five different mushroom farmers in the district. All the five farmers were males and had been engaged in mushroom cultivation for a minimum of five years. In terms of age, all the respondents were beyond 35 years of age. The respondents were interviewed in line with the objectives of the study.

Prospects of mushroom production in Asuogyaman District of the Eastern Region

This research question sought to identify the prospects of mushroom production in the Asuogyaman District. In addressing this objective, the respondents were provided with statements to indicate their agreement or disagreement. The data obtained was analysed descriptively using frequency counts and %ages. The results are presented in Table 1. Table 1 shows the prospects of mushroom production as perceived by the respondents (youth) in the study.

Table 1: Prospects of Mushroom Production (N=132)

Statement	Agree		Disagree	
	Freq.	%	Freq.	%
People are becoming more aware of mushroom production	79	59.8	53	40.2
The mushroom production industry is beginning to gain roots	82	62.1	50	37.9
There is growing export value for mushrooms	75	56.8	57	43.2
There is increasing awareness of the medicinal value of mushrooms	55	41.7	77	58.3
There is increasing awareness of the nutritional value of mushrooms	62	47.0	70	53.0
Environmental conditions are suitable for mushroom production	92	69.7	40	30.3

Source: Field Survey (2017)

It is shown in Table 1 that the majority of the respondents (69.7%) agreed that environmental conditions are suitable for mushroom production. Again, it is shown that 62% of the respondents agreed that the mushroom production industry is beginning to gain roots in the district and the nation.

About 60% of the respondents also indicated that people are becoming more aware of mushroom production.

Further, it is shown in Table 1 that, more than half of the respondents disagreed that there was increasing awareness of the medicinal value (58.3%) and the nutritional value (53%) of mushrooms. The findings show that mushroom production was gaining roots and that the environmental conditions were favourable for mushroom production. However, the awareness of the medicinal and nutritional value of mushrooms was not high.

All the five respondents interviewed were asked of their views regarding the prospects of mushroom production. All the respondents indicated that mushroom production has prospects for the future. The major themes in their views included the fact that mushroom production was gaining awareness and recognition. However, the respondents indicated that a lot remains to be done to make people more aware of the nutritional and medicinal value of mushrooms. Specifically, some of the statements of the respondents are:

...mushroom production will be good for the country in the years to come since people are becoming aware of mushrooms.

- 40 year old farmer

...I think even though people are aware of mushroom cultivations, there still remains a lot to be done to ensure that the value of mushrooms in terms of food and in terms of medicine.

- 43 year old farmer

It is time for Ghanaians to value mushroom production. The conditions in Ghana favour the production of mushrooms and so the prospect is good for the future.

- 38 year old farmer

Overall, the first objective showed that mushroom production was gaining roots and that the environmental conditions were favourable for mushroom production. Again, the study showed that even though there was awareness of mushroom production, a lot remained to be done to make people more aware of the nutritional and medicinal value of mushrooms. These findings of the study are understandable. This is because in Ghana, mushroom production is beginning to gain roots. However, several people are still not aware of all the nutritional and medicinal benefits that mushrooms offer. The prospects are, however, bright for the country. In time past, people only saw mushrooms as edible food for households and were only cultivated in smaller quantities. Currently, there is a larger recognition and even realisation of the export value of mushrooms.

The findings are consistent with those of Frempong (2000), who conducted a research to investigate the extent to which farmers taught by the Food Research Institute have taken up mushroom cultivation, as well as the profitability of mushroom production. According to the Frempong research, there is a rising tendency in mushroom cultivation by individual farmers in the Greater Accra region, and the bulk of the Food Research Institute's trainees are involved in mushroom production. The implication is that mushroom production was beginning to gain roots and gaining awareness in the Greater Accra region of Ghana. Again, the findings of the current study confirm the

view that the mushroom industry, even though is considered by some to be a new and small industry, is steadily growing (Haimid, Rahim, & Dardak, 2013). The similarities among the findings point to the fact that compared to the years past, the mushroom industry is gaining recognition and getting established in several countries. The prospect of mushroom cultivation is therefore bright.

Attractiveness of Mushroom Production in Generating Employment in the Asuogyaman District in the Eastern Region

This objective addressed the attractiveness of mushroom production in generating employment in the Asuogyaman District in the Eastern Region. The data obtained from the respondents were analysed using frequencies and %ages. The results are presented in Table 2.

