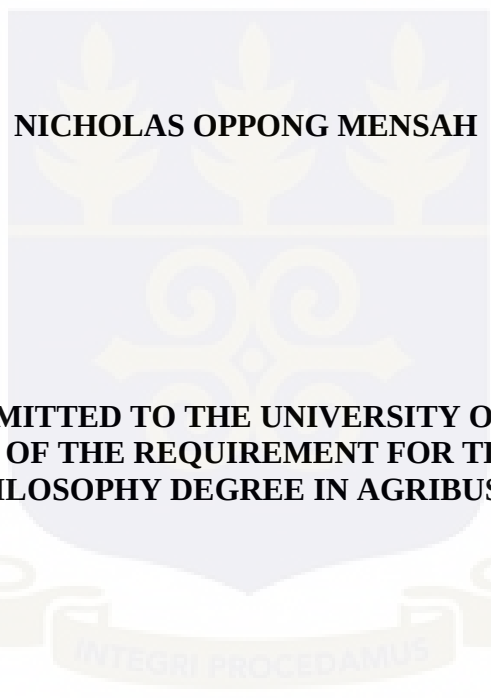


**WILLINGNESS OF POULTRY AGRIBUSINESS WORKERS TO
PARTICIPATE IN THE INFORMAL VOLUNTARY PENSION SCHEME
IN THE KUMASI METROPOLIS OF THE ASHANTI REGION IN GHANA**



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**THIS THESIS IS SUBMITTED TO THE UNIVERSITY OF GHANA LEGON IN
PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE AWARD OF MASTER
OF PHILOSOPHY DEGREE IN AGRIBUSINESS**

DEPARTMENT OF AGRICULTURAL ECONOMICS AND AGRIBUSINESS

COLLEGE OF BASIC AND APPLIED SCIENCES

UNIVERSITY OF GHANA, LEGON

JULY, 2016

DECLARATION

I. **NICHOLAS OPPONG MENSAH**, the author of this thesis titled “**WILLINGNESS OF POULTRY AGRIBUSINESS WORKERS’ TO PARTICIPATE IN THE INFORMAL VOLUNTARY PENSION SCHEME IN THE KUMASI METROPOLIS OF THE ASHANTI REGION IN GHANA**” declare that with the exception of the references which are duly cited, the results of this research were solely conducted by me in the Department of Agricultural Economics and Agribusiness, University of Ghana, Legon, from August, 2015 to July, 2016. This work has never been presented either in whole or in part for the Award of any degree in this university or elsewhere.

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This thesis has been submitted for examination with our approval as supervisors

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(Major Supervisor)

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Date

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Prof. Daniel Bruce Sarpong

(Co-Supervisor)

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Date

DEDICATION

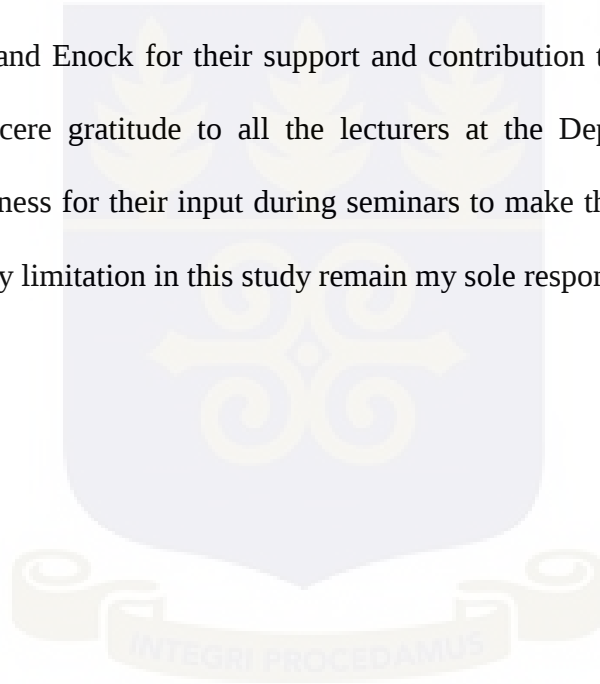
This thesis is dedicated to all pensioners especially my father Rev. Dr. G.K. Mensah, and my siblings: James Yeboah Mensah, Gloria Abena Mensah and Mrs Grace Achiaa Mensah Cobold.



ACKNOWLEDGEMENT

My sincerest gratitude goes to Almighty God who is the Omnipotent, Omnipresent and Omniscient for His bounteous love, protection and grace granted to me throughout my academic life. I also wish to express my sincere gratitude and heartfelt appreciation to my supervisors, Mr. Ditchfeild Amegashie and Prof. Daniel Bruce Sarpong whose guidance and intellectual support throughout the preparation of this thesis was extensive and enormous. Your insightful reviews, undoubtedly remain the critical success factor for the completion of this thesis.

I am grateful to Derick and Enock for their support and contribution towards this work. I also wish to express my sincere gratitude to all the lecturers at the Department of Agricultural Economics and Agribusiness for their input during seminars to make the writing of this thesis a success story. Finally, any limitation in this study remain my sole responsibility.



ABSTRACT

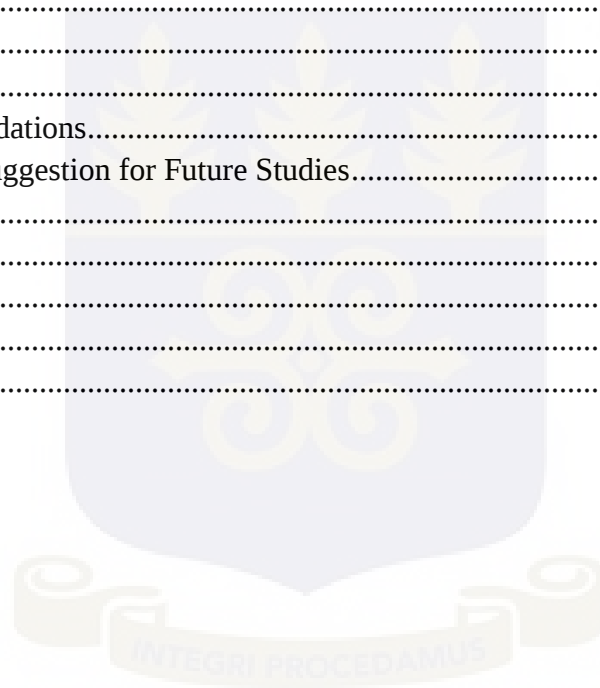
Pension contributions address old age income, insecurity and vulnerability and also improve the standard of living. It is the only investment that qualifies an individual to enjoy regular income, and other benefits till death, after contributing for a minimum number of years. This thesis therefore assessed poultry agribusiness workers' perception, knowledge and attitude towards informal voluntary pension. It also assessed the factors that influence a poultry workers' choice, willingness to pay and the amount the workers are willing to pay for pension. The study further assessed the old age challenges and benefits they anticipate after retirement. Lastly, the study identified the constraints to the development of the pension scheme for the agribusiness poultry workers. The study employed simple descriptive statistics, contingent valuation method, Logit and Tobit and Multinomial logit models in analyzing the factors that influence poultry agribusiness workers' willingness to pay, and willingness to pay amount as well as a choice of an informal voluntary pension scheme respectively. Kendall's Coefficient of Concordance was used in ranking the constraints to the development of informal voluntary pension schemes in the study area. The results of the survey showed that majority (99%) of the respondents had knowledge about pension scheme. The respondents had a positive (0.461) perception about pension schemes. The majority (99.50%) of the respondents were willing to pay GHS0.50 daily for an informal voluntary pension. Empirical estimates from the models applied showed that education, marital status, household size, off-farm income, investment, belonging to a pension scheme, and trust, access to credit statistically influenced willingness to pay for the informal voluntary pension. The study showed that the three most pressing perceived constraints to the development of informal voluntary pension scheme from the poultry agribusiness workers perspective are complicated paper works, low benefit, and low knowledge of the pension scheme while the pension providers face constraints such as high operating cost, no protection against inflation and ineffective information systems. The study recommended that Government policy aimed at providing credits to poultry agribusiness workers would enhance their choices of the informal voluntary pension scheme. Macroeconomic policies aimed at reducing inflation and subsidization of the operational cost of informal voluntary pension providers would have a positive impact on pension uptake by the poultry agribusiness workers in the study area; however, providers should improve pension benefits and also reduce paperwork for poultry subsector workers in the study area. Social assistance programmes in the form of subsidies through means testing for larger household sizes, married couples with a high number of dependence will reverse the negative influence on the amount poultry subsector workers are willing to pay for informal voluntary pension schemes.

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LIST OF ACRONYMS

CE	Choice Experiment
CVM	Contingent Valuation Method
DB	Defined Benefit
DC	Defined Contribution
GDP	Gross Domestic Product
GUSS	University Staff Superannuation Scheme
IFAD	International Funds for Agriculture Development
ILO	International Labour Organization
ISSER	Institute of Statistical, Social and Economic Research
KMA	Kumasi Metropolitan Assembly
MDG	Millennium Development Goal
MFI	Microfinance Institutions
MNL	Multinomial Logit
MIPPA	Madrid International Plan of Action on Ageing
MoFA	Ministry of Food and Agriculture
NPRA	National Pension Regulatory Authority
PAYG	Pay As You Go
SDG	Sustainable Development Goals
SSNIT	Social Security and National Insurance Trust
UN	United Nations
WTP	Willingness to Pay

CHAPTER ONE

INTRODUCTION

1.1 Background of Study

Ageing is a common denominator for individuals who live long. Advancement in science, improvements in nutrition, improved health care delivery, advancement in agriculture and its allied agribusinesses, increased the life expectancy of individuals coupled with high fertility rates and the low death rate has resulted in population growth in the 21st century (Brown, 1999; Powell, Wahidin and Zinn, 2007). This has increased the number of the aged worldwide, and the majority of the aged live in developing countries in Asia and Africa (Brown, 1999).

Old age differs from country to country. In most developing countries the retirement age is 60 years; whereas in some advanced countries, it may be 62 or 65. In some jurisdictions old age has gender dimensions which are 65years for men and 60years for women (Spivak, 1995; Himic, 2009; UN, 2015; Ginn, 2001).

Neugarten and Daton (1973) developed a classification system for the aged, and subcategorized them into young-old for 65-74 years, old for 75-84years and oldest old for 84years and above. However these classifications do not apply to many developing countries. In countries such as Kenya and Zambia, one can retire at the age of 55, whereas in Ghana and many African the compulsory age for retirement is 60yrs (Kakwani, Son and Hiz, 2006).

According to Brown (1999) developing countries would experience intense aging trends in 2025, but communities in Africa are not improving their socio-economic and cultural conditions to accommodate the aged. Evidence suggests that there is no corresponding increase in social

security coverage for the aged particularly for the informal sector, and most of them live in rural communities where there exist social and economic hardship (Help Age International, 2013). Consequently, families continue to be the primary institution that supports the aged (Powell, Wahidin and Zinn 2007; Ginn, 2001). This was so in China, where parents preferred male children who were viewed as the hope of the aged until the rural pension scheme was introduced (Ebenstein and Leung, 2010; Zhang, 2015; Ce Shen and Williamson, 2010).

Similarly in Sub-Sahara Africa, the literature suggests that there is a high incidence of poverty among the aged as less than 20% of the aged receive pension (ILO, 2014; Kakwani and Subaro, 2007). The result thereof is that the extended family system has to care for the aged (Aboderin, 2004; Ghana Statistical Service, 2013; Okoye, 2012). Admittedly, the aged in most families are often viewed as a drain on their resources as they cannot be engaged in formal employment, and may not also be able to work in the informal sector because of their deteriorating health. UNDP (2007) indicated that majority of Ghanaians in the informal sector engage in economic activities such as farming, fishing, petty trading while some work as artisans (Oduro, Osei-Akoto and Acqyaye, 2004).

Mba (nd) noted that those who cannot engage in large-scale agriculture faces the risk of income insecurity. MIPAA (2007) also observed that, those who rely on farming as a source of income, are not able to increase their productivity due to their failing physical strength at old age and are unable to care for themselves properly due to liquidity or financial constraints. Dei (2001) establish the missing link in the Ghanaian pension system, in which the social security pension schemes exclude informal workers including poultry agribusiness workers which constitutes production, processing, service provision and marketing and activities of rural folks who are

actors in the value chain. Consequently, they fall outside the financial inclusion in the social protection schemes and are unable to meet their retirement needs at age 60 (Fin, 2010). It is interesting to note that regardless of the fact that the poultry sector contributes 25% of the domestic meat (Aning *et al.*, 2008); a Poultry agribusiness worker option for survival at old age is to work till death (Domfe, 2013), even though activities in the informal sector have complex linkage with other sectors and contribute immensely to the country's GDP growth.

Though the exact number of workers in the sector is not known, the number of commercial poultry workers was estimated to be about 7000 in the year 2007/2008 (Aning *et al.*, 2008). According to United States Department of Agriculture (USDA, 2008) poultry agribusinesses are found mostly in the urban areas of Greater Accra, Brong Ahafo and Ashanti regions of Ghana where pension providers abound. Also poultry agribusinesses contribute significantly to the country's protein requirement. Food and Agriculture Sector Development Policies (FASDEP) estimates the annual poultry production to be 14,000mt of meat and 200 million eggs respectively (Aning, 2006; Killebrew and Plotnick, 2010). Apart from production of day old chicks (DOC), drugs, chemicals and vaccines, other allied industries in the poultry agribusiness chain are into manufacturing of poultry equipment such as feeders, drinkers and brooders (Aning, 2006).

Other poultry agribusiness value chain activities ranges from feed production from the 12 feed milling companies (Killebrew and Plotnick, 2010) to meat processing such as gizzard and chicken nuggets processing. Other actors in the chain are into broiler production, eggs production, hatcheries, cold store and restaurant operations and most processors are into. While others are into extension services such as poultry consultancy, veterinary service as well as marketing of eggs, feeds, drinkers, vaccines and sale of day old chicks (DOC) from the seven

hatcheries (four in Ashanti, two in Greater Accra, and one in the Eastern region) which rely on local or imported fertile eggs (Killebrew and Plotnick, 2010).

Among the sector constraints is lack of technical knowledge as well as lack of tailored made social protection or security schemes designed purposely for the ageing poultry agribusiness sector workers though Owusu-Afari (2010) report of failure of legislators to promulgate laws that support and improve poultry agribusinesses. Considerable reasons cited are lack of labour unions that will advocate for the introduction of viable bio-security and social security programs for the sector workers when their working life is completed (Gockel and Kumado, 2013; Domfe, 2013). Informal sector pension schemes tailor made for the workers in the sector would therefore provide sustainable income for the aged in the sector when their working life is complete and lack of it, is a recipe for income insecurity, vulnerability, and old age poverty (Atta-Botchwey, 2012). Consequently such victims now view the extended family systems as safety-nets. However, the traditional extended family system, which used to ensure that the aged were adequately catered for in time past, due to migration, urbanization, and modernization is being transformed into nuclear families (Zhang and Tang, 2008; Powell, Wahidin and Zinn, 2005; Nukunya, 2003). This has dispersed kin groups, allowing some to escape their social obligation of caring for the aged. Consequently, society is tilting towards individualism rather than collectivism (Oppong, 2006) and support for the aged now rests on the nuclear family, resulting in neglect and destitution of the aged (Ogwumike and Aboderin, 2005). The aged with no formal social protection would become vulnerable to most of these challenges (Kpessa, 2012; Barrientos, 2007; Ahuja, 2003). Though Okumabga (2011) in his study in Nigeria noted that children send remittance and material support to the aged, the need

for social protection programmes is important, since these supports were not regular and adequate.

Moreover, deteriorating traditional family systems has made, lack of pension schemes towards old age retirement may result into old age poverty and may result in: material, financial, emotional, health, and physical challenges in addition to stigmatization in some communities (Brown, 1999). Arguably, social protection for the aged based on protective, preventive and transformative measures become imperative and need to be promoted in developing countries, as about 90 percent of workers in the informal sector in sub-Saharan Africa lack social protection (UNDP, 2012) and have nothing to depend on in their old age (Kpessa, 2012).

Similarly in Ghana, only 10% of the working population are covered by social protection (Collins-Sowa *et al.*, 2013). This why Kpessa (2012), concluded that pension schemes in Ghana tends to exclude informal sector workers. In this regard, all categories of informal sector workers including poultry agribusiness workers are exposed to the risk of old age income insecurity as the sector lacks statutory and non-statutory pension schemes (Collins-Sowa *et al.*, 2013; Wenner, 2005).

1.2. Research Problem

The social security system in Ghana has not achieved its target in providing for all employees, particularly those in the agricultural sector. It seems to exclude informal sector workers (Adzawla *et al.*, 2015) and only 10% of the working class are covered by social security protection (Collins-Sowa *et al.*, 2013). Pension schemes in Ghana are mandatory for the formal sector and voluntary for the informal sector; making the coverage in the informal sector woefully inadequate (Abglobi, 2011). Moreover, market- based and state pension schemes tend to enhance

participation of the formal sector and hinder the participation of workers in the informal sector including poultry agribusiness workers in Ghana (Collins-Sowa *et al.*, 2013).

Migration and urbanization have led to the dispersal of kin groups and this has allowed some members of families to escape their social obligation of caring for the aged (Ghana Statistical Service, 2013). To reinforce this, Nukunya (2003) and Oppong (2006) observed that emphasis is now on individualism rather than collectivism. The decline in the family support system for the aged has resulted in the neglect and destitution of the aged, culminating into financial, material, emotional, physical, health challenges in addition to the stigmatization of the aged (Brown, 1999; Aboderin, 2004).

An informal Voluntary Pension scheme which is normally paid as lump sum or regularly on a monthly, basis or both has not been specifically designed for poultry agribusiness, though they form part of the informal sector. In view of this, it is fair to conclude that poultry agribusiness workers in Ghana are also likely to fall into old age poverty trap (Sahu, 2014; Wenner, 2005).

This makes the development of the informal voluntary pension scheme(s) for the poultry agribusiness workers imperative. So as to address old age challenges ex-ante, with positive externality effect on the Ghanaian economy in terms of economic development (Sahu, 2014). Moreover, literature synthesis on pension schemes in the informal sector displays gaps in terms of coverage, constraints and willingness to pay for pension schemes by poultry agribusiness workers. Mackeller (2009) reinforced this assertion when he argued that there is enough evidence to suggest that knowledge and coverage gap exists in the mechanics of pension administration. A cursory look at the Ghanaian pension system also points to gaps in terms of

coverage for poultry agribusiness workers in the Kumasi Metropolis of the Ashanti Region in Ghana.

Again, most studies on informal sector pension look at the informal sector in general in Ghana and literature is almost silent on models for providing an informal voluntary pension scheme for agribusiness workers, particularly in the Kumasi Metropolis of the Ashanti Region in Ghana. Most studies done in Ghana do not also look at the constraints to the development of informal voluntary pension scheme for poultry agribusiness workers in Ghana.