Table 2: Attractiveness of Mushroom Production in Generating Employment (N=132)

Statement	Agree		Disagree	
	Freq	%	Freq	%
Mushroom production requires less capital compared to other ventures	93	70.5	39	29.5
Mushroom production does not require too much skills	78	59.1	54	40.9
Mushroom production does not require too much technology	76	57.6	56	42.4
Mushroom production can be done without access to vast land	83	62.9	49	37.1
Cooperating and producing mushroom in a team can be done to reduce cost for youth	81	61.4	51	38.6

Source: Field Survey (2017)

Table 3 shows the views of respondents on how mushroom production can reduce unemployment among young people. The responses in Table 3

reflect the ways in which youth unemployment can be reduced through mushroom production. It is revealed by about 71% of the respondents that mushroom production requires less capital compared to other ventures. About 63% of the respondents also indicated that mushroom production can be done without access to vast land. Further, 61% of the respondents agreed that cooperating and producing mushroom in a team can be done to reduce cost for youth. The results show that mushroom production is attractive and can be used to generate employment in the sense that the capital required is small, no vast land is needed and the production can be done in teams to reduce cost.

The farmers were also asked to indicate how mushroom production can generate employement among the youth. All the respondents were positive that if mushroom production is given the needed attention by the government and all concerned stakeholders then it can generate employment for the youth. The respondents indicated this because, according to them, not a lot is required in terms of land, capital, skills, technology and human resource. Specifically, some of the statements of the respondents are:

If the government supports young people with the little capital required, I am sure young people will go into mushroom production.

- 45 year old farmer

Well, since not a huge land or capital is required I believe with some little help, young people can be engaged in mushroom production.

- 43 year old farmer

The government can support young people in groups, give them some little training and provide them some little financial support to enter mushroom

production. The requirements are not much compared to other ventures like cocoa or oil palm cultivation.

- 38 year old farmer

From the results, it was found that mushroom production can reduce youth unemployment since the capital required is small, no vast land is needed and the production can be done in teams to reduce cost. Due to all these, young unemployed youth can be given some little push in terms of capital and training to engage in mushroom cultivation. This can help reduce the level of unemployment in the district and the entire country as a whole. On the basis of this, mushroom production can be advocated across the entire country.

The current study's findings complement the conclusions of Sawyerr (1991), who said that mushroom cultivation in Ghana does not necessarily require a large amount of money to begin with and may even be produced in cane baskets and in the kitchen. This way, mushroom production can assist to minimize young unemployment. Similarly, the current study's findings are consistent with those of Shakil et al. (2014), who discovered that in Bangladesh, mushroom cultivation could provide a new opportunity for landless and unemployed people because it does not require cultivable land and can be grown in a room by racking vertically. Thus, the requirements for mushroom production are not much and so young unemployed people can make mushroom production a means of gainful employment. Further, the findings of the current study support the findings from the report of Mamaland Mushroom Farm (2015) which showed that mushroom cultivation in Tanzania could help reduce vulnerability to poverty, malnutrition and unemployment since it does not require big land space or any significant big capital

investment. However, even though the requirements are not much, the returns are good. The similarity among the findings could be because there is a general agreement that mushroom cultivation can help reduce the unemployment situation in the different countries.

Profitability of Mushroom Production in the Asuogyaman District of the Eastern Region

In meeting this objective, the respondents were provided with statements to which they had to indicate their agreement or disagreement. The data were analysed using frequencies and %ages. The results of the analysis are presented in Table 3.

Table 3: Profitabiliity of Mushroom Production in the Asuogyaman District of the Eastern Region (N=132)

Statement	Agree		Disagree	
	F	%	f	%
There is a growing market for mushroom in the district	68	51.5	64	48.5
Mushrooms can be produced all year round	103	78.0	29	22.0
Mushroom production can provide all year round income	96	72.7	36	27.3
There is sufficient support for mushroom farmers in the district	72	55.5	60	45.5
Mushroom production can provide food security for the district	101	76.5	31	23.5
The cost of producing mushroom in the district is less than the profit gained	77	58.3	55	41.7

Source: Field Survey (2017)

Table 4 shows the views of respondents regarding the profitability of mushroom cultivation in the Asuogyaman District of the Eastern Region. The table shows that 78% of the respondents indicated that mushrooms can be produced all year round. Again, it is shown that about 77% of the respondents indicated that mushroom production is profitable because it can provide food

security for the district. Further, about 73% of the respondents viewed mushroom production as providing all year round income making it a profitable venture in the district.