In consonance with this, Oppong (2006) noted that the aged who are farmers and in the informal sector ultimately resort to selling part of their farms, or rely on trade such as weaving or take menial jobs to fight old age poverty while an increasing number remain at home and can no longer care for themselves properly.

The result thereof is that informal sector workers including poultry agribusiness workers look forward to retirement with anxiety because of the likelihood of losing income and financial independence (UNDP, 2012; Atta- Botchwey, 2012; Adawla *et al.*, 2015). Given the numerous challenges facing the aged in the informal sector, there is a need to gauge poultry agribusiness workers' perception, knowledge, attitude and willingness to pay for informal voluntary pension schemes, that are anchored on benefit sought that would be adequate in addressing their old age financial and social challenges. These concerns raised the following questions:

1. What are poultry agribusiness workers' perception, knowledge and attitude towards informal voluntary pension schemes in the Kumasi Metropolis?

2. How much are poultry agribusiness workers willing to pay for informal voluntary pension schemes in the study area?
3. Which factors influence the willingness to pay amount, participation and choice of an informal voluntary pension scheme by poultry agribusiness workers, in the study area?
4. What are their anticipated old age challenges and key benefits which they wish to derive in order to participate in the informal voluntary pension scheme?
5. What are the constraints to the development of informal voluntary pension schemes for poultry agribusiness workers in the study area?

1.3. Objectives of the Study

The main objective of the study is to assess poultry agribusiness workers' willingness to participate in the Informal voluntary Pension Scheme in the Kumasi Metropolis. Specifically:

1. To describe poultry agribusiness workers' perception, knowledge and attitude towards informal voluntary pension schemes in Kumasi Metropolis.
2. To estimate the amount poultry agribusiness workers are willing to pay for informal voluntary pension schemes in the study area.
3. To analyze the factors that influence their willingness to pay amount, participation and choice of an informal voluntary pension scheme by poultry agribusiness workers, in the study area.
4. To assess the anticipated old age challenges and key benefits sought by poultry agribusiness workers in the study area in order to participate in the informal voluntary pension scheme.

5. To identify the perceived constraints to the development of informal voluntary pension schemes for poultry agribusiness workers in the study area.

1.4. Relevance of the Study

Ghanaian traditional societies had their extended family and other social networks caring and supporting the aged, financially, materially, emotionally and physically. However, in contemporary Ghana, there is a massive transformation in the social structure, necessitating a well-structured social protection system for the aged. Evidence from other countries suggests that Ghana is not the only country with both operational and design challenges in the informal sector social protection programmes. Global pension crises has threatened world economies and pension funds have declined by 18.5% in Germany, 17.4% in the UK, 16.9% in the Netherlands, 20.1% in Japan, 21.4% in Canada, 26.2% in the US, 26.7% in Australia, 37.5% in Ireland and 35% in Ghana (Atta-Botchwey, 2012) and old age poverty is on the ascendancy.

This has necessitated the need for cutting-edge and evidence-based research to enhance the social protection system in Ghana by designing informal sector pension schemes that link contribution to key benefits sought at old age and also ensure sustainable development of pension schemes that ensure that pensioners do not become worse off at retirement (ibid). Though literature abounds on pension, there appears to be dearth of information on the informal voluntary pension scheme for poultry agribusinesses which has links with food security and contributes 25% of total domestic meat production (Anning *et al.*, 2008) and nearly 2.5 million households benefit from poultry production (Anning, 2006), with the number of commercial poultry agribusiness workers estimated to be 7000 in 2007/2008 (Anning *et al.*, 2008). These workers are producers, sellers, feed millers, processors, and other actors in the chain such as cold

store operators, veterinary, industry, manufacturers of inputs such as chemical and vaccines drugs and poultry equipment such as feeders, drinkers and brooders among others.

Hence the need for designing informal pension schemes specifically for poultry agribusiness workers including those living in the Kumasi Metropolis in the Ashanti region to protect themselves against old age income insecurity and poverty. This study intends to contribute to the empirical literature on the global social protection scheme discourse for the informal sector, particularly the poultry agribusiness in Ghana. The study will also serve as reference material for researchers and set the direction for future research in the informal voluntary pension scheme for poultry agribusiness workers. Additionally, the National Pension Regulatory Authority (NPRA), SSNIT, Insurers, pension providers, MOFA, particularly the livestock agribusiness, poultry farmers association and other stakeholders in pension governance as well as policymakers, who want to gain insight into how to develop pension scheme for poultry farmers in the study area would find this study useful.

Finally, this study seeks to address a recent observation made by Atta-Botchwey (2012) who noted that most workers both in the formal and informal sector cannot sustain their standard of living, when they retire from active service because their pension benefits are not adequate.

1.5. Scope of the Study

The study is carried out in 9 sub-metros of the Kumasi Metropolis of the Ashanti Region of Ghana with the aim of assessing poultry agribusiness workers' willingness to participate in the informal voluntary pension scheme.

1.6 Organization of the Thesis

This thesis is organized into five chapters. Following chapter one, chapter two provides a review of the literature on the theories of pension schemes, models of pension schemes, willingness to pay for pension schemes. Chapter three discusses the methodologies employed to achieve the objectives of the study. These include the theoretical framework, sampling procedure, methods of data collection and analysis. Chapter Four presents the results and discussions, and Chapter five presents the summary, conclusion and the policy implication of the study.



CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter consists of five sections. The first section covers the concept of pension, theories of pension, the taxonomy of pension and the section two reviews the literature on, empirical studies on agribusiness worker perception, knowledge and attitudes towards pension schemes. In the third section, socio-economic variables influencing the willingness to pay are discussed. The fourth section looks at anticipated or perceived old age challenges and key benefits sought. The final section presents the constraints to the development of pension schemes.

2.2 The Concept of Pension

Pension refers to financial arrangements to build assets for old age (Sahu, 2014). According to Agblobi (2011), the pension is a means of investing to enjoy the benefit till death, after contributing for a minimum number of years. It is therefore a social protection tool against the risk of old age poverty (MacKellar, 2009). Diamond (1997) argued that the reason for setting social security pension as an aspect of social protection are: income redistribution, correcting, market failures, paternalism and raising revenue. Thus pension provides sustainable income for the aged to bring about dignified and respectful retirement when they are no longer earning regular income. Spivak (1995) argued that pension systems are insurance against income uncertainties in aging and disability. In Asia, MacKellar (2009) observed that most pension schemes provide at least basic protection against old age poverty for formal sector workers.

In Ghana informal sector pension do not meet the social protection floor that is coverage for all, provision of regular income and basic health. To make matters worse, no pension scheme has been designed for the agricultural sector including poultry agribusinesses, unlike China where they even have rural pension schemes for their farmers. However, the relevance of pension schemes for the sector persists owing to factors such as declining birth and fertility rate in the advanced countries, and increase life expectancy, migration, modernization and urbanization for developing countries (Zhang, 2015; Ghana statistical service, 2013; Okumagba, 2011 MacKeller, 2009; Aboderin, 2004; Nukunya, 2003).

2.3 Theories on Pension

The design of pension schemes is rooted in economic theories. A number of economic theories on pensions include the narratives that provide explanation for saving for the future, such theories include: chain latter, lump of labour, rational prodigality theory, retirement insurance theory, permanent income and life-cycle hypotheses, overlapping generation theory as well as random utility theory which served as a theoretical framework for this study.

2.3.1 Chain latter theory

In this theory, it is argued that social protection schemes behave like Ponzi-type schemes, where the aged take pensions from the younger generation with the assumption that future generations will pay back with some positive rate of return (Friedman, 1957). Each generation believes in the idea of paying social security taxes because they do so in a continuous chain. In this arrangement, later generations will even pay more taxes to fund the benefits. However, this theory fails to explain why the informal-sector chain is less successful than government social

security. The drawback of this theory is its inability to explain enforcement challenges as younger generations may not believe that the scheme will not be in place when they are old (Atta-Botchwey, 2012). Regardless of the limitation this theory is fraught with, it provides a framework for financing pension schemes such as the pay as you go financing mechanism.

2.3.2 Lump of Labour Theory

This theory suggests that jobs need to be redistributed from the old to the young. The theory is rooted in the concept that governments may wish to take some jobs from their citizens who are nearer to retirement in exchange for social security pension and give them to the younger ones to be more productive. According to Atta- Botchwey (2013), this theory is consistent with assets test due to the fact that benefits are a function of lifetime wages, hence it will take a very high pension package to induce a worker with high wages to move out of the labour force. He argues that the lump of labour theory may not be scientifically and economically correct.

2.3.3 Rational Prodigality Theory

The theory assumes that individuals do not look forward enough to retire when they are young and make a mistake of saving too little (Atta-Botchwey, 2013). According to Diamond (1997), one reason for this observation is that; individuals may lack information about the future which will lead to their inability to make effective long-term decisions and may not be willing to accept the fact that they may be old in future, and subsequently take a myopic view of the future.

However, another version of the theory is exactly opposite and assumes that individuals are forward-looking and anticipate not only their needs for retirement but expect their children and others in the society to aid them in desperate situations such as poverty, even if such situations

were self-inflicted. They expect society to put in place mechanisms aimed at addressing their old age poverty. Consequently younger generations may not bother to save towards their retirement knowing that there would be some bailout.

Atta-Botchwey (2013) posits that the result would be less than Pareto optimal since the prodigal young will not equate their willingness to delay consumption to the social marginal rate of transformation. He succinctly opined that to achieve Pareto optimality in resource allocation, citizens must be forced to save when they are young and give resource back to them when they are old. This undoubtedly reflects a social security system in a steady state with the resource being taken from the young and being given to the old. This is why study sought to examine the poultry agribusiness perception, knowledge, attitude and willingness to pay for informal voluntary pension schemes in the study area.

2.3.4 Retirement Insurance Theory

This theory tries to explain why governments provide retirement insurance with Medicare and Medigap insurance package for the aged rather than auto insurance for them. However, this theory does not explain other dimensions of government policies that is fraught with both financial and social exclusions of the informal sector workers and rural folks when they are old. (Atta-Botchwey, 2013; Myers, 1993). Also, the theory could not explain the 13% of the contributions by the employer and 5.5% by the employee when it comes to the computation of Ghanaian pension scheme (Atta-Botchwey, 2013). This leads us to theories of savings.

2.3.5 Theories on Savings

The usage of theories on savings helps in understanding the determinants and motives for contribution to pension schemes which is a deferment of current consumption for the future after retirement. One such theory is the Overlapping generations model (OLG) which was viewed by Miyazaki (2013) in a retirement and aging study as a classical economic growth theory for analyzing pension schemes. The model assumes an individual life in two periods. That is when he or she is a young adult and works full-time in period one t and saves a portion of his or her wage in social security to enjoy in Period two $t+1$. Fanti (2014) argued that the model assumes that the individual has a utility function of:

$$U(x) = Inc_{1,t} \quad (2.1)$$

And budget set of

$$c_{1,t} + s_t = w_t(1 - \tau) \quad (2.2)$$

With the τ as social security tax (or contribution); w_t as earned wage income, and s_t as savings

Secondly, when an individual is in the terminal period with a utility function of

$$U(x) = \gamma Inc_{2,t+1} \quad (2.3)$$

And a budget set of

$$C_{2,t+1} = (1 + r_{t+1})S_t + w_{t+1}(1 - \tau)\lambda + (1 - \lambda)Z_{t+1} \quad (2.4)$$

With γ as subjective discount factor, λ as a function of labour work (or $\lambda = 0$, when retired) and z_t as a pension benefit. Also $1 + r_{t+1}$ as interest earned on savings made in the first period. The discount factor suggest how the individual values the utilities of different generations.

Similiar to Romer (2006) analysis, Acemoglu (2009) argued that $C_1(t)$ represents consumption of individual when young at period t ; and $C_2(t+1)$ as consumption of individual when old at period $t+1$.

The model suggests that an individual consumes and saves a portion of wage income earned in period one. This individual essentially consumes in period two the benefits of what was saved the wage he earned and the pension provided by Government. This model seems to explain why Singapore's, government enforced compulsory saving through social security. In Ghana Social security schemes can be expanded to embrace the agribusiness workers, in order to improve government sector finance and to generate a budgetary surplus for social insurance and social assistance programs. Savings in pension schemes therefore will serve as a buffer for the aged or retired to mitigate the effect of destitution. This is why Zeller and Sharma (2000) view savings as an engine of economic growth and development. This underpins the reason for which this study sought to identify how much poultry agribusiness workers were willing to pay /save for a pension as well as factors that influence the willingness to pay into the scheme till they retire.

In general, it has been established that Keynes (1936), absolute income hypothesis is a significant determinant of savings for developed countries. Other alternatives to the Keynesian absolute income hypothesis are relative income hypothesis, Friedman's permanent income hypothesis and Modigliani – Brumberg – Ando (MBA) life cycle which is discussed as follows:

2.3.5.1 Relative Income Hypothesis

The key assumption of relative income hypothesis developed by Duesenberry (1994) is that the utility of the consumer is derived not from the absolute level of consumption, but judged in relation to both consumer's own past standards and the consumption standard of others. Therefore, a household consumption is not determined by its absolute income, but by its position in the income scale relative to its reference group, however this theory was not utilized in the study.

2.3.5.2 Permanent Income Hypothesis

Permanent income hypothesis was proposed by Friedman (1957). In this hypothesis, the level of the expected long-term average income is thought of as the household's level of permanent income that can be safely spent. A household will therefore save only if its current income is higher than the anticipated level of permanent income in order to guard against the reduction in future income. The hypothesis assumes that households are able to determine what their long-term consumption needs are and then allocate their resources in line with their lifespan (Meghir, 2002; Carroll, 2001). However, permanent income hypothesis was not utilized in this study.

2.3.5.3 Life Cycle Hypothesis (LCH)

The life cycle hypothesis was postulated by Modigliani and Brumberg (1954) and later by Ando and Modigliani (1963). This hypothesis on savings has been utilized by many researchers to analyze the relationship between savings and retirement behaviour of individuals. This hypothesis presents a well-defined linkage between the consumption plans of the individual and his/her income and income expectations from their youth, through their working life into

retirement and death. According to Rodepeter and winter (1999), life cycle hypothesis (LCH) analysis explains saving behaviour of individuals who spread their lifetime consumption over their entire lives by accumulating savings during their working life and maintaining the same level of consumption during their retirement. It therefore assumes that individuals plan their consumption and savings behaviour by considering all the different stages of their lives and spreading their income in such a way that today's income will be used to finance tomorrow's consumption (Modigliani and Brumberg, 1954).

One of the important implications of the LCH is that it makes it explicit that consumption needs and income are unequal at various points in our life cycles. Clearly, young individuals tend to have consumption needs that exceed their income. This makes them save little towards their future. At the middle age, earnings generally rise, enabling debt accumulated earlier in life to be paid off and savings to be accumulated. Finally, in retirement, income decline and individuals consume out of previously accumulated savings (Crown, 2002). This hypothesis makes it explicit how pension benefits must be linked with old age consumption and needs. In view of this objective four of this study assessed the anticipated old age challenge and key benefits sought from the informal voluntary pensions by poultry agribusiness workers in the study area.

2.4 Taxonomy of Pension Schemes

Classification of pension schemes into types will direct the study to determine the type of schemes that already exist as well as methods of financing in many countries so as to design a tailor-made informal voluntary pension scheme for poultry agribusiness workers in the study area. In consonance with this, Atta-Botchwey (2012) classifies pension schemes into public and private pension schemes: occupational and individual pension schemes, funded and unfunded

pension scheme; open and closed systems. Yermo (2002), Dixon and Hyde (2003) distinguish between the public and private pension schemes by suggesting that private pension schemes are pension scheme for private sector workers, managed by private sector institutions and also managed by private law.

Guariglia and Sheri-Markose (2005) suggest that occupational pension scheme is the type where contributions are linked to the earnings of employees through the employer may sponsor it, concluding that pension plans are opened to formal and informal sector workers. Yermo (2002) explained funded pension schemes as a pool of assets that can be used to finance the payment of pension benefits, and reports that, unfunded pension schemes do not accumulate assets for the members. Hence benefits are paid from the contributions and incomes of the sponsor (Besley and Prat, 2005). In explaining open and closed pension schemes, Hughes and Stewart (2004) suggest that open pension schemes support at least one pension scheme with no restriction on membership. Closed pension scheme on the other hand support pension scheme(s) that are restricted to certain employees.

A cursory look at Abglobi's (2011) taxonomy of pensions schemes in Ghana revealed that they can be grouped into State pension, Para-statal pension, and non-state pension schemes. According to him, the state pension is a combination of social insurance and welfare scheme where state aggregates individuals' contribution and general taxation to provide state pension to its retired citizens.

For para-statal pension, the author stresses that is the retirement benefits provided by a state agency. It is partially-funded by employees and employers as well as investment returns for the benefit of the employees during their retirement. The non-state pension scheme is an

occupational and individual pension scheme in which the state is not involved and does not use tax payer's money to pay pensioners. Pension benefits may be provided based on defined contribution (DC) or Defined Benefits (Mackeller, 2009).

According to Ginn (2001), defined benefits (DB) are based on a formula “which takes into consideration earnings and years of membership-bearing the advantage of risk-free retirement income borne by the employer”. Defined contribution (DC) however depends on investment performance and annuity rates and the risk borne by employees. Harrison *et al.*, (2006) also added another dimension known as means-tested pension credit which was introduced to help the poorest pensioners and those with minimum retirement income in the UK. Dixon and Hyde (2003) and Agblobi (2011) also added superannuation guarantee which was a non-contributory scheme in Ghana which is the preserved for university staff dubbed Ghana University Staff Superannuation scheme (GUSS). Currently, a minimum contribution of 15years with a minimum of 10% basic monthly salary is required with three distinct benefits namely refund, gratuity and pension, where gratuity is one of tax-free cash lump sum payment.

Ce Shen and Williamson (2010) categorize pension into rural old age social security and urban social security system which is a prerequisite in bridging the urban-rural divide to promote social balance in order to bring about harmonious development in China. Other pension scheme taxonomy relate to voluntary and mandatory pension schemes (Atta-Botchewey, 2012; Abglobi 2011; Castel, 2008).

In a related study by MacKeller (2009) in Sri Lanka, a made a distinction between contributory and non-contributory pension schemes, Just like Cap 30 and SSNIT Pension schemes in Ghana. In his analysis of the Sri Lanka agriculture sector, the author identified fully funded defined

contribution provident fund for the informal sector while a defined benefit, pay as you Go (PAYG) scheme for the formal sector and retirement insurance for those outside the formal sector wage employment. In Bangladesh, a however means-tested non-contributory pension which is an old-age allowance program for the aged not covered by the pension was identified. Casals (undated) also classified the social security system into compulsory and voluntary in the Philippines, while Chen *et al.*, (2015) in their study in China, also identified home pension and institutional pension.

In the US, Ginn (2001), classified pension system into public social security, where a pensioner's wife gets a percentage of husband's income and private occupational pension (OP) as well as a social assistance means-tested pensions with a gender-based benefits where women and men receiving 5% and 7% respectively in the UK and 4.3% and 1.7% respectively in the US. Spivak (1995) in his assessment of Israel's pensions scheme also classified pension schemes into a basic pension or comprehensive pension that provide cover for the aged and their survivors in addition to disability insurance. He also maintained that pension schemes can be dynamic to adjust itself to the changing economic circumstance through index linking or static- based on the defined benefit that is not linked to any index.

Ce Shen and Williamson (2010) also identifies universal non-contributory social pension schemes which exist under universal pensions paid to everyone over specified age and means-tested pension, paid only to people above a specified age and with income at a specific level below the poverty line. To Ce Shen and Williamson (2010), this has alleviated old age poverty in New Zealand and has fostered social solidarity. However, it has a drawback of creating disincentive towards work and also makes it explicit that means-tested schemes failed in India

and Bangladesh, as it relegates to the background a large portion of people who met the eligibility criteria.

In the Thai pension system MacKeller (2009), describes four types of pension schemes namely Old Age Pension system, (OAP), Government Pension Fund (GPF), a mandatory defined contribution system and voluntary provident fund. However, he noted that in Sri Lanka the pension system was being widened to embrace the informal sector and farmers in a voluntary retirement savings scheme. He also observed that formal sector workers were covered by employees' provident fund, which is a fully funded defined contribution scheme. MacKeller (2009) noted that while the public sector are covered by public service pension scheme (PSPS) based on a defined benefit pay-as-you-go scheme, informal sector workers including farmers, fishermen and self-employed also enrolled on an informal voluntary pension scheme namely, farmer's scheme, fishermen's scheme and self-employed schemes respectively and the scheme for farmers and fishermen was governed by Agricultural and Agrarian Insurance Board (AAIB) in the Ministry of Agriculture and Fisheries who perform a supervisory role.

In Vietnam, he observed that that farmer's pension fund was set up in Nghe province and policy makers set up a social insurance for rural workers in order to achieve universal social security coverage in 20 years. Noord and Herd (1993) also added war pensions and pensions of the national resistance as pension types that exist however, these types of schemes are not applicable to the poultry agribusiness sector and fall outside the scope of this work.

2.5. Design of Pension Schemes

Researchers that have studied pension systems including Spivak (1995) of Israel maintained that pension designs are based on the method by which they are financed. The author identified two methods of financing pension scheme in Israel namely funded scheme and pay-as-you-go. Under the funded scheme, pension funds are invested in high yielding assets to pay pensioners, consequently payment would be low if there are low returns on investment. In contrast, the pay-as-you-go financing, the pension scheme uses funds paid by current working generation to pay the pensioners and does not invest at all in any asset.

McCarthy (2003), based on lifecycle hypothesis of consumptions opines that retirement planning should examine a tradeoff between defined benefits (DB) and defined contribution(DC) pension plans by varying the effect of risk aversion, initial income, financial wealth and wage process. The author indicated that Defined Benefit (DB) is valuable if the wealth is higher relative to income and wage variability is low. He suggests that older workers should join define benefit plan or national wage-linked social security system and should be enhanced for older workers. In Ghana, both formal and informal pension schemes have been designed by the Social Security and National Insurance Trust (SSNIT). Institutions such as pension trust and life insurance companies offer a private pension, Retirement Savings, Interest Earning savings (Provident Fund) and Endowment Insurance and others such as personal pension plans, executive pension plans and group pension plans for plans for the informal sector.

Additionally, there are companies who are solely into informal voluntary pensions schemes based on defined contribution model. To enhance pension design, Dixon and Hyde (2008) argued that the design should have a strong market orientation and its objectives should include

coverage, governance, benefits financing, eligibility and coverage with emphasis on income redistribution. Providers should also engage the right stake holders in its administration. In the Ghanaian context, the cap 30 pension which was a funded and non-contributory scheme used to be 20years, the new pension reforms makes the years of contribution 15 years while the informal sector pension contribution can be 5 – 10 years and must be voluntary (Agblobi, 2011; Ce Shen, and Williamson, 2010). From the demand side, though this study did not assess the duration poultry agribusiness workers want to contribute to a scheme, the age with which they would to retire was analyzed. They study also looked at the model of financing pension scheme in the study area from the supplier side.

2.6 Models for Providing Pension Schemes

In the search for a model for providing pension scheme for the informal sector, MacKellar (2009) argues that a model that ensures that a sale is voluntary, while compliance is mandatory has normally not been successful. He recommends an innovative approach based on community-based savings schemes which targets member of cooperatives and occupational associations, while collecting payment through agents, mobile phones, post office, banks, MFI's and insurance companies. Most pension models are based on the Swiss Chilanpore model. According to Atta-Atta-Botchwey (2012), Switzerland, Chile and Singapore represent the flagship of pension schemes that provide a safety net and voluntary savings based on a three-pillar system. Similarly, analysis of the Ghanaian Pension system reveals a three-tier system.

For the informal sector, particularly for agribusinesses, and farming communities, China's rural pension schemes serve as good models. In the Chinese rural pension model, the government of China makes direct contributions to rural pension schemes and government involvement has a

positive externality effect in terms of economic and social development (Ce Shen and Williamson, 2010). In the Chinese model, the local and central governments as well as individuals are involved. The contribution of local government to affluent regions is higher and is a voluntary program for all rural residents aged 16 and above. The pension age which is the minimum number of years a worker should contribute is 15 years and the retirement age of 50 and 55 years and those living in developed areas contribute 8% of their personal income (Ce Shen and Williamson, 2010).

Castel and Phuong (2009) explained a Vietnam model that has two components; mandatory and voluntary system. The mandatory covers wage employees who have worked for 3 months and above while the voluntary cover other workers. They suggest that the mandatory encapsulates benefits such as short-term benefits, compensation for a work accident, occupational disease, old age pension and survivorship. The voluntary systems consist of survival pension benefits. Dixon and Hyde (2003) provide a model that shows retirements benefits are fully funded by employee contribution only but centrally collected, and is subsidized by the government. Under this approach, there can be deferred retirement, early retirement, gender discrimination, and pre-retirement withdrawal.

Also retirement funds have regulatory boards, pension fund guarantee in event of insolvency, prohibiting owner to be part of boards. Moreover there is mandatory investment requirement and competitive measures with statutory rights, agency board, public appeal process and government underwriting in the event of insolvency and mandatory investment requirements (Himick, 2009). To Atta-Botchwey (2012), pension models of Switzerland, Chile and Singapore, that has become

known as the Swiss Chilianpore represents best practices in pension reform, which is discussed as follows:

2.6.1 The Chilean Pension System

The Chilean Pension Reforms took place under the leadership of Augusto Pinochet (Atta-Botchwey, 2012; Himic, 2009). According to Atta-Botchwey (2012), the Chilean system was introduced in 1981 to replace the pay-as-you-go system. The scheme requires employees to contribute 10% on the first \$22,000 of their income until retirement ages at 65 for men and 60 for women. The system requires workers to contribute for at least 20years to qualify for a minimum pension. The Chilean model is government regulated and privately managed and contributors receive regular statements with information about their contribution and investment income.

A worker may contribute more than 10% of his/her salary if he/she wants an early retirement. The Chilean system has proven successful and Chilean workers are actually investors in the country's development (Atta-Botchwey, 2002). However, the schemes give rise to a regressive redistribution of pension income in favor of high-income workers steaming from the commission charges. Over the years, Peru, Argentina and Colombia and other South American countries and China went to understudy Chilean private pension system (Atta-Botchwey, 2012). Himick (2009), reports that the World Bank has adopted the model in its pension reforms in some 80 countries worldwide.

2.6.2 The Swiss Pension System

The Swiss system is based on defined benefit with three pillars similar to the three-tier system in Ghana. The first pillar is a social insurance similar to the role of SSNIT in Ghana. However, the Swiss pay defines benefit with a contribution of 8.4% split equally between the employer and employee while the government also contribute to the general revenue to cover 20% of pension payments. It facilitates a redistribution scheme in favor of low-income earners. According to Atta-Botchwey (2012), Ghana's national budget is 40% donor funded and cannot do same. The second pillar is a compulsory based plan that complements the first pillar and the third pillar is voluntary that includes fiscally supported pension plans for the informal sector (ibid).

2.6.3 The Singapore Pension System

Singapore established a provident fund in 1955 to encourage savings for retirement (Atta-Botchwey, 2012; Asher and Karakuranthre, 2001). The funds were invested in high interest yielding assets, but in addition had retirement-related withdrawals for housing, health and tertiary education. Only native and permanent resident workers are required to contribute to the fund and funds can be transferred to children who will support parents at old age. The Singapore system was a mandatory savings scheme with a retirement age of 55 with a contribution of 10% shared equally between the employee and employer, and a lower contribution rate for people over 55, and low-income earners below a certain threshold exempted from contributing. The income realized at the age 60 is used to purchase life annuity equal to 20% of average earnings.

Singaporean pension system force natives to save towards old age and also encourages acquisition of merit goods such as health, housing and education. The government gives public

assistance to the destitute which is about 12% of their average earnings. However, the weakness in their model is the high contribution rate and low returns on their investment. Atta-Botchwey (2012), analyzed the three countries pension models and highlighted some important difference as follows:

- The Swiss system, like those of most OECD countries, is extremely complex and opaque.
- The Singaporean system is quite simple and operationally efficient. However, it suffers from lack of transparency and produces relatively low returns and benefits to its affiliates.
- The Chilean system is very simple and highly transparent and is also supported by very effective regulation and supervision. It has produced very high real returns, but suffers from very high operating costs.

2.6.4 The Ghanaian Pension System

In 1965, Parliament passed Act 27 that required all workers in the formal and informal sectors to join a contributory scheme, meant to pay for: survival, invalidity and superannuation. According to Agblobi (2011), Ghanaian pension scheme metamorphosed from cap 30 scheme to SSNIT and the Ghana universities staff superannuation scheme (GUSS). According to Yankah (2008), cap 30 scheme was set up by the colonial government to attract and maintain talents. Also to maintain discipline since the right to enjoy cap 30 was not automatic for a worker who was dismissed or break service. Yankah (2008) also pointed out that the scheme initially was non-contributory defined benefit scheme until 1972 when it was made compulsory for teacher and

civil servants. They were required to pay 5% of their basic salary and the rest was financed from the consolidated fund from export and taxes which increases the burden of the taxpayer (Atta-Botchwey, 2012; Agblobi, 2011). It also depended largely on government budget and different law and regulations were passed until 1972 when SSNIT provident fund was set up by State Insurance Corporation(SIC) and some public service workers joined (Agblobi, 2011). SSNIT scheme is a Para-statal pension since contribution is split between the employer and employee. It is a funded scheme unlike the cap 30 which was unfunded (Atta-Botchwey, 2012). The Ghana University Superannuation Scheme (GUSS) scheme prior to 1976 was for every member in public universities and non-contributory scheme but now restricted and senior members can join but not mandatory (Agblobi, 2011). Currently, the scheme is financed by the split contribution made up of 10% from the employee and 12.5% of the employer. Meanwhile, 22% is invested in high yielding investments in equities, fixed assets and members enjoy refund pension that is tax-free lump sum (Agblobi, 2001).

The new Pension Act 2008 makes social security contribution mandatory for every worker based on a three-tier system. The first two tiers are mandatory for formal sector workers and the third tier is voluntary. This is why Agblobi (2011) suggested that those in informal sector including poultry agribusinesses in the sector can take advantage of the voluntary third tier system. The first tier basic national social security scheme (BNSSP) is mandatory, under which 18.5%, is paid by both employer pay (13%) and employee pay (5.5%). The 13% is sent to SSNIT, who in turn sends 2.5% to national health insurance. The 5% is sent to mandatory occupational pension scheme provider. It must be noted that the first two tiers are mandatory and fully funded, the first tier is government managed, while tier 2 and 3 are privately managed. The government regulates all the 3 tiers through the National Pensions Regulation Authority (NPRA). The third tier is

voluntary and not binding on employers and the National Pension Act indicates that personal pension schemes apply to the following categories of individuals:

- a) Those who want to make voluntary contributions to enhance their pension benefits outside the mandatory schemes.
- b) Those in the informal sector who are not covered by any retirement or pension scheme under the mandatory part of the first Second-tier and may purchase the informal voluntary third tier.

According to Agblobi (2011), the voluntary pension system is open and makes no restriction on the number of applicants. However it must be a registered pension scheme. Agblobi (2011) noted that the voluntary pension schemes are of two categories namely formal and informal sector pension schemes. In which the formal sector personal pension is in a form of a provident fund. The main difference is that the formal sector contributions are not staggered into personal savings and retirement accounts as that of the informal sector.

The uniqueness of the informal voluntary pension scheme is the absence of ceilings and floors in terms of contribution. Contributors can contribute any amount and it does not matter the frequency of contribution. It all depends on the contributors' dreams and packages they want to enjoy during retirement. With regards to the formal sector, Atta-Botchewey (2012) points out that to enjoy full pension a contributor must retire at the age of 60 to enjoy full pension else will enjoy reduced pension at age 55. He added that through retirement age is 60 and 55, a contributor's pension age is 15years that is the number of years one has to contribute to the

scheme. Similarly, an effort was made to gauge the preferred retirement age of poultry agribusiness workers in the study area in order to enjoy full pension from the supplier side.

2.7 Knowledge of Pension Schemes

Lack of accessible and reliable information is a challenge to pension schemes. Harrison *et al.*, (2006) analyzing the purchasing behavior of occupational pension scheme in Edinburgh observed that timely and effective information as a prerequisite to enrollment on pension schemes. According to Lee and Hogarth (2000), lack of adequate knowledge to identify and process relevant information influences the purchase behaviour of clients. Sowa *et al.*, (2013) suggest that knowledge about pension schemes has a positive influence on participation in the case of drivers and woodworkers in Ghana.

Adzawla *et al.*, (2015) analyzed the factors influencing the informal sector contribution towards pension schemes in Tamale, Ghana. The authors employed a Hackman two-stage approach and observed that 82.7% of respondents were aware of pension schemes. However, lack of knowledge about pension schemes was prevalent among respondents and a constraint to the patronage of informal voluntary pension schemes in the Tamale Metropolis in Ghana.

Castel (2008) in his analyses of the Vietnams informal sector to ascertain their willingness to participate in voluntary pension systems found knowledge as a precursor to participation in pension schemes. Withanage *et al.*, (2000) employed a probit model to analyze data obtained from farming communities in Sri Lanka and observed that lack of knowledge on the benefit of the scheme led to low participation.

Gordon *et al.*, (1997) identified sources of information on pension schemes to includes but not limited to, insurance agents, microfinance institutions, newspapers and magazines, brokers, and bankers. MacKeller (2009) notes that in India, pension products are made known through distribution channels included the post office, insurance companies, points of service in rural areas and banks by Pension Fund Regulatory and Development Authority (PFDR).

2.8 Perception of Pension Schemes

Caste and Phuong (2009) stresses that changing perception and attitude of the younger generations towards pension schemes are paramount to expansion in terms of coverage. Harrison *et al.*, (2006) however, found mix results after employing a phenomenology methodology utilizing focus group discussion, reports of negative and positive perceptions as influencing consumer decision making regarding the choice of a pension scheme in the UK.

To determine the perception among Dutch farmers, Asseldonk *et al.*, (2010) used a five point Likert scale to evaluate the variable perception of the adequate state pension. They elicited a response from 1,128 farmers and observed that majority of respondents perceived the state pension as modest. When binary probit model was employed, it was also observed that perception of declining financial situation was significantly and negatively associated with wealth. The authors found the sum of farm assets and household savings influenced the amount of equity available for retirement.

2.9 Attitude towards Pension Schemes

There is a link between attitude and perception (Anifori, 2009). Anifori (2009) view attitude as the willingness or predisposition of an individual to react positively or negatively to a stimulus

pattern of a product offer. Consumers attitude towards a product depend heavily on their perception of the product (Padberg *et al.*, 2002; Alvensleben and Meier, 1990).

Harrison *et al.*, (2006) employing focus group discussions observe that attitude of individuals influence their decision to purchase pension schemes by moving them through the cognitive, affective and conative stages of the consumer decision-making process. Adzawla *et al.*, (2015) noted the lack of confidence in scheme due to past experience of relatives and difficulty in access to office influence the willingness to pay for informal voluntary pension schemes in the Tamale Metropolis of Ghana.

Withanage *et al.*, (2000) employ probit model to study an alternative premium payment method to finance farmers' pension and social security benefit among farmers in Sri Lanka and found out that farmers were willing to pay low contribution but wish to get higher pensions. Their study concluded that people's attitudes towards pension schemes in some situations are influenced by political factors. Castel (2008) also found that attitude towards long-term planning influence informal sector workers to participate in actuarially fair informal voluntary pension schemes in Vietnam. Casals (nd) observed the effect of feelings and interest on consumer's attitude towards micro pension schemes in Philippines and reports that effective demand for micro-pension scheme was mediated by usage, interest and awareness. Harrison *et al.*, (2006) concludes that positive or negative feelings about retirement can have a negative or positive externality effect on pension contributors.

2.10 Old Age Challenges and Benefits sought from Informal Voluntary Pension Schemes

Understanding old age challenges and key benefits sought would be of paramount interest to companies that design pension schemes and it allied financial services in order to bridge the gap between contributions and benefits particularly for informal workers. Adzawla *et al.*, (2015) reports that major occupation in the informal sector in Ghana is agribusiness which falls within production, marketing and services. Sahu (2014) noted that the informal sector workers include construction workers, drivers, farmers, poultry agribusinesses including poultry farming, home-based workers, casual labour, street vendors, handloom workers, dairy farmers, landless laborers and other wage labour.

Individual's including poultry agribusiness worker in the informal sector decision to participate in the informal voluntary pensions and retirement savings involves a tradeoff between immediate and future consumption in order to address perceived old age challenges which may be material, emotional and health and, financial and disabilities (Himick,2009). Casals (undated) also noted that the challenges of the aged include lack of employment and consequently become dependents due to lack of enough income. Health challenges, material challenges, physical challenges, and sometimes stigmatization are some of the old age challenges faced by the aged (Brown, 1999).