The mushroom farmers interviewed viewed mushroom production as profitable in the district mainly because it provides all year round income and food. Again, the respondents were of the view that the profit gained from mushroom cultivation is bigger than the cost involved because of the growing market for mushrooms. Specifically, the following are some of the statements of the respondents:

...Mushroom production brings financial benefits throughout the year and the gains are more than the costs incurred.

- 36 year old farmer

Farmers who engage in mushroom cultivation get more in return compared to how much they spend. Mushroom production in the district is profitable.

- 38 year old farmer

With a little money spent and some few requirements, a mushroom farmer can get a lot in return throughout the year.

- 43 year old farmer

The findings showed that mushroom production is profitable since it can be done all year thereby providing all year round income and food security, the cost of production is less than the profit gained because of the growing market for mushrooms. In the Asuogyaman District, the findings are understandable. The district has favourable whether condition, good location in terms of market accessibility, with access to about ten (10) market centers. There are many restaurants and local food joints popularly known as "chop

bars" which use a lot of mushrooms in their menu. Hotels such as Volta hotel, Royal Senchi hotel, and Akosombo Continental hotel use mushrooms for various dishes such as Pizza. All these make mushroom production profitable in the Asuogyaman District.

The findings are consistent with those of Shakil et al. (2014), who discovered that by spending a little amount of cash and labor in mushroom growing, it was feasible to generate a handsome profit. This makes mushroom cultivation a profitable venture. Again, mushrooms are often considered to provide a fair substitute for meat, with at least a comparable nutritional value to many vegetables (Mamaland Mushroom Farm, 2015). In this sense, mushroom production can produce all year round food supply. The profitability of mushroom cultivation has been confirmed by several other researchers and authors. According to Seraj (2017), mushroom farming can be a profitable business with low capital investment. In essence, mushroom cultivation is profitable because of the returns from the investment made. Several gains are made from the small investment made in mushroom cultivation.

Constraints Associated with Mushroom Production in the Asuogyaman District of the Eastern Region

The respondents were required to indicate their agreement or disagreement with several statements reflecting challenges associated with mushroom production. The results of the frequency and %age analysis of the data are shown in Table 4.

Table 4: Constrains Associated with Mushroom Production (N=132)

Statement	Agree		Disagree	
	F	%	F	%
Unfavourable climatic conditions	65	49.2	67	50.7
Lack of financial support	117	88.6	15	11.4
Difficulties in marketing	83	62.9	49	37.1
Irregular supply of water	85	64.4	47	35.6
Lack of storage facilities	103	78.0	29	22.0
Pest infestations	75	56.8	57	43.2
Negative perceptions about cultivated mushrooms	98	74.2	34	25.8
Difficulty in acquisition of production space	74	56.1	58	43.9

Source: Field Survey (2017)

Table 4 shows the constraints or challenges associated with mushroom production in the Asuogyaman District of the Eastern Region. It can be seen from the table that about 89% of the respondents indicated that the lack of financial support was challenge in mushroom production. Again, 78% of the respondents indicated that the lack of storage facilities was a challenge in mushroom production. Further, 74% of the respondents also revealed that negative perception about cultivated mushrooms was a challenge in mushroom production.

From the perspective of the mushroom farmers interviewed, it was revealed that the main challenge that mushroom farmers faced had to do with the lack of financial support. The mushroom farmers also face the challenge of storage. Aside this, the respondents also indicated that some people have the

wrong perception about mushroom that is cultivated. Some of the statements of the respondents include:

There is not much financial support for mushroom production in Ghana. This makes it difficult to engage in mushroom cultivation.

- 45 year old farmer

...Getting facilities to store cultivated mushrooms presents a challenge for mushroom farmers.

- 36 year old farmer

Some people do not prefer cultivated mushroom to the naturally grown mushroom. This makes our work as mushroom farmers difficult. We have to change the perceptions of some consumers.

- 43 year old farmer

Overall, the study found that the lack of financial support, storage facilities and negative perceptions of some consumers affect mushroom cultivation. These challenges could be general challenges associated with most farming or agriculture ventures in Ghana. Even though the capital required to start mushroom cultivation is not much, people who want to enter mushroom farming need some form of financial support. Aside this, storage has not been a strong suit for all forms of farming in Ghana. The same can be applied to mushroom cultivation. Storage is a problem for the mass cultivation of mushrooms. This leads to most of the mushroom cultivated on a large scale going bad when not sold off or consumed. The wrong perceptions about cultivated mushroom could be because of the perception among most Ghanaians that naturally grown agriculture products are better than cultivated ones.