According to Atta-Botchwey (2012b), premature death, long-term disabilities are some of the challenges that should be addressed by social protection programs. He succinctly opined that there should be social adequacy and individual equity. He stresses that social adequacy has to do with providing a required standard of living to all contributors dubbed minimum social protection floor (SPF) by International Labour Organisation (ILO) in 2012, which is essential health care and basic security for all guided by recommendation no 202. According to ILO

(2014), the SPF framework is meant to address the issue of poverty, income inequality and social exclusion. However, for equity one's benefit has to relate to his or her contribution, thus lowering the gap between the actuarial value of benefits and the actuarial value of contributions. Key benefits under Ghanaian Social Security Act of 1965 were: death/survival benefits, invalidity benefits, emigration, and sickness which was added in 1968. Moreover, indexation in line with benefits was built under PNDC law 247, section 39 and disability benefit under ILO convention; other benefits identified by Atta- Botchwey (2012) include: coverage for medicals, accidents, vacation, disability, daycare, training programs, and prepaid legal services. Similarly SSNIT lays emphasis on social adequacy through minimum pension (Atta-Botchwey, 2012b).

Zhang (2015) categorized benefit sought for the aged into monetary support and caring support with their children giving caring support dubbed off-spring support in China. Shen and Williamson (2010) noted that pension helped the aged with no children and disabled who are to pay for necessities such as food, medicine, clothing housing water and electricity, burial expenses and decrease dependency on others in terms of financial support and reduces family tensions. Moreover key benefit sought may also depend on one's needs, marital status as well as his or her gender. Adzawla *et al.*, (2015) analyzing the benefit sought from informal voluntary pension scheme reports of secure future reduction in frustration, income for a family upkeep and rest at old age as benefit sought by informal workers in the Tamale Metropolis in the Northern Region of Ghana.

Zhang (2015) argues that pension can be a source of saving that also provides retirement salary and access mitigate depending on children for old age monetary support while children can provide monetary support such as care. The benefit can be in the form of cash or kind (De la

Maisonneuve and Mylonas, 1999). Sahu (2014) identified regular cash transfers, health care and access to service were some of the benefit sought at old age among informal sector workers in India.

MacKeller (2009) views housing and education as benefits sought by pensioners. He also identified index linking the lump sum to consumer price index and payment can be made to dependents when a contributor dies before the pension age in Vietnam. However, lump-sum benefits, health insurance were benefit sought in the informal sector in India. Casals (undated) in his exploratory study of micro-pensions in the Philippines, identified housing and health as the two key benefit sought by informal workers when they are old. Moreover, good time with children and grandchildren not as dependent but supporters and also continue to be some kind of benefit sought in gross defiance of the disengagement theory, which posits that as people grow old, society redraw from them, and they also redraw from the society.

On the issue of health however, they wanted community health workers and city clinics to take care of their health with regards to payment options, they want lump sum and installment or both and wanted the third tier of their contribution to be linked to a housing fund administered by a government financial institution. The benefit sought in relations to health, Chen *et al.*, (2015) categorized health into physical and mental health, and observed that, social support sought includes but not restricted to offspring support and other support (ibid).

Attah-Botchwey (2012) identified income for invalidity, consistent with observation made by De la Maisonneuve and Mylonas (1999), who identified benefit sought from Greece pension schemes as “cover for old age, survivor, invalidity health care and other social benefit corresponding to contributions with the payment of funds be it primary, supplementary and

separation payments. However, Mackellar (2009) observed that pre-retirement redraw benefits were tied to education, housing and health in Asia. Atta- Botchwey (2012) concluded that benefits are prescribed by law with administration or supervision plan by the government.

With regards to the administration of pension benefits MacKeller (2009) found out that years of contribution can be 5, 10, 15 and 20 years after analysis varies schemes in Asia while Spivak (1995) observe 10-year duration in France. Agglobi (2011) reports that the minimum number of years to contribute is 15 years and 5 years for withdrawal in Ghana. However, the retirement age to enjoy a full pension is not gendered sensitive and is 60 years compels.or retirement and 55 years for voluntary retirement to enjoy reduced pension in Ghana. Moreover, to get tax exemption for a voluntary pension scheme for the informal sector, one's contribution must not exceed 35% of his/her income and average of your three best years' salary is paid as a basic pension. It is worthy to note that the social safety net is limited as it does not cater for unemployment benefits, automatic pension for all retiree (universal pension), in a form of free transportation or subsidies on rent or mortgage allowance (Abglobi, 2011). Conclusively empirical literature key benefits sought appear to reinforce the activity theory of aging which suggest that individuals still want to be involved in the social activities in the society.

2.11 The Concept of Willingness to Pay

Willingness to pay is the maximum (WTP) amount of money a consumer is willing to pay for a product of choice (Dimitri and Greene, 2002). According to Centre for International Economics (CIE), (2001) this can be gauged by either revealed preference techniques in situations where past data or stated preference or stated preference technique when data is yet to be collected.

The direct way to apply stated preference technique to elicit a poultry agribusiness workers willingness to pay is to ask them how much they would be willing to spend on an informal voluntary pension scheme. In the family of stated preference techniques is contingent valuation method(CVM) for open-ended and dichotomous choice formats. Contingent valuation is a direct survey approach which is used in the estimation of preferences for goods and services. Historically, Green and Jacowitz (1998) report that open-ended contingent valuation technique was used by Davis (1963). Arguably CVM initially was used for estimating WTP for non-market goods, but now also used to evaluate willingness to pay for new products based on the Random Utility Maximization theory (Marschak, 1960; Lusk and Hudson, 2004).

Other stated preference techniques such as choice experiments and conjoint analysis are beyond the scope of this work. To elicit an agribusiness worker's willingness to pay for the informal voluntary pension scheme, in this study a CVM in the form of sequential bidding game was employed for the valuation of informal voluntary pension schemes for poultry agribusiness workers in the study area.

2.12 Empirical Review on Socio-economic Variables Influencing Willingness to Pay (WTP) for Pension Schemes

Literature synthesis supports the notion that socioeconomic factors of informal sector workers including poultry agribusiness workers influence their willingness to pay for non-marketed hypothetical goods. Factors influencing their willingness to pay include socio-demographic characteristics of the workers, product characteristics and institutional factors. Paudel (2007) in

his willingness to pay study among Broiler producers in Louisiana state in the USA observed that willingness to pay (WTP) was affected by the number of broiler houses (endowment effect), proceeds from broiler operation (income effect), number of alternative operations (substitution effect), and knowledge of regulators were eminent (information effect), if they were to continue broiler production.

Collins-Sowa *et al.*, (2013) analyzed willingness to participate in micro pensions schemes in Ghana using 400 urban informal workers made up of drivers, woodworkers, beauticians and urban vegetables growers, and applied binary logistic regression model to analyze socioeconomic variables that influence their willingness to pay. The empirical results obtained revealed that age, education, marital status, household size, pension type, health status and other incomes sources influence their willingness to pay. In the case of vegetable farmers, the location of production, having assets such as livestock had a negative influence on the farmer's willingness to pay. Also age, membership of FBO, duration of premium payment savings and household size influence farmers willingness to participate in micro-pension scheme. However, savings had a negative effect on vegetable farmers' willingness to participate in the scheme. Again, knowledge about the scheme, payment mode, as well as type of pension scheme also influences the informal sector decision to participate in the pension scheme.

Adzawala *et al.*, (2015) assessed the factors influencing the informal sector workers willingness to contribute to pension schemes in the Tamale metropolis in Ghana. They found out that those older workers had a higher probability of joining the scheme than younger workers. Beside contrary to expectation single workers had a higher probability of contributing to pension schemes than their married counterpart. With regards to education the estimated effect of

education was positive, meaning that the more years one spent on schooling exerts a positive effect on willingness to pay for a pension scheme in the study area. The marginal effect of income was positive meaning that the higher the income level of a worker the more likely he would contribute to the pension scheme. Finally, higher household size with large dependents also exerted a positive effect on the willingness to contribute to pension scheme contrary to expectation; the authors posited that smaller households with fewer dependent may have a preference for bank savings instead of pension schemes.

Castel (2008) identified factors that influence the willingness to participate in voluntary defined benefit pension schemes in Vietnam by employing an ordered logistic regression model and observed that apart from the warfare enhancement in the pension packages, saving capacity, higher wealth, education, access to credit, fiscal burden, knowledge and attitude towards pension scheme had positive influence on informal sector workers willingness to pay for pension schemes. Withanage *et al.* (2000) in their study an alternative premium payment to finance farmer's pension and social security benefit in Sri-Lanka utilizing a contingent valuation method and probit model to gauge socioeconomic factors that influenced farmers' willingness to pay reported that, older farmers were more willing to pay more to join the scheme; they also noted that married farmers were not enthusiastic about joining the scheme, possibly due to higher household income expenditure. However, employment status such as being a full-time farmer positively influenced their willingness to pay than their part-time cohorts.

Also insurance related and farm specific variables such as membership of an insurance scheme, higher farm sizes, had a positive influence on WTP estimates. Chen *et al.*, (2015) analyzed the factors influencing the willingness to pay for general practitioners in contractual services in

China employing a multistage random sampling to selected 900 urban elderly with the application of COX's Proportional Hazards regression model. They observed that gender, health status, education income and pension mode significantly and positively influenced the willingness to pay for the service of contractual service of a general practitioner. They observed that females had higher willingness to pay than males, besides the level of education which was used as a proxy for earning capacity also influenced their ability to pay. They also observed that families higher per capita income with poor health status have higher willingness to pay.

Ginn (2001) in the assessment of Britain and US pension system observed a risk of exclusion of women since of their role affects their pension benefit, as they take part-time employment to cater for their children. He observed that full time well educated and well-paid women had more benefits and other factor identified that affects pension benefits were a social class, ethnicity, motherhood, and gender roles, particularly in the traditional model, where males are breadwinners and female are homemakers had a different implication for contribution towards pension schemes.

With regards to income, he found out that minority ethnic group with depressed income normally received a lower state pension. For marital status he observed that divorced women with children often face many years of restricted earnings after divorce settlement and subsequently claim a portion of ex-husband's pension. Spivak (1995) in his analysis of the Israelites pension system made it explicit that women receive nearly twice the pension than men since women receive a pension at 60 and men at 65 and also have higher life expectancy than men. He succinctly opined that actuarial consideration involves different assumptions about men and women, in

terms of the wage increase, methods of indexation and their ages also influence distribution of pension funds.

Zellig *et al.*, (2005) in their study of state retirement age common misconception about retirement and state pension, observed a difference between pension age and retirement age in terms of factors influencing pension eligibility. They highlight the role gender and marital status play in pension schemes, by maintaining that women are eligible for a state pension at a younger age in the UK. However, marital status influences pension payment, where divorce means a smaller portion of women can rely on their husband's pension at old age.

Zhang (2015) in his study 'children old age support and pension in rural China employing a Difference in Difference (DID) analytical tool observed that sex ratio, gender, at least having a son, larger total number of son and daughters, lower educational achievements, higher proportion of minorities, lower individual income, and household income were all statistically significant. The empirical estimate made it explicit that, peasant farmers having sons were less likely to participate in pension schemes. However, his result showed that having access to pension negatively influence peasant farmer's reliance on their children for old age support.

A similar study by Bärnighausen *et al.*, (2007) on a willingness to pay for social health insurance among informal sector workers in Wuhan, China; a contingent valuation study found out that, informal workers were willing to pay a substantial portion of their income based on the premium to require to obtain social health insurance coverage.

2.11 Constraints to the Development of Informal Sector Pensions schemes for Farmers

A skim through literature identifies a wide range of constraints to the development of informal voluntary pension scheme for agribusiness workers. Ce Shen and Williamson (2010) noted that, it takes time for farmers to accept pension schemes. Other constraints they identified were lack of affordability due to regional differences in economic development and income levels making poor households unable to afford a contribution of pension schemes in rural China apart from low benefits and weak administration. In a similar survey, Fanning (1985) reports that occupational pension is affected by inflation, economic, social and demographic influences. These include death, marriages, ill health, number of dependents, having children and number of schemes one has. He identified some constraints such as inaccurate forecasting since actuarial forecasts of short and long-run rates compare with future schemes are affected by recessionary constraints such as lack of sufficient contribution flow.

To Adzawla *et al.*, (2015) constraints to the development of pension include difficulty in accessing contribution, difficulty in access to funds manager's office, low confidence in the scheme, low and irregular flow of income, low knowledge of the scheme were some of the constraints to the development of pension schemes in Ghana. Following from this, Castel (2006) identified high contribution and lack of understanding, low benefits, and complicated paperwork as some of the constraints. Roberts *et al.*, (2002) in his analysis of fifteen rich and poor countries identified constraints to the development of informal voluntary pension scheme as low level of fiscal resources, lack of capacity for low-income groups, unwilling of some individuals to contribute, lack of capacity to collect contributors, lack of institutional infrastructure and intrinsic difficulty to extend coverage to rural areas and government lack of capacity to extend

social protection to informal sector and farmers. Mackellar (2009) also reports of harvest failure, natural catastrophe, lack of infrastructures such as transport and communication systems, how to determine the revenue to be collected due to low income and lack of affordability which makes only a few farmers participate (Ngugen *et al.*, 2009). Moreover difficulty in asset management, lack of access to information on payment details, default rates and ad hoc forgiveness of debt remain a challenge to Sri Lanka's farmer's pension scheme (*ibid*). In China, their rural pension scheme is constrained by lack of sophisticated management skills, political interference, and embezzlements that brings about low operational efficiency.

Withanage *et al.*, (2000) report of lack of revision in the premium, lack of indexing premium to inflation and interest rates as constraints facing Sri Lanka's farmers' pension and social security benefit schemes. Other constraints include political constraints, mistrust of regulations and cost of compliance. Casals (undated) in his study of the Philippines also identified, underfunded government agencies, poor payment collection, lack of access, lack of understanding of the products and lack of transparency in marketing as some of the constraints.

Other constraints observed by the author include high premium, absence of product option for the poor, few choices among standard pension products, lack of understanding of pension product's needs, deliberate falsification and negligence in the performance of duties, challenge of pension fund managers standards of selecting investment portfolio, lack of new products development for existing market, lack of long term bond markets, weak regulation, low capability of regulators, inconsistent payment, red tape in application for membership and services delivery, lack of client education, workload of field office staff, and lack of good customer relations.

Furthermore, constraints identified by Niguyen *et al.*, (2009) include retirement as age being too and job turnover which brings about low preference for social protection schemes. Leaning on the work of De la Maisonneure and Mylonos (1999). Other constraints identified are: pension fraud, contribution evasion, lack of transparency, poor administration and complexity in pension systems. Harrison *et al.*, (2005) view misselling of pension products, misappropriation scandal, and gender bias towards woman as it is not beneficial for some women due to low incomes, part-time and breaks in employment (Ginn, 2003).

For informal sector constraints to developing Informal Voluntary pension schemes. Mackellar (2009) observed low informal sector workers' capacity to contribute; high default rates in Sri Lanka compromised the voluntary. The work of Zhang (2015) in rural China revealed the following constraints: poor management, intimidating recruitment tactics and embezzlement. A detailed analysis of the work Mackellar (2009) summarizes the constraints as: Investment, administrative, institutional, and managerial and pension funds to meet their commitment.

2.12 Chapter Summary

The review of the literature shows that pension schemes for poultry agribusiness worker remain a social protection instrument that can insulate poultry agribusiness against old age income insecurity and poverty. Yet its willingness to pay is influenced by socioeconomic factors, whereas its development is constraint by both technical and institutional constraints, which has not been assessed in poultry agribusiness sector, particularly in the Kumasi metropolis of the Ashanti region of Ghana. The next chapter looks at the methodology in other to achieve the objectives.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter focuses on the methodology of the study. The Chapter describes the theoretical, conceptual and Analytical frameworks, in addition to various statistical methods and econometric models used for empirical analysis of data collected in line with the objectives of this study. This chapter also presents the study area, the specification of empirical model, statement of hypotheses, methods of data collection and data analysis.

3.2 Description of the Study Area

Kumasi is the most popular metropolis located in the central part of the Ashanti Region of Ghana. It is between latitude 6.35° - 6.40° and longitude 1.30° - 1.35° , an elevation which ranges between 250 - 300 metres above sea level with an area of about 254 square kilometres. Kumasi Metropolis is the most populous district in the Ashanti Region and share boundaries with Kwabre district in the North and Bosomtwi-Kwanwoma district in the south. The West and the East Borders are Ejisu-Juaben and Atwima-Kwanwoma districts respectively (GLSS, 2010). The centrality of Kumasi as a nodal city with major routes linking it to other parts of the country makes Kumasi Metropolis not only entirely urban but accounts for a third of the region's population (GSS, 2010). Commercial activity in and around Kumasi as well as the high migrant number may account partly for the relatively high urban population.

3.3 Conceptual Framework for the Study

The conceptual framework in figure 3.2 shows various factors that account for poultry agribusiness worker's willingness to pay for informal voluntary pension scheme is influenced by their socio-demographic characteristics: age household size, education which influence their knowledge and perception about involuntary pension scheme and their provider, marital status. Product characteristics such as: product benefits in terms of meeting the social protection floor of addressing income insecurity and health challenges, at old age in addition to the mode of financing, as well as institutional factors such as: availability of informal voluntary pension providers, their trustee governance and operations models. These factors influence poultry agribusiness workers perception, attitude and willingness to pay for informal voluntary pension schemes. However, constraints to providing informal voluntary pension scheme should be surmounted by providers and poultry agribusiness workers for the scheme to operate.

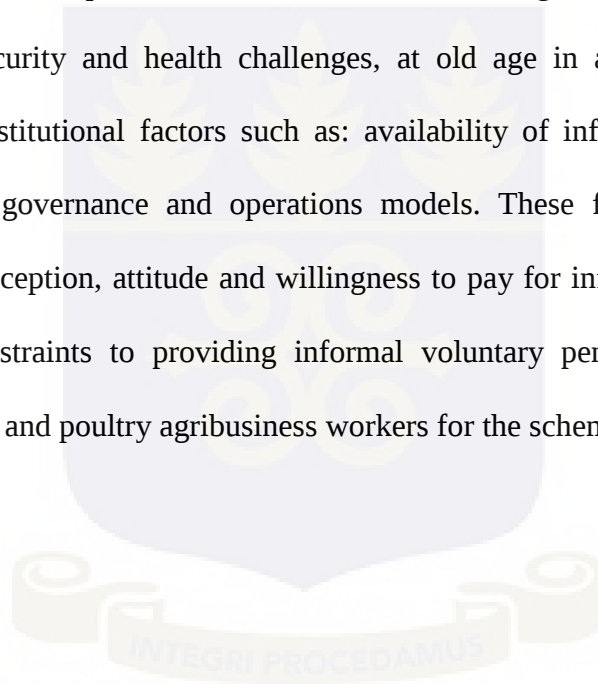
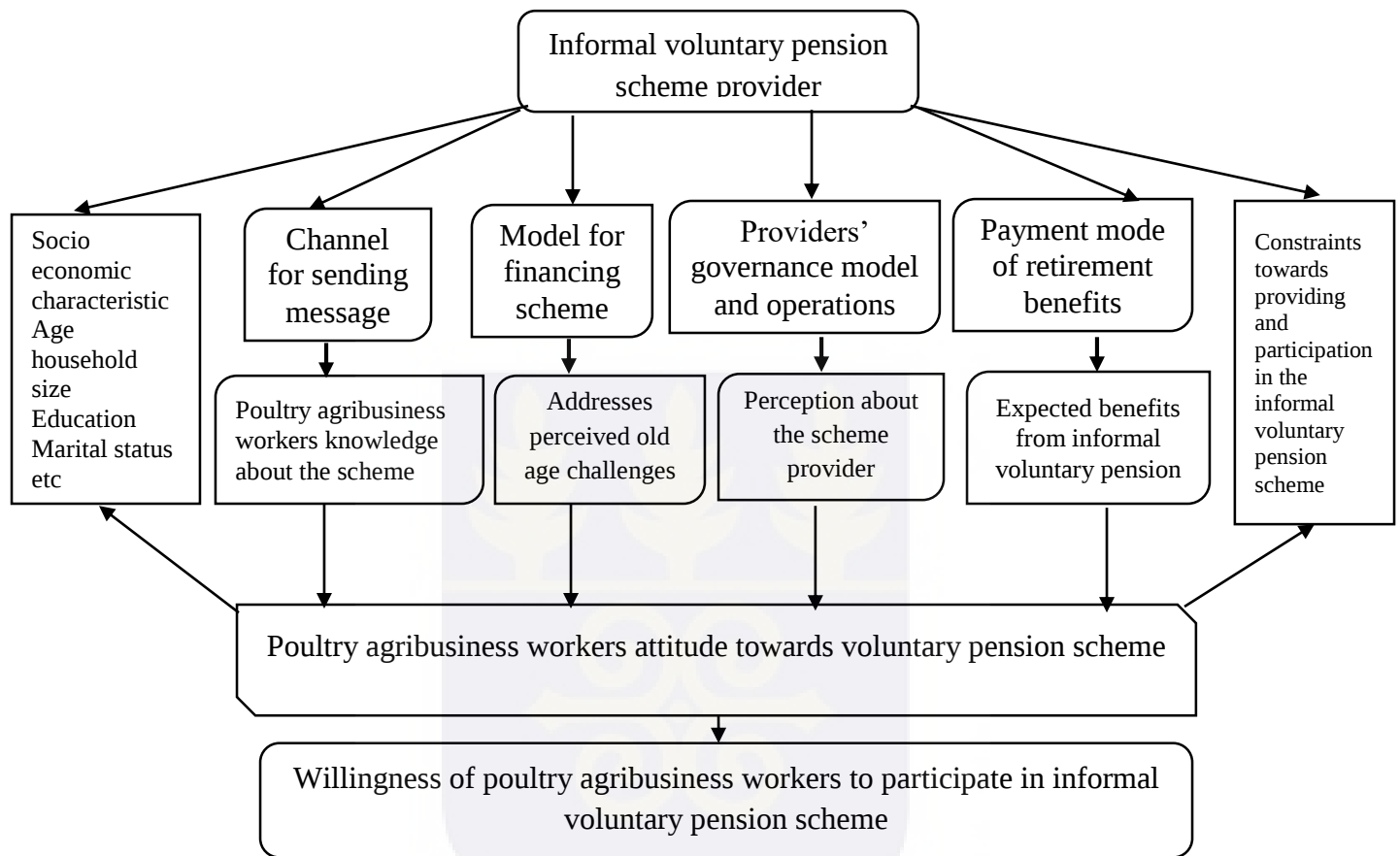


Figure 3.2 Conceptual frameworks for poultry agribusiness workers' willingness to pay for Informal voluntary pension schemes



Source: Authors construct 2015

3.4 Theoretical Framework for the Study

3.4.1 Theoretical Framework on the Concept of Willingness to Pay

The concept of poultry agribusiness workers' preference and willingness to pay for Informal Voluntary pension schemes is rooted in microeconomic theory and Lancaster (1991) characteristics methodology. Poultry agribusiness workers' choice decision can be linked to their socio-economic characteristics such as their ages, income, gender, educational levels,

household sizes, coverage, product characteristics such as Informal voluntary pension scheme type based on the mode of contribution, types of benefits and retirement age and pension component, in addition to institutional characteristics such as presence of pension scheme providers, access to credits, and macro policies aimed at controlling inflation and operational cost of the provider.

Lancastrian random utility theory suggests that poultry agribusiness workers will be willing to participate in pension schemes, if the utility derived from the scheme will be higher than other alternative schemes such as investment and savings (Collins–Sowa *et al.*, 2013). The random utility theory is based on the assumption that a rational poultry agribusiness worker has a utility function for alternatives and assigns a value for each alternative by valuing and trading off the attributes that are important to their choice decision. According to Acheampong (2015), the sources of utility are linked to the schemes attributes, the contextual characteristic and socio-economic characteristics of the worker. Following the theory suggests that the poultry agribusiness workers will select informal voluntary pension schemes that offer the highest utility subject to their income constraints (Loureiro and Umberger, 2006) given by

$$WTP = f(\Delta U) \quad (3.1)$$

Where, ΔU is the change in utility and $f > 0$ and the utility derived from by an agribusiness worker is given by:

$$U_i = X_i\beta_i + \varepsilon_i \quad (3.2)$$

Where, U_i is the utility arising from choosing the i th alternative, $X_i\beta_i$, the deterministic component of the utility function where X_i is a vector of explanatory factors, β_i is a vector of parameters and ε_i is the error term. In the rational sense, an agribusiness worker would choose alternative i , if $\mu_i > \mu_j$, for all $j \neq i$ or that $\Delta U = U_i - U_j > 0$.

$$WTP = X_i\beta_i + \varepsilon_i \quad (3.3)$$

Hence their WTP can be expressed as:

Where WTP is the utility that a poultry agribusiness worker obtains from pension product i and β_i is the deterministic and observable part of the utility, which is related to the attribute of the pension product and the term ε_i is the error term.

3.4.2. Estimating WTP Using Contingent Valuation Method (CVM)

The elicitation of willingness to pay values for this study was based on contingent valuation method (CVM) (Lusk and Hudson, 2004). Given that informal voluntary pension schemes with varying coverage have the potential to mitigate the effect of old age, vulnerability and poverty arising out of income insecurity. Following Owusu and Anifori (2013), a hypothetical market was created and respondents were asked how much they are willing to pay for non-marketed informal voluntary pension product with a change in levels of attributes (Bateman and Willis, 1999). Though CVM has a lot of weaknesses such as starting point bias, hypothetical bias, implied cue bias and other, its choice was based on the fact that it has been applied to a lot of business, environmental and agricultural extension researchers (Whitehead *et al.*, 2000). Moreover, CVM is relatively simple when it comes to measuring perceptions and attitudes toward new products (Blaine *et al.*, 2003).

Following this, Ajayi (2006) conducted a study on farmers' willingness to pay for extension services in Nigeria by using CVM. In South India Chandrasekaran *et al.*, (2009) also used this elicitation technique to determine farmers' willingness to pay for tank irrigation water, while Boadu (1992) used it to assess payment for household water in rural Ghana. Moreover, Budak *et al.*, (2010) used this technique to determine livestock producers' willingness to pay for extension services in Turkey. Through CVM, WTP could be estimated using open-ended questions where respondents are asked to declare the maximum amount they would be willing to pay. However, the open-ended format can be problematic since the respondent might not have sufficient information and stimuli to thoroughly consider the values they would attach to such good or service if a market were to exist, and might result in biased estimates (Arrow *et al.*, 1993). Dichotomous choice involving close-ended questions can also be done by asking the respondents if they would be willing to pay a specific amount or not. This approach also factors the production cost into the pricing of the product. These types of surveys only give meaningful results if they are based on consumer utility maximization framework (Hanemann and Kanninen, 1998).

Close-ended questions, on the other hand, are easier for the respondent and are more realistic since they correspond more to a real market situation, where the workers are presented with a price for a product to choose between a yes/no options. Close-ended questions can be based on single-bounded approach, where respondents make a choice on one bid but this approach is normally not statistically efficient (Hanemann *et al.*, 1991).

The efficiency is normally improved by offering the respondent a second bid, higher or lower depending on the first response, an approach generally known as the double-bounded CVM. If

the worker responds “yes” to the first bid (B_i) the second bid (B_i^u) is set higher, but if the individual responds “no” to the first bid, the second bid (B_i^d) is set lower. There are four possible outcomes: “yes” to the first bid followed by a “yes” to the second bid with probability denoted by (π^{yy}); “yes” followed by “no” (π^{yn}) “no” followed by “yes” (π^{ny}); and two consecutive “no” answers (π^{nn}). To receive information on a wider range of values, different amounts for the bids are assigned randomly between respondents i . The probability of receiving a “yes” answer to both questions equals the probability that the respondent’s WTP is higher than the highest bid offered:

$$\pi^{yy}(B_j, B_i^u) = \Pr(B_i^u < WTP_i) = 1 - G(B_i^u) \quad (3.4)$$

Similarly, the probability of receiving a “yes” followed by a “no” equals the probability

that the WTP of respondents lies between the initial bid and the second, higher bid offered:

$$\pi^{yn}(B_i, B_j^u) = \Pr(B_j < WTP_i < B_j^u) = G(B_j^u) - G(B_j) \quad (3.5)$$

The probability of receiving a “no” followed by a “yes” is again the probability that

(WTP_i) lies between the initial and the second, now lower, bid offered:

$$\pi^{ny}(B_i, B_i^d) = \Pr(B_i^d < WTP_i < B_i) = G(B_i) - G(B_i^d) \quad (3.6)$$

Finally, the probability of receiving two “no” answer is equal to the probability that (WTP_i) lies below the second, lowest bid offered:

$$\pi^{nn}(B_i, B_i^d) = \Pr(B_i^d < WTP_i) = G(B_i^d) \quad (3.7)$$

Combining the probabilities of the four outcomes, the log-likelihood function for a sample of N consumers takes the form

$$InL^D(\theta) = \sum_{i=1}^N \left\{ di^{yy} In\pi^{yy}(Bi, Bi^u) + di^{nn} In\pi^{nn}(Bi, Bi^d) \right. \\ \left. + di^{yn} In\pi^{yn}(Bi, Bi^u) + di^{ny} In\pi^{ny}(Bi, Bi^d) \right\} \quad (3.8)$$

Where d_i^{yy} , d_i^{nn} , d_i^{yn} , and d_i^{ny} are binary variables 1 for the occurrence of a particular

the , and 0 otherwise. Thus, the mean WTP of a poultry agribusiness workers in monetary terms, can be derived from the survey (Lusk and Hudson, 2004). The probability distribution of the WTP gives as:

$$p(WTP = B) = \exp(v) / (1 + \exp(v))^2 \quad (3.9)$$

However bidding game format of CVM was utilized in the study. In operationalizing the model, structured closed-ended questions describing hypothetical informal voluntary pension products were developed for various bids: high, medium and low bids. Respondents were asked to express their maximum willingness to pay for various hypothetical informal voluntary pension product based on defined contribution with a change in the level of attributes with prices attached. This was based on the random utility theory where poultry agribusiness workers chooses a pension product from the universal set of hypothetical informal voluntary pension products available to them based on their utilities, subject to their income constraints (Hanley *et al.*, 2001). Empirical evidence suggests that if respondents are familiar with a service then the threat to reliability and validity of CVM is eliminated and CVM surveys that are carefully designed and administered can yield accurate and useful information on WTP Values (Nimoh, 2016).

3.5 Analytical Framework for Estimating Willingness to Pay for Informal Voluntary Pension Scheme

Parametric approaches are commonly used to analyze CVM surveys, quantile choice models namely logit, probit, Tobit, and linear probability models are normally applied based on some assumption about the dependent and explanatory variables as well as the error term in the model. When the dependent variable is a dummy variable, the logit model and the probit model are applied. However, the linear probability cannot be restricted between 0 and 1 and cannot be employed (Gujarati, 1988; Amemiya, 1981). The decision to pay or not assumes a binary distribution and normally generates a nonlinear response that violates the assumptions of the OLS estimator (Vogt, 2007). As a result, a probit or logit models may be used based on the assumption about the distribution of the error term, whether they are normally and logistically distributed.

Though logit and probit models are however quite similar as the tails of a logistic model are flatter than the probit model (Amemiya, 1981). The result thereof is that these models are similar, unless samples sizes are very large and many observations fall near the tails (Maddala, 1983). A logistic regression model may also be preferred in a situation a dichotomous dependent and independent variables take predicted values between $y_i \in \{0,1\}$ and as relates to this study as:

$$y_1 = \begin{cases} 1 & \text{if } y_i^* \text{ willing to pay} \\ 0 & \text{if } y_i^* \text{ not willing to pay} \end{cases} \quad \text{for binary logit} \quad (3.10)$$

Thus a logit model it is written as:

$$\begin{aligned}\Pr[y_i = 1] &= \frac{\exp(\alpha + \beta_1 x_i)}{1 + \exp(\alpha + \beta_1 x_i)} \\ \Pr[y_i = 0] &= \exp \frac{1}{1 + \exp(\alpha + \beta_1 x_i)}\end{aligned}\quad (3.11)$$

And as odds ratio, it becomes:

$$\frac{\Pr[y_i = 1]}{\Pr[y_i = 0]} = \exp(\alpha + \beta_1 x_i) \quad (3.12)$$

The logistic model also has a direct interpretation similar to probit model in terms of the logarithm of the odds in favor of success (Collet, 1991). But the marginal effects of logistic regression models are relatively easier to compute. (Pindyck and Rubinfeld, 1981; Judge *et al.*, 1980). However, when the objective is to determine the socio-economic variables that influence the willingness to pay as well as the amount they are willing to pay, then Tobit models are preferred (McDonald and Moffit, 1980). But, when the dependent variable censored or truncated then, censored or truncated regression models are appropriate as probit and logit models fail to differentiate between limit (zero or censored) and non-limit (continuous or uncensored) observations (Langyintuo *et al.*, 2005).

In this study, Binary Logit, Multinomial Logit and Tobit models were adopted since the dependent variable is binary, measured as WTP or not the independent variables constituted both continuous and discrete variable. Subsequently the generalized logit model is specified as:

$$WTP = \alpha + \beta X_i + \varepsilon_i \quad (3.13)$$

Where WTP denotes 1 if consumer is WTP for price bid and 0 otherwise;

X_i is a vector of consumer characteristics such as age, gender, and so on

α is the intercept term and

ε is the error term capturing unobserved effects.

Where WTP is equal to one when a choice is made to pay and zero (0) otherwise, X_i is the combined effect of the explanatory variables at the threshold, ε_i is the stochastic error term and β is the parameter to be estimated.

Marginal effects estimation

The marginal effects are computed using the following equation:

$$\frac{\partial p_i}{\partial x_i} \left[\frac{e^{\beta' x_i}}{(1 + e^{\beta' x_i})^2} \right] \beta_i = F(\beta' X) [1 - F(\beta' X)] \beta_i \quad (3.14)$$

For this study the empirical Logit model utilized was specified as:

$$\begin{aligned} WTP_i = & \beta_0 + \beta_1 Age_i + \beta_2 Gender_i + \beta_3 Edu_i + \beta_4 rgion_i + \beta_5 Exp_i + \beta_6 Hhsize_i + \beta_7 Inc_i \\ & + \beta_8 Off\ Inc_i + \beta_9 Invt_i + \beta_{10} Crdt_i + \beta_{11} Exten_i + \beta_{12} FBO_i + \beta_{13} Knledge_i + \beta_{14} Belong_i \\ & + \beta_{15} trt_i + \beta_{16} Dpd_i + e_i \end{aligned} \quad (3.15)$$

Hypothesis Validation

T Statistic was employed to test the significance of independent variables.

This was given by:

$$T_{cal} = \frac{\beta_i}{SE(\beta_i)} \sim t_{n-k} \quad (3.16)$$

Where SE is the standard error of each explanatory variable, n is the sample size of poultry agribusiness workers and k is the total number of parameters.

3.5.1 Estimating Poultry Agribusiness Workers' Willingness to pay for Pension

To achieve this objective, the Tobit model was employed for the current study following Okoffo *et al.*, (2016) who used a Tobit model to estimate cocoa farmers' willingness to pay for crop insurance in Ghana. The generalized model specification for Tobit is

$$y_i^* = x_i\beta + \varepsilon_i \quad (3.17)$$

Where the error term $\varepsilon_i \sim N(0, \sigma^2)$ is normally distributed with Zero mean and constant variance, y_i is the latent dependent variable, x_i is explanatory variables and β is the vector of parameter to be estimated. Tobit Model to determine poultry agribusiness workers willingness to pay for pension scheme was specified as:

$$\begin{aligned} Contribution_i = & \beta_0 + \beta_1 Age_i + \beta_2 Gender_i + \beta_3 Edu_i + \beta_4 rgion_i + \beta_5 Exp_i + \beta_6 Hhsize_i \\ & + \beta_7 Inc_i + \beta_8 Off\ Inc_i + \beta_9 Invt_i + \beta_{10} Crdt_i + \beta_{11} Exten_i + \beta_{12} FBO_i + \beta_{13} Knledge_i \\ & + \beta_{14} Belong_i + \beta_{15} trt_i + \beta_{16} Dpd_i + e_i \end{aligned} \quad (3.18)$$

Hypothesis Testing

H₀: The independent variables have no influence on willingness to pay amount for informal voluntary pension schemes

H_A: The independent variables have an influence on willingness to pay amount for informal voluntary pension schemes

Hypothesis Validation

T Statistic was employed to test the significance of hypothesis in relation to the different independent variables. This was given by:

$$T_{cal} = \frac{\beta_i}{SE(\beta_i)} \sim t_{n-k} \quad (3.19)$$

Where SE is the standard error of each explanatory variable, n is the sample size of poultry agribusiness workers and k is the total number of parameters.

3.5.2 Estimating the Factors Influencing the Choice of a Pension Scheme by the Poultry Agribusiness Workers

In estimating the factors that influence poultry subsector workers choice of the informal voluntary pension scheme, a multinomial logit model was employed. The present study followed Brown and Weisbenner (2009) who applied the multinomial logit model to estimate individuals' preference for defined contribution plan over a defined benefit plan. In this study multinomial logit model was used to estimate factors that influence the choice of a pension scheme. The

probability that an agribusiness worker will choose from a range of informal voluntary pension scheme is given as:

$$\text{Prob}(A_i = j) = \exp(x\beta_j) / \left[1 + \sum_{k=1}^J (\exp x\beta_k) + \varepsilon, j = 0, 1, \dots, J \right] \quad (3.20)$$

Where A_i is the random variable representing adoption decision of informal voluntary pension scheme chosen by poultry agribusiness workers. The study assumed that each poultry agribusiness worker faces a set of discrete, mutually exclusive choices. These choices are assumed to depend on a number of attributes that differ in their levels apart from their demographic characteristics and other factors X . According to Greene (2003), multinomial logit model for adaptation of a choice, specifies the relationship between the probability of choosing an option A_i and the set of independent variables X .