The findings of the study confirm the findings of Seraj (2017) who indicated that in Bangladesh, the unpopular state of mushroom production might be because of the social mindset or misconceptions about cultivated mushrooms. Thus, the misconceptions about cultivated mushrooms present a challenge to mushroom farmers. Again, the findings of the current study support the findings of Agyei et al. (1993) who reported that inadequate storage facilities do not allow farmers to maintain some kind of food security. Therefore, the cultivated mushrooms end up spoiling. In this sense, mushroom farmers have to battle with the lack of storage facilities. Shakil et al. (2014) have also revealed that mushroom farmers are facing many problems such as unavailability of spawns or seeds, inadequate loans, lack of promotion among others. All these are critical challenges because of the lack of financial support. This was also revealed in the current study. The current study's findings are similarly consistent with those of Frempong (2000), who discovered that the restrictions to mushroom production, as mentioned and prioritized in decreasing order of significance by farmers, include inadequate marketing, a lack of finance, and a paucity of water. These obstacles make it difficult for mushroom farmers to do their jobs.

Chapter Summary

This chapter dealt with the results and discussion of the study. Data was collected from a sample of 132 youth and five mushroom farmers. The quantitative data was analysed descriptively using frequencies and %ages while the qualitative data was analysed using thematic analysis.

The study revealed that mushroom production was gaining roots and that the environmental conditions were favourable for mushroom production.

However, even though there was awareness of mushroom production, awareness of the nutritional and medicinal value of mushrooms was minimal. The study also showed that mushroom production can be attractive ingenerating employment for youth because the capital required is small, no vast land is needed and the production can be done in teams to reduce cost.

In addition, the study revealed that mushroom production is profitable since it can be done all year thereby providing all year round income and food security. The cost of production is also less than the profit gained because of the growing market for mushrooms in the district as such making mushroom production a profitable venture. Finally, the study showed that the lack of financial support, storage facilities and negative perceptions of consumers were the challenges that affect mushroom cultivation.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Introduction

This chapter presents the summary, conclusions and recommendations of the study. Suggestions for further research are also presented in this chapter.

Summary

The purpose of this study was to assess the prospects of Mushrooms production in reducing youth unemployment. Specifically, the study sought to find out the prospects of mushroom production in Asuogyaman District of the Eastern Region. Also, the study aimed at finding out how attractive is mushroom production in generating employment, the profitability of mushroom cultivation and the constraints associated with mushroom production in the Asuogyaman District of the Eastern Region.

Literature was reviewed under sub-headings related to mushroom cultivation, the prospects, how it can reduce unemployment, the profitability and the challenges or constraints. For the study, a mixed methods research technique was employed. For the investigation, a descriptive survey was used. Purposive and convenience sampling techniques were used to choose a sample of 132 youth and five farmers. Questionnaires and an interview guide were used to collect data. The numeric data were descriptively analyzed using frequencies and percent ages, whilst the qualitative data were analyzed using theme analysis. The findings were discussed in light of the relevant literature.

Key findings

The following are the key findings of the study:

1. The study found that mushroom production was gaining roots and that the environmental conditions were favourable for mushroom production. However, even though there was awareness of mushroom production, awareness of the nutritional and medicinal value of mushrooms was minimal.
2. Again, the study found that mushroom production was attractive and can generate employment for the youth because the capital required is small, no vast land is needed and the production can be done in teams to reduce cost.
3. Further, it was revealed in the study that mushroom production is profitable since it can be done all year thereby providing all year round income and food security. Again, the cost of production is less than the profit gained because of the growing market for mushrooms in the district.
4. Finally, the study found that the lack of financial support, storage facilities and negative perceptions of consumers were challenges that affect mushroom cultivation.

Conclusions

From the findings of the study, it can be concluded generally that there are good prospects for mushroom cultivation in reducing unemployment in the district and Ghana as a whole. It is concluded that mushroom cultivation provides good prospect for ending the unemployment menace in the district.

The capital required is not huge. A little support in terms of capital and young unemployed people can be gainfully employed.

Also, it is concluded that mushroom production can be done throughout the year and so provides all year round income and food. Finally, it is concluded that mushroom farmers do not get financial support to invest fully in their production. Produce may also be lost due to the lack of storage facilities and the negative perceptions of some consumers regarding cultivated mushrooms.