Where β_j is a vector of coefficients on each of the explanatory variables X . Equation (3.19) can be normalized to remove indeterminacy in the model by assuming that $\beta_0 = 0$ and the probabilities can be estimated as;

$$\text{Prob}(A_i = j / x_i) = \frac{e^{\beta_j' x_i}}{1 + \sum_{k=1}^J e^{\beta_k' x_i}}, j = 0, 2, \dots, J, \beta_0 = 0 \quad (3.21)$$

Estimating equation (3.22) produces the J log-odds ratios

$$\text{Ln} \left(\frac{P_{ij}}{P_{ik}} \right) = x_i'(\beta_j - \beta_k) = x_i' \beta_j, \text{ if } k = 0 \quad (3.22)$$

The dependent variable is therefore the log of one alternative relative to the base alternative. The Multinomial Logit parameters are difficult to interpret, and associating them β_j with the j th outcome is misleading. Therefore, to interpret the effects of independent variables on the probabilities, marginal effects are usually derived (Greene, 2003). The marginal effect is specified as follows;

$$\delta_j = \frac{\partial P_j}{\partial X_i} = P_j \left[\beta_j - \sum_{k=0}^J P_k \beta_k \right] = P_j (\beta_j - \bar{\beta}) \quad (3.23)$$

The marginal effects measure the expected change in the probability of particular choice being made with respect to a unit change in an independent variable (Greene, 2000). The empirical model for this study was specified as:

$$\begin{aligned} Pension\ type_i = & \beta_0 + \beta_1 Age_i + \beta_2 Gender_i + \beta_3 edu_i + \beta_4 inc_i + \beta_5 Hhsize_i + \beta_6 Belong_i + \beta_7 Attitude_i \\ & + \beta_8 FBO_i + \beta_9 offInc_i + \beta_{10} Exp_i + \beta_{11} Dpd_i + \beta_{12} Exten_i + \beta_{13} Trt_i + \beta_{14} crdt_i + \beta_{15} Invt_i + \beta_{16} knledge_i \\ & + \beta_{17} Mtl_i + \beta_{18} rgion_i + e_i \end{aligned} \quad (3.24)$$

Here, WTP denotes the maximum amount an individual poultry agribusiness worker is willing to pay for an informal voluntary pension product. Table 3.1 describes the dependent and independent variables used in equation (3.15), (3.18) and (3.24) and presents a priori expectations for the sign of each of the explanatory variables.

Hypothesis Testing

H₀: The explanatory variables have no influence on poultry agribusiness workers' choice of an informal voluntary pension scheme

H_A : The explanatory variables have an influence on poultry agribusiness workers' choice of an informal voluntary pension scheme.

Hypothesis Validation

Z statistic was employed to test the significance of hypothesis in relation to the different independent variables was also specified as:

$$T_{cal} = \frac{\beta_i}{SE(\beta_i)} \sim t_{n-k} \quad (3.25)$$

Where SE is the standard error of each explanatory variable, n is the sample size of poultry agribusiness workers and k is the total number of parameters.

Statement of Hypotheses for the Study

The research hypotheses for the study were as follows:

1. H_0 : Gender of a poultry agribusiness worker has no influence on willingness to pay for informal voluntary pension schemes

H_A : Gender of a poultry agribusiness worker has a positive influence on willingness to pay for informal voluntary pension schemes

2. H_0 : Age of a poultry agribusiness worker has no influence on willingness to pay for informal voluntary pension schemes

H_A : Age of a poultry agribusiness worker has positive influence on willingness to pay for informal voluntary pension schemes

3. H_0 : Educational level of a poultry agribusiness worker has no influence on willingness to pay for informal voluntary pension schemes

H_A : Educational level of a poultry agribusiness worker has a positive influence on willingness to pay for informal voluntary pension schemes

4. H_0 : Marital status of a poultry agribusiness worker has no influence on willingness to pay for informal voluntary pension schemes

H_A : Marital status of a poultry agribusiness worker has positive influence on willingness to pay for informal voluntary pension schemes

5. H_0 : Religion of a poultry agribusiness worker has no influence on willingness to pay for informal voluntary pension schemes

H_A : Religion of a poultry agribusiness worker has positive influence on willingness to pay for informal voluntary pension schemes

6. H_0 : Years of experience of a poultry agribusiness worker has no influence on willingness to pay for informal voluntary pension schemes

H_A : Years of experience of a poultry agribusiness worker has a positive influence on willingness to pay for informal voluntary pension schemes

7. H_0 : Annual income of a poultry agribusiness worker has no influence on willingness to pay for informal voluntary pension schemes

H_A : Annual income of a poultry agribusiness worker has a positive influence on willingness to pay for informal voluntary pension schemes

8. H_0 : Off-farm income of a poultry agribusiness worker has no influence on willingness to pay for informal voluntary pension schemes

H_A : Off-farm income of a poultry agribusiness worker has a negative influence on willingness to pay for pension

9. H_0 : Investment of a poultry agribusiness worker has no influence on willingness to pay for informal voluntary pension schemes

H_A : Investment of a poultry agribusiness worker has a positive influence on willingness to pay for informal voluntary pension schemes

10. H_0 : Access to credit by a poultry agribusiness worker has no influence on willingness to pay for informal voluntary pension schemes

H_A : Access to credit by a poultry agribusiness worker has a positive influence on willingness to pay for informal voluntary pension schemes

11. H_0 : Extension visit for a poultry agribusiness worker has no influence on willingness to pay for informal voluntary pension schemes

H_A : Extension visit for a poultry agribusiness worker has a positive influence on willingness to pay for informal voluntary pension schemes

12. H_0 : Membership in an FBO by a poultry agribusiness worker has no influence on willingness to pay for informal voluntary pension schemes

H_A : Membership in an FBO by a poultry agribusiness worker has a positive influence on willingness to pay for informal voluntary pension schemes

13. H_0 : Knowledge about pension by a poultry agribusiness worker has no influence on willingness to pay for informal voluntary pension schemes

H_A : Knowledge about pension by a poultry agribusiness worker has a positive influence on willingness to pay for informal voluntary pension schemes

14. H_0 : Belonging to pension scheme by a poultry agribusiness worker has no influence on willingness to pay for informal voluntary pension schemes

H_A : Belonging to a pension by a poultry subsector worker has a positive influence on willingness to pay for informal voluntary pension schemes

15. H_0 : Trust of a poultry agribusiness worker has no influence on willingness to pay for pension

H_A : Trust of a pension by a poultry agribusiness worker has a positive influence on willingness to pay for informal voluntary pension schemes

16. H_0 : No of Dependents of a poultry agribusiness worker has no influence on willingness to pay for informal voluntary pension schemes

H_A : No of Dependents of a poultry agribusiness worker has a negative influence on willingness to pay for informal voluntary pension schemes

The description of variables for the models in the study and their apriori expectations were defined and explained in table 3.1 below:

Table 3.1: Variables and their Definitions

Variables	Description	Type of measure	Expected sign
WTP	Willingness to pay for Informal Voluntary pension scheme	1 if the farmer is willing to pay and 0 otherwise	
Contribution	Amount of money poultry agribusiness worker is willing to pay (Cedis)		
Pension type	Categories: 1. Private pension2. Retirement savings 3. Endowment pension 4. Interest earning savings 5. Others		
<i>Age</i>	Age of farmer	Years	+
<i>Gender</i>	Gender	male =1 and 0 otherwise	+
<i>Edu</i>	Education level of worker	Number of years	+
<i>Inc</i>	Income	Amount of income earned from production (Cedis)	+
<i>Size</i>	Household Size	Number of people in the household	-
<i>Belong</i>	Belonging to a pension scheme	1 = Yes 0 = No	+/-
<i>Attitude</i>	Attitude towards long term planning	1 = positive attitude and 0 otherwise	+
<i>FBO</i>	Membership of FBO	1 = FBO membership and 0 otherwise	+
<i>Off Inc</i>	Income from other sources	Amount of income earned from other sources in Cedis	-
<i>Exp</i>	Experience with Pension	1 = if the worker has any pension scheme and 0 otherwise	+
<i>Dpd</i>	Dependency ratio	Number of dependents	-
<i>Exten</i>	Extension visit	1 if the worker had extension visit and 0 otherwise	+
<i>Knowledge</i>	Knowledge about pension	1 if the worker has knowledge about pension and 0 otherwise	+
<i>Trt</i>	Trust of the pension scheme	1 if the worker has trust in a pension scheme and 0 otherwise	+
<i>credit</i>	Access to credit	1 if the worker has access to credit and 0 otherwise	-
<i>Region</i>	Religion	1 if the worker is a Christian and 0 otherwise	- /+
<i>Inv</i>	Investment alternative	1 if the worker has other investments and 0 otherwise	+
<i>Mtl</i>	Marital Status	1 = Married	+/-

Source: Author's construct, 2015

3.6 Justification of the Explanatory Variables

Age of the Respondents: Age of the poultry agribusiness workers was measured in years in this study. It is expected that age will have either a positive or negative effect on willingness to pay and willingness to pay an amount for a pension. It is believed that older workers are more or less likely to pay for a pension than younger workers. This is due to the fact that older farmers will believe that because of their age they will gain less from the pension. On the other hand, anticipating old age challenges will make the older workers more willing to pay for pension more than their young counterpart.

Gender of Respondents: Gender was measured as a dummy (1 = male, 0 = female). The study expected to have a positive correlation amongst males and willingness to pay for informal voluntary pension, meaning males are expected to pay for involuntary pension schemes more than females. This is due to the fact that male worker is well endowed with more resources such as large poultry agribusinesses than their female counterparts; therefore, there exists a higher probability of the males willing to pay for the informal voluntary pension. Another school of thought is that females are risk averse and the result may be otherwise.

Level of Education of Respondents: Education was measured in a number of years. The study hypothesized a positive correlation between the level of education and willingness to pay the amount for the informal voluntary pension scheme. This is because it is believed that a worker with a high level of education will know more about the importance of saving towards the future than his or her counterpart with low or no education.

Annual Income: Annual income was measured in Ghana cedi (GHS). The study expected a positive relationship between annual income and willingness to pay and willingness to pay the amount for an informal voluntary pension. This is due to the fact that workers who get more income annually will be more willing to pay for a pension than their counterparts who get less.

Extension Visit: Extension visit was measured as a dummy (1= Yes, 0 = otherwise). The study expected a positive relationship between household size and willingness to pay and willingness to pay the amount of a pension. This is because a poultry worker who has access to an extension will be educated on the benefits pension brings and this will motivate him or her to join one.

Household size: Household size was measured as a number of people in a household. The study expected a negative relationship between household size and willingness to pay and willingness to pay the amount for an informal voluntary pension. This is due to the fact that a poultry agribusiness worker who has a large household size may not want to spend his or her income in any other activities but use it to cater for his or her household. This will not make him or she pay for the informal voluntary pension.

Belonging to Pension: Membership of a pension scheme was measured as a dummy (1= yes, 0 = no). The study hypothesized either a positive or negative relationship between belonging to pension and willingness to pay and willingness to pay the amount. This is due to the fact that when a worker already belongs to a pension he or she will either join another for a different benefit or will not join again if he or she feels the benefit from that one is very sustainable.

The attitude of Respondent towards Pension: It was measured as a dummy (1 = positive attitude, 0 = otherwise). The study hypothesized a positive correlation between attitude and

willingness to pay and willingness to pay the amount. This is due to the fact that showing a positive attitude towards pension implies that the individual knows the benefits and gains he or she will get in the near future. This will serve as a motivation for the individual worker to subscribe to the informal voluntary pension scheme.

Membership of FBO: FBO was measured by the study as a dummy (1 = FBO membership, 0 = otherwise). The study expected a positive relationship between membership of FBO and willingness to pay amount and willingness to pay for the informal voluntary pension. This is due to the fact that FBOs educate their members on both good farming practices and the importance of savings. This will make a worker who belongs to FBO join the informal voluntary pension scheme.

Off-farm Income: Off-farm income was measured in Ghana cedi (GHS). The study expected a positive relationship between off-farm income and willingness to pay and willingness to pay the amount of a pension. This is due to the fact that workers who get more off-farm income will be more willing to pay for an informal voluntary pension than their counterparts who get less.

Experience with Pension: Experience was measured as a dummy (1= have pension experience, 0 = otherwise). The study expected a positive relationship between experience and willingness to pay and willingness to pay the amount for an informal voluntary pension. This is because if a worker has some experience with a pension, he or she will know the benefit associated with a pension. This will make him or she join the scheme.

Dependency: Dependency was measured as a number of dependents (household members below 15 years and above 65). The study expected a negative relationship between dependency and

willingness to pay and willingness to pay the amount. This is due to the fact that a poultry agribusiness worker who has more household members depending on him or her that individual may not want to spend his/her income in any other activities but use it to cater for his/her household. This will not make him or she pay for the informal voluntary pension scheme.

Knowledge about Pension: Knowledge was measured as a dummy (1 = knowledge about pension, 0 = otherwise). The study expected a positive relationship between knowledge and willingness to pay and willingness to pay the amount. This is due to the fact that having knowledge about pension implies that the individual knows the benefits and gains he or she will get in the near future. This will serve as a motivation for the individual worker to subscribe to the informal voluntary pension scheme.

Trust in Pension: Trust was measured as a dummy (1 = trust in pension, 0 = otherwise). The study expected a positive relationship between trust and willingness to pay and willingness to pay the amount. This is due to the fact that having trust in pension will make a worker believe the benefits proposed by the pension providers. This will serve as a motivation for the individual worker to join the informal voluntary pension scheme.

Access to Credit: Credit was measured as a dummy (1 = access to credit, 0 = otherwise). The study expected a positive relationship between access to credit and willingness to pay and willingness to pay the amount. This is due to the fact that a poultry agribusiness worker who has access to credit is able to expand his/her business. This will make him or she get more income to pay for the informal voluntary pension scheme.

Religion: Religion was measured as a dummy (1 = Christian, 0 = otherwise). The study expects either positive relationship between religion and willingness to pay and willingness to pay the amount. This is due to the fact that the religious background of a worker will either make a worker join an informal voluntary pension scheme or not.

Alternative Investment: It was measured as a dummy (1 = other investments, 0 = otherwise). The study expected a positive relationship between alternative investments and willingness to pay and willingness to pay the amount. This is due to the fact that workers who engage in other investments make him or she gets more income to pay for the informal voluntary pension scheme.

Marital Status: Marital status was measured as a dummy (1 = married; 0 = otherwise). The study expected a positive relationship between marital status and willingness to pay and willingness to pay the amount. This is due to the fact that to the fact that the marital status of a worker will either make a worker join an informal voluntary pension scheme or not.

3.7 Empirical model for perception and constraints analysis

3.7.1 Perception Analysis

A five-point Likert scale ranging from -1 = strongly disagree, to 1 = strongly agree was used to gauge poultry agribusiness knowledge attitude and perception towards informal voluntary pension scheme, following Anifori (2009); Gough and sozou (2005), perception indices were estimated by asking Respondents to agree or disagree with perception and attitude statements which were given weights by coding them into five classes; ranging from strongly disagree

strongly agree (-1 = strongly disagree, -0.5 = disagree, 0 = undecided, 0.5 = agree and 1 = strongly agree) to determine their perception and attitude towards informal voluntary pension schemes and their providers. These responses were then averaged to form an index called the perception index.

The perception indices were computed based on five categories (perception and attitude towards pension scheme, perception towards providers, perception towards retirement, perception about providers of the informal voluntary pension scheme, perception towards old age). The empirical estimate index for a particular statement was computed as:

$$\text{Total Score} = \sum F_i \times W_i \quad (3.26)$$

Where $\sum F_i$ = frequency of the i th statement W = weight of response such 1 = strongly disagree, -0.5 = disagree, 0 = undecided, 0.5 = agree and 1 = strongly agree

$$\text{The mean score was estimated as: } \frac{\sum F_i \times W_i}{\sum F_i} \quad (3.27)$$

Where means scores represent an index for a statement.

The individual computations for the various constructs are found in table 3 below

Table 3.2 Agribusiness workers perception towards person

Knowledge, Perception and Attitude towards pension scheme	Type of Index	Computation Index
Knowledge about pension schemes	Awareness and understanding of pension options	$\frac{a(1) + a(0.5) + a(0) + a(-0.5) + a(-1)}{n} = G$
Attitude towards pension	Perception and attitude towards pension schemes	$\frac{b(1) + b(0.5) + b(0) + b(-0.5) + b(-1)}{n} = H$
	Perception and attitude towards pension providers	$\frac{c(1) + c(0.5) + c(0) + c(-0.5) + c(-1)}{n} = I$
	Attitude towards retirement	$\frac{d(1) + d(0.5) + d(0) + d(-0.5) + d(-1)}{n} = J$
	Attitude towards old age	$\frac{e(1) + e(0.5) + e(0) + e(-0.5) + e(-1)}{n} = K$
Perception about pension Providers	Perception about providers of informal voluntary pension scheme	$\frac{f(1) + f(0.5) + f(0) + f(-0.5) + f(-1)}{n} = M$
Overall index		$\frac{G + H + I + J + K + M}{6} = Z$

Source: Author's construct (2016)

Where a is frequency of Awareness and understanding of pension options

b is the frequency of Perception and attitude towards pension schemes

c is the frequency of Perception and attitude towards pension providers

d is the frequency of Attitude towards retirement

e is the frequency of Attitude towards old age

f is the frequency of Perception about providers of informal voluntary pension scheme

n is total sample size

G is Index for Awareness and understanding of pension options

H is Index for Perception and attitude towards pension schemes

I is Index for Perception and attitude towards pension providers

J is Index for Attitude towards retirement

K is Index for Attitude towards old age

M is Index for Perception about providers of informal voluntary pension scheme

Z is Overall Index

3.7.2 Constraints Analysis

Constraints analysis was done using Kendall's coefficient of concordance. Following, Mattson (1986), Kendall's coefficient of concordance was used to measure the degree of agreement among respondents in this study. According to Mattson (1986), Kendall's coefficient of concordance is an index that measures the ratio of the observed variance of the sum of ranks to the maximum possible variance of the sum of ranks. In view of this Kendall's coefficient of concordance was employed for this study. The identified constraints were ranked from the most pressing to the least pressing using numbers: 1, 2, 3, 4...n, in that order. Computing the total rank score for each constraint, the constraint with the least score is ranked as the most pressing,

whilst the one with the highest score is ranked as the least pressing. The rank scores computed were then used to determine the coefficient of concordance (W), so as to obtain the degree of agreement among the rankers, and this ranges from zero (0) to one (1). It is 1 when the ranks assigned by each respondent are exactly the same as those assigned by other respondents and was 0 when there is a maximum disagreement among the respondents. If T represents the sum of ranks for each constraint being ranked, the variance of the sum of ranks was estimated by the formula;

$$VarT = \frac{\sum T^2 - (\sum T)^2 / n}{n} \quad (3.28)$$

The maximum variance of T is then given by;

$$m^2 (n^2 - 1) / 12 \quad (3.29)$$

Where 'm' is the set of rankers (Poultry agribusiness workers) and 'n' was the number of constraints being ranked. The formula for the coefficient of concordance (W) was then computed as:

$$W = \frac{(\sum T^2 - (\sum T)^2 / n) / n}{m^2 (n^2 - 1) / 12} \quad (3.30)$$

The is simplified as;

$$\frac{12 [\sum T^2 - (\sum T)^2 / n]}{nm^2 (n^2 - 1)} \quad (3.31)$$

Where: T = sum of ranks for each constraint.

m = number of rankers (farmers).

n = the number of constraints being ranked

Hypotheses and Significant Test for W: (F – Test)

H_0 : There is no agreement among the rankings of the constraints by respondents.

H_A : There is an agreement among the rankings of the constraints by respondents.

Where H_0 and H_A denote null and alternate hypotheses respectively.

The coefficient of concordance (W) could be tested for significance in terms of the F – distribution. The F – ratio is given by:

$$F - \text{ratio} = \frac{(m-1)W_c}{1-W_c} \quad (3.32)$$

W_c is the calculated Kendall's Coefficient of Concordance (W) (Edwards, 1964).

3.8 Survey Design and Sampling Method

The population for this study constituted all Poultry agribusiness in the study area: Pension scheme providers, Social Security and National Pension Trust (SSNIT) in the study area as well as life pension companies that provide informal voluntary pension schemes in the study area. The study employed both primary and secondary data. Primary data was obtained by means of a survey conducted in the Kumasi Metropolis in the Ashanti region of Ghana. The survey was administered to poultry agribusinesses workers, Pension scheme providers, life pension companies that provide informal voluntary pension schemes as well as SSNIT offices that work on informal voluntary pension scheme in the study area.

The sample size of poultry agribusiness workers was computed as:

$$n = t^2 \times (p)(q) / d^2 \quad (3.32)$$

Where n = sample size t = number of standard deviations for a chosen confidence level, p and q = proportion of poultry agribusiness workers and d = allowable margin of error.

For most studies, a confidence interval of 95% is normally utilized to obtain a sample size that reflects the population under study that reflects the population under study (Cochran, 1977). This the t -value for an alpha level of 0.05 is 1.96 assigning a 95% confidence level and 6.5% margin of error.

Hence, the estimated sample size for the study was given by

$$N = (1.96)^2 \times (0.5)(0.5) / (0.067)^2 \quad (3.33)$$

$$= 3.8416(0.25 / 0.004489)$$

= 213 respondents.

This implies 213 poultry agribusiness workers should be utilized, but to make provision for non-responses and rejection the sample size was increased to 220 poultry agribusiness workers.

A multistage sampling technique was utilized in the selection of the respondents for the study.

The first stage involved purposively selecting the Kumasi Metropolis which is a hub for Poultry agribusinesses in the Ashanti region of Ghana and consequently endowed with poultry agribusiness workers. The second stage involved purposive selection of districts and communities from the sub-metros of the Kumasi Metropolis. The selection was based on a preponderance of poultry agribusinesses in those communities. In all, 18 communities were

sampled from 9 sub-metros of the Kumasi Metropolis of the Ashanti region, which constitute the study area.

Thirdly, simple random sampling technique was used to select 220 poultry agribusiness workers made up of producers and sellers of poultry products, service providers, and farmers were sampled for this study. Also, 50 respondents who are mainly management and staff of informal voluntary pension scheme provider companies in the Kumasi Metropolis were also sampled for the study. The simple random selection was done by numbering all poultry agribusinesses that had operated for more than 5 years in the study area to be included in the sample. The numbers were then entered into Software named Stat Trek's Random Number Generator, which generated a table of 220 random numbers. Poultry agribusiness workers corresponding to each of the 220 random numbers generated were contacted. Table 3.2 below summaries the sampling technique and the sample size used.

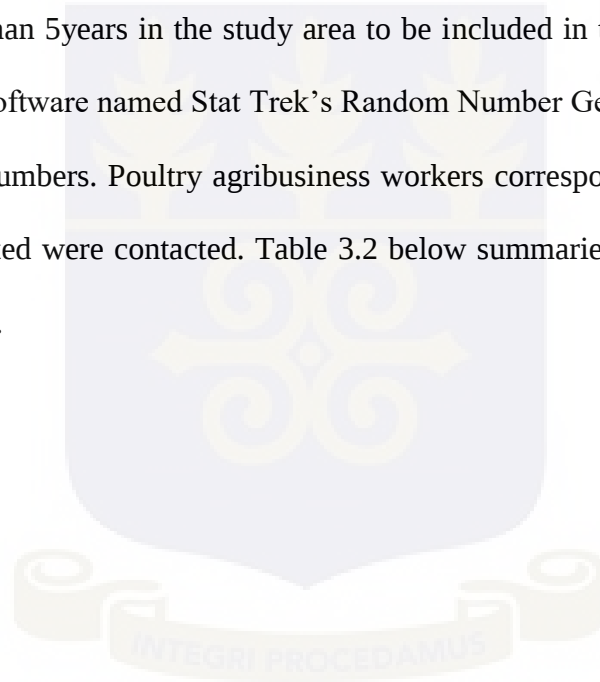


Table 3.3 Summary of Sampling Frame and Sample Size Utilized in the Study

Selected Districts	Selected Villages/Suburbs	Poultry Agribusiness workers (Jan. to June,2016)	No of Workers	Number Sampled
Asokwa	Atonsu-Agogo,	Chemical sellers, Cold store, farmers, egg sellers, poultry farmers, workers, veterinary services	66	25
Bantama	Bantam, Kajetia	Chemical sellers, Cold store, live bird sellers, egg sellers, maize sellers	129	40
Kwaadaso	Abrepo, Edwenase,	Chemical sellers, Cold store, live bird sellers, egg sellers, maize sellers, poultry farmers	70	25
Manhyia	Buokrom Estate, Dicheonso	Chemical sellers, Cold store, farmers, egg sellers, poultry farmers, poultry feed sellers, workers	73	25
Nhyiayeso	Santase, Patase, Kaase, Ahinsan	Chemical sellers, Cold store, farmers, egg sellers	34	20
Oforikrom	Domeabra, Anloga	Chemical sellers, Cold store, farmers, egg sellers, poultry farmers, poultry feed sellers, workers	86	25
Suame	Santasi,	Sellers and Farmers	51	20
Subin	Amakom, Asafo Market,	Cold store, farmers, egg sellers, poultry farmers, poultry feed sellers, workers	64	20
Tafo	Old Tafo, New Tafo	Sellers and Farmers veterinary services	54	20
Total			627	220

Source: *Author's Construct, 2015*

Also simple random sampling technique was used to select 50 staff from SSNIT and Life Pension companies that offer informal voluntary pension scheme in the study area. In all a total sample size of 270 respondents was sampled for this study and a 90% percent response rate was achieved. A 100% response rate was achieved for the pension providers.

3.9 Questionnaire Design

A semi-structured questionnaire was used to solicit information directly from the poultry agribusiness workers as well as the staff of pension scheme providers. The questionnaires were pretested in the Ejisu Juaben Municipality and finally refined. A baseline survey was also carried out with pension scheme providers in the study area to come out with prices for the hypothetical products used for the WTP aspect of the questionnaire (See Appendices 1 and 2). The questionnaires for poultry agribusiness workers consisted of both open-ended and closed-ended questions. The open-ended questions gave the respondents the opportunity to share his or her opinion whereas the closed-ended questions gave the respondents pre-coded responses in which they selected the option they agreed with the most or the option to specify otherwise.

The questionnaire comprised various sections. The initial section of the questionnaire was designed to elicit responses on the demographic characteristics of respondents such as age, gender, ethnicity, income, education, religion, occupation among others. A section was devoted to household characteristics, and another section included questions on the cost of production. Questions on poultry agribusiness workers knowledge, perceptions and attitude towards pension schemes were also included in the mid portion of the questionnaire. Questions on Contingent Valuation Method aimed at eliciting information on poultry agribusiness workers willing to participate in an informal voluntary pension scheme in addition to the amount they are willing to pay.

Questions on old age challenges as well as the key benefits needed in a pension scheme to cope with or address perceived old age challenges were also included in the questionnaire.

Moreover, questions of knowledge, perception and attitude towards informal voluntary pension schemes as well as information on constraints to the development of pension scheme for poultry agribusiness workers in the study area. Likert scales were used to identify and rank the constraints as well as suggestions to improve informal voluntary pension scheme uptake. Information was also sought from pension providers, particularly, their mode of financing the operations of the scheme, type of involuntary pension products they offer for sale, the type of benefit paid to pensioners, in addition to the constraints to the development of informal voluntary pension scheme specifically for poultry agribusiness workers in the study area.

3.10 Methods of Data Collection

To elicit agribusiness perception and attitude towards informal voluntary pension scheme utilizing a stated preference techniques, poultry agribusiness workers were asked about their preferences and willingness to pay for different options of informal voluntary hypothetical pension products by employing bidding game format (A CVM format), where poultry agribusiness workers are presented with different bids for informal voluntary pension schemes and asked about their preferences for different bids. They were also given the chance to state their willingness to pay in an open-ended format.

3.11 Data Analysis

Descriptives statistics such as means and percentages were used in analyzing the socioeconomic characteristics of the respondents. In examining poultry agribusiness workers perception, knowledge and attitude towards pension schemes in the study area, descriptive statistics

involving the use of Percentages and Means scores were used to determine the Knowledge, perception and attitude indices.

Binary Logit was used to analyze the factors influencing the worker's willingness to pay for the informal voluntary pension scheme. CVM with the use of bidding game was used to estimate the mean willingness to pay for the informal voluntary pension scheme. Moreover, Tobit regression model was used to analyze factors that influence the willingness to pay amount while multinomial logit was used to analyze the factors that influence the choice of a particular type of informal voluntary pension scheme in the study area.

Means and percentages were also used to analyze their anticipated old age challenges as well as the key benefit the poultry agribusiness workers wish to derive from the informal voluntary pension scheme. Constraints to the development of informal voluntary pension schemes for Poultry agribusiness worker in the study area from both the worker and pension providers perspectives were analyzed using Kendall Coefficient of Concordance.

Attride-Stirling's (2001) suggested six steps for analysing qualitative data, which involve: coding the material, identifying them, constructing the network, describing and constructing thematic networks, summarizing the thematic network and interpret patterns, data obtained from the in-depth interviews held with some pension and pension agencies were transcribed and analysed to support the quantitative data.

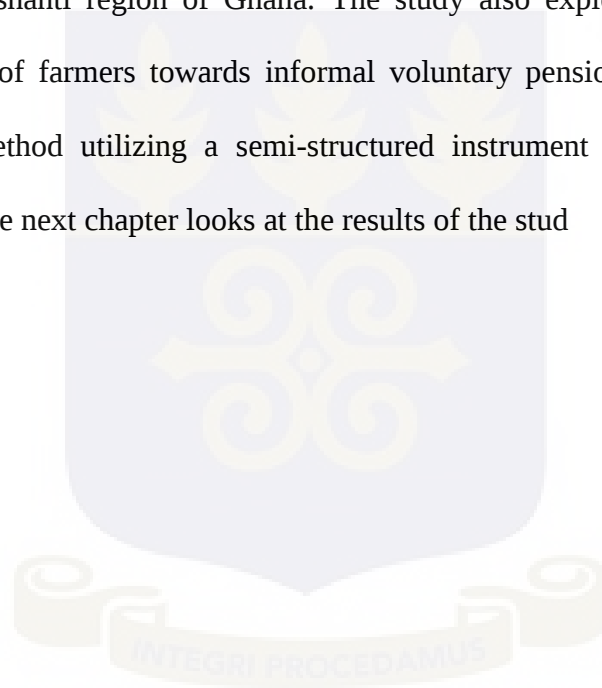
3.12 Ethical Considerations

The ethical considerations include on informed consent, anonymity: plagiarism and misrepresentation. The purpose of the study was explained to respondents and participation was

purely voluntary. Also, anonymity was ensured as data elicited from respondents were not linked to their identity, and was highly confidential. Moreover, information from secondary sources was acknowledged, paraphrased, and the central idea maintained to avoid plagiarism and misrepresentation.

3.13 Conclusion

The study area, the Kumasi Metropolis in the Ashanti Region of Ghana is the hub of poultry agribusinesses in the Ashanti region of Ghana. The study also explored the knowledge and perception and attitude of farmers towards informal voluntary pension schemes employing a contingent valuation method utilizing a semi-structured instrument sections for CVM in a bidding game format. The next chapter looks at the results of the stud



CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents the discussions of the results of the study. The chapter begins with a description of the socioeconomic characteristics of workers in the poultry agribusiness. It also presents the level of awareness and willingness to pay for informal voluntary pension. The results of the contingent valuation analysis are also presented. The results of the Tobit, Logit and Multinomial regression models are also discussed.

4.2 Socio-Economic Characteristics of the Poultry Agribusiness Workers

The socio-economic characteristics are presented in Table 4.1 below:

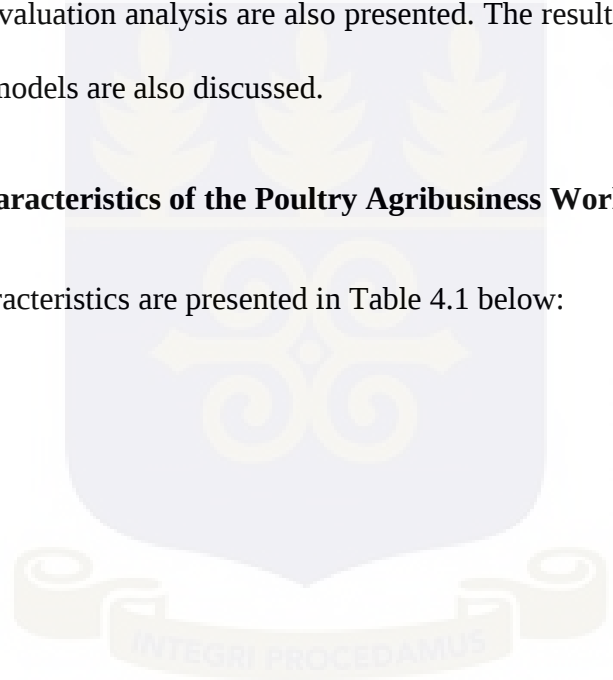


Table 4.1: Socio-Economic Characteristics of the Poultry Agribusiness Workers

Variables	Categories	Frequency	Percent
Gender	Male	151	75.5
	Female	49	24.5
Type of Workers in the Poultry Agribusiness	Farmers	50	25.0
	Seller of poultry product	142	71.0
	Others	8	4.0
Level of Education of the Worker	None	38	19.0
	Basic (Primary/JHS/Middle	20	10.0
	Secondary (SHS/Vocational)	108	54.0
	Tertiary (Training college/Poly,university)	34	17.0
Marital Status	Single	67	33.5
	Married	108	54.0
	Divorced/Separated	24	12.0
	Widowed	1	0.5
Religion	Christian	165	82.5
	Islamic	35	17.5
Off-farm Income Generating Activities	Yes	125	62.5
	No	75	37.5
Extension Visit	No	125	62.5
	Yes	75	37.5
Access to Credit	Yes	91	45.5
	No	109	54.5

Source: Computed from survey data, 2016

The survey shows that, majority (75.5%) of the workers were males whilst 24.50% were females. This shows that there is male dominance in the poultry agribusiness sector in the study area. Spivak (1995) opines that women receive nearly twice the pension of men in Israel, because they retire at 60 and men at 65 and also have higher life expectancy; consequently, gender response aimed at enhancing the participation of women would be laudable.

The results indicated in table 4.1 shows that majority (71.0%) of the agribusiness workers are sellers of the poultry product, 25.0 % are farmers whilst only 4% are service providers including veterinary service providers and consultants in the poultry value chain. The results from the field as captured in figure 4.1 indicates that 54% of the poultry agribusiness workers had secondary education, 19% had no education, and 17% had tertiary education, whilst 10% had basic education. The results indicate that majority of the workers in the poultry agribusiness had secondary education which is important in understanding pension schemes.

The results show that about 54% of the workers in the poultry agribusiness are married, 33.5% are single, and 12% are divorced or separated. Ginn (2001) noted that divorced women could also receive 50% of ex-husband retirement after 10years and 100% if the ex-husband dies in the US. Moreover, 0.5% are widowed. The result shows that majority of the workers in the poultry agribusiness are married. This would undoubtedly serves as a buffer during old age to enjoy emotional support.

The result as indicated in table 4.1 shows that 82.5% of the poultry agribusiness workers are Christians, whilst 17.5% belong to the Islamic religion. Religion also plays a significant role of the aged in coping with old age challenges, particularly emotional challenges, by receiving encouragement from their religious heads, known as emotional focus coping. Moreover,

Christians are supposed to give tithes on pension income, while Muslims are supposed to give alms known as *zakat* on their pension benefits.

From Table 4.1, majority (62.5%) of the workers in the poultry agribusiness engage in off-farm income generating activities whilst about 37.5% do not. This was expected to have a positive influence on payment of informal voluntary pension schemes. From Table 4.1, majority (62.5%) had no access to extension services whilst 37.5% did have access. The result shows that majority (54.5%) of the workers in the poultry agribusiness had no access to credit whilst 45.5% had access.

The means of the Socio- economics characteristics are also presented in table 4.2 below:

Table 4.2: Means of Socio-Economic Characteristics

Variable	Mean	Std. Dev	Min.	Max.
Age of workers (Years)	37.875	7.819	19	64
Years of experience (Years)	9.495	5.449	1	31
Household size (Number)	3.96	3.088	1	24
Annual Income (GHS)	7,507.58	23,623.88	40.00	259,200.00
Physical Asset (GHS)	524.21	907.01	100.00	9,400.00

Source: *Computed from survey data, 2016*

The average age of the workers is about 38 years with a minimum of 19 years, maximum of 64 years and standard deviation of 8 years. This means that poultry agribusiness workers in the metropolis are dominated by adults and are eligible to contribute to the informal voluntary pension scheme for a long time in order to enjoy good benefits. The mean years of experience of

the workers in the poultry agribusiness is about 9 years, minimum of 1 year, maximum of 31 years and standard deviation of 5 years.