Recommendations

The following recommendations are made by the study:

1. The youth in the Asuogyaman District should seek support from the District Office to be able to engage fully in mushroom cultivation.
2. Mushroom farmers should seek for financial support from the District Office as well as financial institutions to be able to invest and expand their mushroom cultivation.
3. Unemployed youth in the Asuogyman District should make mushroom cultivation a venture that they can enter so as to make themselves employable and also create employment for others.

Suggestions for further research

The researcher suggests that further research uses a larger sample size to help increase the extent to which the results can be generalized. Again, it is suggested that further research consider investigating into which types of mushrooms are most profitable in the country. This can help ensure that

mushroom farmers venture into the right or appropriate farming to increase the profitability that they stand to gain.

REFERENCES

Addae-Kagyah, K. A. (1993). Cultivating the straw mushroom (Volvariella Volvaceal) in South Africa: The possibilities. *Journal of the Southern AfricaSociety for Horticultural Sciences, 1*, 111-112.

Afetsu, J. Y. (2014). *Postharvest losses in oyster mushroom (agaricus ostreatus) produced in the Ho Municipality of the Volta Region of Ghana*. (Unpublished master's thesis). Kwame Nkrumah University of Science and Technology, Kumasi, Ghana.

Agyei, J. K., Asuming-Brempong, S., Fiadjoe, F. Y. M., Obeng, F. K., Saah, M. K., & Tachie-Menson, C. K. B. (1993). *Agricultural economics and extension for senior high schools*. Accra, Ghana: H. Gangasam and Sons.

Ahuma, K. D. (2010). *The effect of composting subtrates on the growth, yield and nutrient content of the oyster mushroom Pleurotus Ostreatus*. (Unpublished master's thesis). University of Cape Coast.

Amadeo, K. (2021). *Keynesian economics theory: How it works with examples*. Retrieved from https://www.thebalance.com/keynesian-economics-theory-definition-4159776

Apetorgbor, M. M., Apetorgbor, A. K., & Nutakor, E. (2005). *Utilization and cultivation of edible mushrooms for rural livelihood in southern Ghana*. Paper presented at the 17th Commonwealth Forestry Conference in Colombia, Sri Lanka.

Arestsis, P., & Skott, P. (1995). Conflict, wage relativities and hysterisis in the UK wage determination. *Journal of Post Keynesian Economics, 3*, 43-47.

Atikpo, M., Onokpise, O., Abazinge, M., Louime, C., Dzomeku, M., Boateng, L., & Awumbilla, B. (2008). Sustainable mushroom production in Africa: A case study in Ghana. *African Journal of Biotechnology, 7*(3), 249-253.

Babbie, E. R. (Eds.). (2010). *Fundamentals of social research*. London: Cengage Learning.

Barnier, B. (2020). *What is Keynesian economics*? Retrieved from https://www.investopedia.com/terms/k/keynesianeconomics.asp

Bempah, B. (2011). *Mushroom in Ghana project*. Retrieved from http://www.mushroomsinghana.org

Bhupinder, K., & Ibitwar, B. B. (2007). *Mushroom cultivation and processing*. Retrieved from http://119.93.23.123/resourcematerials/INDUSTRIES,%20SMEs/Food%20Processing%20Technologies/NOT%20INCLUDED/food/mushroom_cultivation.pdf

Boateng, P. (2019). *Asuogyaman district directorate*. Retrieved from http://mofa.gov.gh/site/sports/district-directorates/eastern-region/199-asuogyaman

Brennan, M. H., & Gormley, T. R. (1998). *Extending the shelf life of fresh slicedmushrooms*. Retrieved fromhttp://www.teagasc.ie/research/reports/foodprocessing/4196/eopr-4196.pdf.

Brouk, B. (1975). *Plants consumed by man*. London: Academic Press Inc.

Chang, S. T., & Wasser, S. P. (2016). *The cultivation and environmental impact of mushrooms*. Oxford: Oxford University Press.

Chletsos, M. (1996). *Employment policy: From the reproduction to production process*. Paper presented at CSE'96 Restructuring the Left, July 12-14 1996, The University of Northumbria at Newcastle.

Creswell, J. (2002). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research*. Upper Saddle River, NJ: Merrill Prentice Hall.

Creswell, J. W. (2009). *Research design: Qualitative, quantitative, and mixed methods approaches* (3rd ed.). Thousand Oaks, CA: Sage Publications.

Creswell, J. W. (2013) *Research design: Qualitative, quantitative, and mixed methods approaches* (4th ed.). London: Sage Publications.

Creswell, J. W., & Plano Clark, V. L. (2007). *Designing and conducting mixed methods research*. Thousand Oaks, CA: Sage Publications.

Dary, S. K., & Kuunibe, N. (2012). Participation in rural non-farm economic activities in Ghana. *American International Journal of Contemporary Research, 2*(8), 9-14.

Diao, X., Hazell, P., Resnick, D., & Thurlow, J. (2007). *The role of agriculture in development: Implications for sub-saharan Africa*. Washington, DC: International Food Policy Research Institute.

Eastern Region Co-Ordinating Council. (2020). *Asuogyman district profile*. Retrieved from http://www.easternregion.gov.gh/index.php/asuogyaman/

Emerson, M. (1988). Regulation or deregulation of the labour market. *European Economic Review, 32*, 775-817.

Ferdousi, J., Al Riyadh, A., Hossain, M. I., Saha, S. R., & Zakaria, M. (2019). Mushroom production benefits, status, challenges and opportunities in Bangladesh: A review. *Annual Research & Review in Biology*, *34*(6), 1-13.

Food and Fertilizer Technology Centre(2007). *Postharvest losses of fruits andvegetables in Asia*. Retrieved from http://www.agnet.org/library/ac/1993d/

Fraenkel, J. R., Wallen, N. E., & Hyun, H. H. (2012). *How to design and evaluate research in education* (8th ed.). New York, NY: Mc Graw HIll.

Frempong, A. (2000). *A study of the profitability of mushroom cultivation in the Greater Accra Region of Ghana*. (Unpublished master's dissertation). University of Ghana, Legon.

Frimpong, P. (2012). *Unemployment in Africa: What policy makers should know*. Retrieved from https://www.modernghana.com/news/435566/unemployment-in-africa-what-policy-makers-should-know.html

Gary, L., Allshouse, J., & Biin-Hwan, L. (2003). *Factors affecting U.S. mushrooms consumption*. Retrieved fromhttp://www.ers.usda/gov/publication/VGS/Mar03/vgs29501.pdf

Ghana Statistical Service. (2014). *Asuogyaman district*. Accra, Ghana: Author.

Gianotti, B. M., Cleaver, M. P., Cleaver, P. D., Bailey, C., & Holliday, J. C. (2009). *21st Century diversified agriculture project for Ghana - Aloha Ecowas Development Corporation LTD - Diversified agriculture Part 1: Simplified and lower cost methods for mushroom cultivation in Africa*. Retrieved from: http://www.alohaecowas.com/diversified-agriculture-part1.html.

Gittinger, J. P. (1982). *Economic analysis of agricultural projects*. Baltimore and London: The Johns Hopkins University Press.

Gravetter, F. J., & Forzano, L. B. (2009). *Research methods for the behavioural sciences* (3rd ed.). Wadsworth: Cengage Learning.

Haimid, M. T., Rahim, H., & Dardak, R. A. (2013). Understanding the mushroom industry and its marketing strategies for fresh produce in Malaysia. *Economic and Technology Management Review, 8*, 27-37.

Hope Sr., K. R. (2012). Engaging the youth in Kenya: Empowerment, education, and employment. *International Journal of Adolescence and Youth, 17*(4), 221-236.

International Labour Organisation. (ILO). (2011). *Global employment trends for youth*. Geneva: Author.

Kazi, T. H. (2013). *Youth unemployment in the Caribbean: Social and economic backgrounds*. Retrieved from unpan1.un.org/intradoc/groups/public/documents/un/unpan014955.pdf

Kelley, K., Clark, B., Brown, V., & Sitzia, J. (2003). Good practice in the conduct and reporting of survey research. *International Journal for Quality in Health Care, 15*(3), 261-266.

Kenton, W. (2020). *What Is neoclassical economics*? Retrieved from https://www.investopedia.com/terms/n/neoclassical.asp

Krejcie, R. V., & Morgan, D. W. (1970). Table for determining sample size from a given population. *Educational and Psychological Measurement*, *30*(3), 607-610.

Kudadjie, J. N., & Aboagye-Mensah, R. K. (2004). *Christian social ethics*. Accra, Ghana: Asempa Publishers.

Kumar, R. (1999). *Research methodology: A step-by-step guide for beginners*. London: Sage.

Lay, J., & Schuler, D. (2007). *Income and diversification and poverty in a growing agricultural economy: The case of Ghana*. (Unpublished master's thesis). University of Gottingen.

Maher, M. J., Smyth, S., Dodd, V. A., McCabe, T., Magette, W. L., Duggan, J., & Hennerty, M. J. (2000). *Managing spent mushroom compost*. Dublin: Teagasc.

Mamaland Mushroom Farm. (2016). *Roles played by mushroom cultivation in poverty, malnutrition and unemployment reduction*. Retrieved from http://mamalandmushroomproject.blogspot.com/2016/06/roles-played-by-mushroom-cultivation-in.html

Mensah, K. K. (2014). *Assessing the livelihood opportunities of rural poor households: A case study of Asutifi District*. (Unpublished master's thesis). Kwame Nkrumah University of Science and Technology, Kumasi.

Mohanty, S., Mohanty, R. K., Mandal, K. G., Ghosh, S., Rautaray, S. K., & Kumar, A. (2016). Impact of water resources development and technology interventions on livelihood of farmers in Eastern India: A case study. *Irrigation and Drainage, 65*, 724-733.

Msigwa, R., & Kipesha, E. F. (2013). Determinants of youth unemployment in developing countries: Evidences from Tanzania. *Journal of Economics and Sustainable Development, 4*(14), 67-76.

Mutema, M., Basira, K., Savadye, D., & Parawira, W. (2019). Assessment of oyster mushroom production and profitability in Harare Urban and Periurban Areas (RUWA), Zimbabwe. *Tanzania Journal of Science, 45*(1), 114-130.

NABCO. (2018). *Nation builders corps*. Retrieved from https://nabco.gov.gh/about/

National Youth Policy. (2010). *The youth and employment*. Accra, Ghana: Ministry of Youth and Sports.

Ninfaa, D. A. (2011). *Postharvest handling of the edible parts (leaves and fruits) of the desert date* (*Balanite aegyptiaca*). (Unpublished master's thesis). Kwame Nkrumah University of Science and Technology, Kumasi.

Nitko, A. J. (1996). *Educational assessment of students* (3rd ed.). Englewood Cliffs, NJ: Merill/Prentice Hall.

Ntisha, A. (2015). *Keynesian theory of employment (With diagram)*. Retrieved from https://www.economicsdiscussion.net/employment-theories/keynesian-theory-of-employment-with-diagram/3990

Oei, P. (1991). *Manual on mushroom cultivation*. Amsterdam: TOOL Foundation.

Oei, P. (1996). *Mushroom cultivation with special emphasis on appropriate techniques for developing countries*. Leiden, Netherlands: Tool Publications.

Ofori, R., & Dampson, D. G. (2011). *Research methods and statistics using SPSS*. Amakom-Kumasi, Ghana: Payless Publication Limited.

Ogah, J. K. (2013). *Decision making in the research process: Companion to students and beginning researchers*. Accra, Ghana: Adwinsa Publications (Gh) Ltd.

Osuala, E. C. (2005). *Introduction to research methodology* (3rd ed.). Onitsha: Africana First Publishers Ltd.

Plecher, H. (2020). *Youth unemployment rate in Ghana in 2020*. Retrieved from https://www.statista.com/statistics/812039/youth-unemployment-rate-in-ghana/

Royse, D. J. (2003). *Cultivation of oyster mushrooms*. (Unpublished thesis). Penn State's College of Agricultural Science.

Sawyerr, L. C. (1991). *Grow your own mushroom - Part I: A Handbook on outdoor cultivation for Ghanaian farmers*. Accra, Ghana: Food Research Institute.

Senyah, J. K., & Robinson, R. K. (1988). Mushrooms from waste materials. *Developments in Food Microbiology, 4*(67), 1-22.

Seraj, S. (2017). *Bright prospect of mushroom farming*. Retrieved from http://www.thedailystar.net/country/bright-prospect-mushroom-farming-1425643

Shakil, M. H., Tasnia, M., Munim, Z. H., & Mehedi, M. H. (2014). Mushroom as a mechanism to alleviate poverty, unemployment and malnutrition. *Asian Business Review, 4*(9), 31-34.

Stephen, D. (2001). Livelihood insecurity and social protection: A re-emerging issue in rural development. *Development Policy Review, 19*(4), 507-519.

Tandoh-Offin, P., & Awuse, N. (2013). Internal migration and poverty reduction in Ghana. *Journal of Economics and Sustainable Development, 4*(18),63-66.

Thakur, M. P. (2014). Present status and future prospects of tropical mushroom cultivation in India: A review. *Indian Phytopathology, 67*(2), 1-7.

Twumasi, I. K. (2013). *The challenges of youth unemployment to the church in Ghana: Response of the Methodist Church Kumasi Circuit and Church of God Patasi District*. (Unpublished master's thesis). Kwame Nkrumah University of Science and Technology.

Uwa, O. G., Chuke, P. I., & Elton, M. E. (2016). Youth unemployment and insecurity: Impediment of nation-building in Nigeria. *Research on Humanities and Social Sciences, 6*(2), 189-195.

World Bank. (2020). *Report on youth unemployment*. Washington, DC: Author.

APPENDICES

APPENDICES

APPENDIX A

UNIVERSITY OF CAPE COAST

COLLEGE OF DISTANCE EDUCATION

DEPARTMENT OF BUSINESS

QUESTIONNAIRE FOR YOUTH

Dear Respondent,

The purpose of this study was to assess the prospects of Mushrooms Production in reducing youth unemployment in Asuogyaman District of the Eastern Region of Ghana.This questionnaire seeks to gather information concerning the prospects of Mushrooms Production. Your participation in this study is very much valued. Any information you provide will be kept confidential. Please feel free to participate in the study.

Thank you.

Please respond by ticking [√] and writing where necessary.

Section A - Background Information

Direction: Kindly provide the required information or put a tick **(√)** in the appropriate column to indicate your response to each of the items in this section.

1. Gender: Male [ ] Female [ ]

2. Age: 18-25 [ ] 26-35 [ ]

3. Level of Education: Basic [ ] Secondary/Vocational [ ]

Tertiary [ ]

4. Employment Status: Fully employed [ ] Casual/Part-time [ ]

Unemployed [ ]

5. Category of Occupation: Self-employed [ ] Government Worker [ ]

Private Firms [ ]

Please respond to the items using the scale:

Strongly Agree=SA, Agree=A, Disagree=D, and Strongly Disagree=SD

Section B - Prospects of Mushroom Production

Statement	SA	A	D	SD
1. People are becoming more aware of mushroom production				
2. The mushroom production industry is beginning to gain roots				
3. There is growing export value for mushrooms				
4. There is increasing awareness of the medicinal value of mushrooms				
5. There is increasing awareness of the nutritional value of mushrooms				
6. Environmental conditions are suitable for mushroom production				

Section C – Attractiveness of Mushroom Production

Statement	SA	A	D	SD
1. Mushroom production requires less capital compared to other ventures				
2. Mushroom production does not require too much skills				
3. Mushroom production does not require too much technology				
4. Mushroom production can be done without access to vast land				

5. Cooperating and producing mushroom in a team can be done to reduce cost for youth				

Section D - Profitability of Mushroom Production

Statement	SA	A	D	SD
1. There is a growing market for mushroom in the district				
2. Mushrooms can be produced all year round				
3. Mushroom production can provide all year round income				
4. There is sufficient support for mushroom farmers in the district				
5. Mushroom production can provide food security for the district				
6. The cost of producing mushroom in the district is less than the profit gained				

Section E - Constrains Associated with Mushroom Production

Statement	SA	A	D	SD
1. Unfavourable climatic conditions				
2. Lack of financial support				
3. Difficulties in marketing				
4. Irregular supply of water				
5. Lack of storage facilities				
6. Pest infestations				
7. Negative perceptions about cultivated mushrooms				
8. Difficulty in acquisition of production space				

APPENDIX B

INTERVIEW GUIDE

Thank you for agreeing to participate in this study. The results of the study would be used in making recommendations to improve mushroom cultivation in your District and Ghana as a whole. Please I assure you that everything we talk about will be kept confidentiality. Feel free to express yourself. You can also back out of the study anytime. Thank you.

Prospects of Mushroom Production

How do you view mushroom production in your district?

What are some of the prospects of mushroom production?

Mushroom Production Reduces Unemployment

In your own view, do you think mushroom production can reduce youth unemployment?

How can mushroom production reduce unemployment in your district?

Profitability of Mushroom Cultivation

Do you think mushroom production is profitable?

Why do you think so?

Constraints Associated with Mushroom Production

Do you encounter any challenges in your mushroom production?
What are some of the challenges that you encounter?

This is the end of the interview.
Thank you.

APPENDIX C

RELIABILITY OUTPUT

Reliability Statistics

Cronbach's Alpha	N of Items
.761	25