The average household size of the workers is about 4 with a minimum of 1, maximum of 24 and standard deviation of 3. The average annual income generated by the workers is GHS 7507.58, with a minimum of 40, maximum of GHS 259,200 and standard deviation of GHS 23, 623.88. This is expected to influence poultry agribusiness workers willingness to pay amount to the informal voluntary pension scheme. Income and Assets are used to conduct means testing in universal pension and other social assistant programmes (Ginn, 2001). The average physical asset of the workers in poultry agribusinesses is GHS 524.21 with a minimum of GHS 100, maximum of GHS 9400 and standard deviation of GHS 907.01.

This leads us to the expected retirement age which is presented in table 4.3:

Table 4.3: Expected Age for Retirement by workers and Pension Scheme Providers

	Mean	Std. Dev.	Min.	Max
Workers perspective	69.585	10.571	50	99
Pension Providers perspective	53.000	4.400	50	65

Source: Computed from survey data, 2016

Table 4.3 shows that the mean age at which the poultry agribusiness workers are willing to go for retirement is about 70 years, with a standard deviation of 10.57 years, minimum of 50 years and maximum age of 99 years. For the pension providers, the mean age they pay the pension benefit to client is 53 years, standard deviation of 4.4 years, minimum of 50 years with a maximum age

of 65 years. This means that pension providers need to revise their pension age and retirement age for the informal sector in their design of informal voluntary pension scheme specifically for poultry agribusiness workers in the informal sector. Abglobi (2011) observes that one needs to be 60 years in Ghana to enjoy full pension.

A similar observation was made by Ce Shen and Williamson (2010) who report that retirement age was 60 for males and 55 for females in rural China. However, the poultry agribusiness workers in the Kumasi Metropolis want their retirement age to be 70 years. The mere fact that they do not leave employment early defied the lump of labour theory which suggests government may wish to take some jobs from its citizens who are nearer to retirement in exchange for social security pension and give it to the young.

The benefits provided the pension scheme providers was also captured in table 4.4

Table 4.4: Kind of Pension Scheme Provided by the Institutions

	Freq.	Percent
Private Pension	43	42
Retirement savings	12	12
Endowment Insurance	6	6
Interest Earning Savings	3	3
Special Pension Scheme	4	4
Personal Pension Scheme	27	26
Executive Pension Plans	8	8
Total	103	100

Source: *Computed from survey data, 2016*

The results from the survey as computed in table 4.4 shows that 86% of the institutions provide private pension to clients consistent with the findings of Abglobi (2011) who posited that private pension schemes are normally based on the third tier voluntary pension scheme. About 24% provide retirement savings, consistent with the findings of Mckeller (2009) and Botchwey (2012) who observed that private pension and retirement savings are designed for informal sector in Vietnam and private pension plans for Chile. 12% provide endowment insurance, 6% provide interest earning savings, 8%, 54% and 16% provide special pension scheme, personal pension scheme and other schemes respectively.

Table 4.5 shows the type of pension schemes agribusiness workers contribute.

Table 4.5: Type of Pension Schemes workers belong to

	<i>Freq.</i>	<i>Percent</i>
Private Pension	31	15.5
Retirement Savings	44	22.0
Endowment Insurance	41	20.5
Interest Earning Savings	27	13.5
Special Pension Savings	34	17.0
Personal Pension	23	11.5
Total	200	100

Source: *Computed from survey data, 2016*

According to Withanage *et al.*, (2000), membership of a pension scheme influenced a farmer's willingness to pay (WTP) for a pension scheme in Sri Lanka. About 15.5% of the respondents belong to a private pension scheme, 22% belong to retirement savings, 20.5% belong to endowment insurance, 13.5% belong to interest earning savings, and 17% belong to special

pension savings whilst 11.5% of the workers belong to personal pension schemes. The results show that poultry agribusiness workers are conscious of retirement and are planning towards it. This consistent with Mackeller (2009) and Botchewey (2012) who observed that retirement savings are provided to the informal sector in Sri Lanka and private pension scheme in Chile.

The preferred media poultry agribusiness worker wants to receive information about pension schemes were captured in table 4.6

Table 4.6: Sources of Information about Pension Schemes by Workers

<i>Source</i>	<i>Freq.</i>	<i>Percent</i>
Registered Association	49	24.5
Banks	13	6.5
Microfinance	7	3.5
News Print	10	5.0
Pension Companies	42	21.0
Insurance Companies	21	10.5
Radio Stations	57	28.5
Extension officers	1	0.5
Total	200	100

Source: *Computed from survey data, 2016*

Table 4.6 shows that 24.5% of the poultry agribusiness workers source information about pension schemes from a registered association, similar to the findings of Mackeller (2009) who observed that cooperative, associations and insurance companies were key distribution channels in Philippines and India respectively. About 6.5% source information on pension scheme from banks, 3.50% from microfinance institutions, 5% from newsprint, 21% from pension companies,

10.5% from insurance companies, consistent with observation made by Gordon *et al.*, (1997) who noted that microfinance and banks provides information on pension and 0.5% source from others whilst majority (28.5%) source from radio stations.

Moreover, pension providers' collection mode was explained in table 4.7:

Table 4.7: Rate at which Institutions take Deposit from Clients

<i>Frequency</i>	<i>Freq.</i>	<i>Percent</i>
Daily	11	22
Weekly	1	2
Monthly	14	28
Quarterly	8	16
Semi-Annually	5	10
Annually	7	14
Seasonal	2	4
Occasionally	2	4
Total	50	100

Source: Computed from survey data, 2016

It can be inferred from Table 4.7 that 22% of the pension providers take contribution from clients daily. While 2% of providers take it weekly. 4% take it monthly and 16% take the contribution quarterly. 10% also semi-annually, with 14% taking it annually. Moreover 4% take it seasonally whilst another 4% take the contribution occasionally

Table 4.8 shows that 70% of the pensions providers' methods of paying retirement benefits are based on defined contribution method, 4% finance the clients through defined benefit and other methods respectively.

Table 4.8: Method of Providing Benefits to Client

<i>Methods</i>	<i>Freq.</i>		<i>Percent</i>	
	<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>
Defined Contribution	35	15	70	30
Defined Benefit	2	48	4	96

Source: Computed from survey data, 2016

Mackeller (2009) found out that the informal sector workers in Sri-Lanka enjoyed fully funded defined benefits. This is consistent with the findings made by Ginn (2001), who posited that Defined Contribution (DC) depends on investment performance and also contradicts the findings of McCarthy (2003) who noted that older workers should join defined contribution. In the study area, it was observed that most of the employees in the poultry agribusiness sub sector in the Kumasi Metropolis are adult workers, and subsequently have more years to contribute.

Table 4.9 details the method of financing by a pension provider

About 18% employ the pay-as-you-go method whilst 24% use the fund/investment management.

Table 4.9: Method of Pension Providers Financing Methods

<i>Methods</i>	<i>Freq.</i>		<i>Percent</i>	
	<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>
Pay-As-You-Go	9	41	18	82
Fund/Investment Management	12	38	24	76
Other	1	49	2	98

Source: Computed from survey data, 2016

This corroborates the findings of Yermo (2002) who found that many public pension schemes are based on Pay-As-You-Go. Fund investment management was employed by the pension providers in the study area. This result is also contrary to the chain latter theory where social protection behaves like a ponzi scheme in a pay as you go mode of financing, where the aged takes up pension schemes with the assumption that future generations will pay back with some positive rate of return (Romer, 1994; Friedman, 1957).

4.2 Poultry Agribusiness Workers' Perception, Knowledge and Attitude towards Pension

4.2.1 Perception and Attitude towards Pension Schemes

Each perception response was measured on a five point likert scale with score from (-1 for “strongly disagree to +1 “strongly agree).

Table 4.10 shows the results of the awareness and understanding of pension options by the workers in the poultry agribusiness.

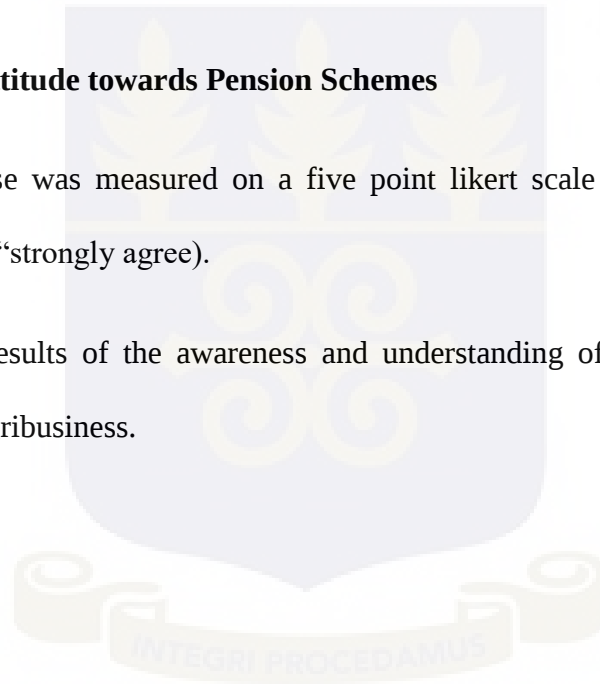


Table 4.10: Awareness and Understanding of Pension Options

	<i>Strongly Agree (1)</i>	<i>Agree (0.5)</i>	<i>Undecided (0)</i>	<i>Disagree (-0.5)</i>	<i>Strongly Disagree (-1)</i>	<i>Mean Score</i>
I know about pension schemes	123(61.50)	75(37.50)	0	1(0.50)	1(0.50)	0.795
Pension scheme is provided by SSNIT and Companies	74(37.00)	100(50.00)	7(3.50)	13(6.50)	6(3.00)	0.558
Without pension, will be poor and can't afford life at retirement	94(47.00)	77(38.50)	8(4.00)	12(6.00)	9(4.50)	0.588
Plenty poultry agribusiness workers don't have pension only those in the formal sector have	112(56.00)	75(37.50)	6(3.00)	5(2.50)	2(1.00)	0.725
I know what pension means	164(82.00)	34(17.00)	0	0	2(1.00)	0.895
There are many pension schemes and companies to choose from to make pension decisions	139(69.50)	51(25.50)	4(2.00)	5(2.50)	1(0.50)	0.805
I know of pension benefit	108(54.00)	61(30.50)	4(2.00)	19(9.50)	8(4.00)	0.605
Perception Index						0.710

Source: Computed from survey data, 2016 (Percentages are in parentheses)

The results indicate that about 99% respondents are aware of the existence of pension scheme whilst 1% was not aware. Majority (87%) of respondents agreed that pension is provided by SSNIT, 3.5% of them were undecided, whilst 9.5% disagreed. About 85.50% of the workers agreed that ageing without pension will leave them poor and cannot afford life after pension,

40% were indecisive whilst 10.5% of them disagreed with the statement. A majority (93.5%) of the workers agreed to the statement that most of the poultry agribusiness workers don't have pension, only those in the formal sector have, 3% of them were indecisive whilst 3.5% of them disagreed. Majority (99%) of the workers knew the meaning of pension and most (54%) of them also did not know the benefit of pension.

With regards to knowledge about pension schemes, the overall perception was positive, with a positive perception index of 0.710, which is consistent with Collins-Sowa *et al.*, (2013) who posited that knowledge about pension schemes has positive influence in participation in pension schemes. This contradicts the findings of Adzwala *et al.*, (2015) who found lack of knowledge about pension scheme among informal sector workers in the Tamale Metropolis.

The positive scores were 0.5 for agree, 1 for strongly agree, -1 for strongly disagree, -0.5 for disagree.

As shown in Table 4.11, workers perception about pension is positive with overall index of 0.461.

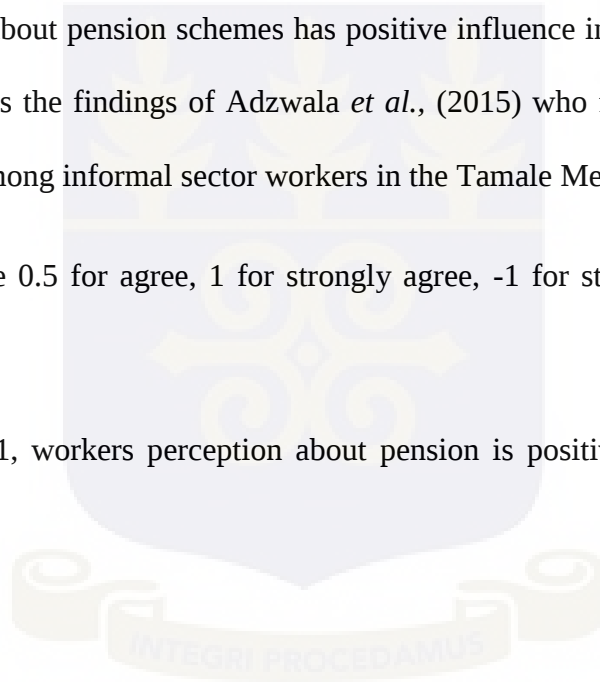


Table 4.11: Perception and Attitude towards Pension Schemes

	<i>Strongly Agree (1)</i>	<i>Agree (0.5)</i>	<i>Undecided (0)</i>	<i>Disagree (-0.5)</i>	<i>Strongly Disagree (-1)</i>	<i>Mean Score</i>
I am concerned about pension benefits	101(50.50)	75(37.50)	6(3.00)	14(7.00)	4(2.00)	<i>0.643</i>
Pension scheme is something for rich people	57(28.50)	27(13.50)	6(3.00)	78(39.00)	32(16.00)	<i>0.001</i>
Premium is expensive	66(33.00)	68(34.00)	10(5.00)	47(23.50)	9(4.50)	<i>0.338</i>
Pension is necessary to protect you and your family	113(56.50)	55(27.50)	6(3.00)	22(11.00)	4(2.00)	<i>0.633</i>
Pension should be provided by the state	126(63.00)	49(24.50)	8(4.00)	14(7.00)	3(1.50)	<i>0.758</i>
Private companies should provide pension schemes	110(55.00)	54(27.00)	9(4.50)	14(7.00)	13(6.50)	<i>0.585</i>
Individuals and association should set up their own pension scheme	89(44.50)	23(11.50)	5(2.50)	65(32.50)	18(9.00)	<i>0.250</i>
I think those who make ₵50,000 a year do not need pension because they can save towards their retirement.	53(26.50)	34(17.00)	16(8.00)	63(31.50)	34(17.00)	<i>0.023</i>
Pension companies just tell you good things about themselves	134(67.00)	33(16.50)	10(5.00)	19(9.50)	4(2.00)	<i>0.690</i>
Pension funds are not secured	62(31.00)	73(36.50)	12(6.00)	44(22.00)	9(4.50)	<i>0.338</i>
It is possible to lose your money in pension schemes, will you set aside money each month/week for contribution towards pension.	154(77.00)	31(15.50)	3(1.50)	7(3.50)	5(2.50)	<i>0.805</i>
Perception Index						<i>0.461</i>

Source: Computed from survey data, 2016 (Percentages are in parentheses)

Majority (50.5%) of them strongly agreed and 37.5% agreed that they are concerned about pension benefit. About 28.5% strongly agreed and 13.5% agreed that pension scheme is something for the rich. About 33% strongly agree and 34% agreed that premium is expensive.

Castel and Phuong (2009) reported that changing perception and attitude of young generation towards pension schemes is paramount to expansion of pension schemes in terms of coverage.

4.2.2 Perception and Attitude towards Pension Providers

Table 4.12 shows that the poultry agribusiness workers have positive perception towards pension providers.

Table 4.12: Perception and Attitude towards pension Providers

	<i>Strongly Agree (1)</i>	<i>Agree (0.5)</i>	<i>Undecided (0)</i>	<i>Disagree (-0.5)</i>	<i>Strongly Disagree (-1)</i>	<i>Mean Score</i>
When it comes to paying claims, pension providers will always try to delay and / make it difficult	3(1.50)	6(3.00)	2(1.00)	26(13.00)	163(81.50)	-0.863
When it comes to making claims, pension providers will normally try to cheat you	7(3.50)	12(6.00)	6(3.00)	32(16.00)	143(71.50)	-0.730
I can trust pension provider to be fair to me	70(35.00)	85(42.50)	14(7.00)	23(11.50)	8(4.00)	0.465
Pension providers care more about saving money than about helping you.	149(74.50)	28(14.00)	8(4.00)	11(5.50)	4(2.00)	0.768
Perception Index						-0.360

Source: Computed from survey data, 2016 (percentages are in parentheses)

This is so because the perception index computed based on the 5 scale likert scale (1 for strongly agree to -1 for strongly disagree) was -0.360. Majority (81.5%) strongly disagreed and 13%

disagreed that when it comes to paying claims, pension providers will delay and/or make it difficult. About 71.5% of the respondents strongly disagreed and 16% disagreed that when it comes to making claims, pension providers will normally try to cheat you, 3% were indecisive, 6% and 3.5% of them disagreed and strongly disagreed respectively. Thirty five percent of them strongly agreed and 42.5% agreed that they can trust pension provider can be fair to them. Also, 74.5% strongly agreed and 14% agreed that pension providers care more about saving money than about helping you.

4.2.3 Attitude towards Retirement

The attitude of the poultry agribusiness towards retirement was also assessed. This was discussed in table 4.13

Table 4.13: Attitude towards Retirement Planning

	<i>Strongly Agree(1)</i>	<i>Agree (0.5)</i>	<i>Undecided (0)</i>	<i>Disagree (-0.5)</i>	<i>Strongly Disagree (-1)</i>	<i>Mean Score</i>
It will be nice to think about life with regular contribution from pension provider at 60	163(81.50)	28(14.00)	4(2.00)	4(2.00)	1(0.50)	0.522
You feel black mailed if you don't have pension/state pension at 60	60(30.00)	81(40.50)	20(10.00)	37(18.50)	2(1.00)	0.436
I can get along with pension when I am old	139(69.00)	52(26.00)	4(2.00)	3(1.50)	3(1.50)	0.604
Perception Index						0.502

Source: Computed from survey data, 2016 (Percentages are in parentheses)

It can be seen from the Table 4.13 that, 81.5% of them strongly agreed to the statement that it will be nice to think about life with regular contribution from pension provider at 60, 14% agreed, 2% were undecided and disagreed respectively whilst 0.5% strongly disagreed About 30% strongly agreed and 40.5% agreed to the statement that you feel black mailed if you don't have pension at 60. Some of them were indecisive (10%), 18.5% disagreed whilst 1% strongly disagreed.

Castel (2008) found that attitude towards long term planning influences informal sector workers to participate in actuarially fair informal pension schemes in Vietnam. When opinion was sought from the respondents on the assertion that one can get along with pension when he or she is old, 69% strongly agreed, 26% agreed, 2% of them were undecided, 1.5% of them disagreed and strongly disagreed respectively.

4.2.4 Perception about Providers of Informal Voluntary Pension Scheme

The result is presented in Table 4.14 below:

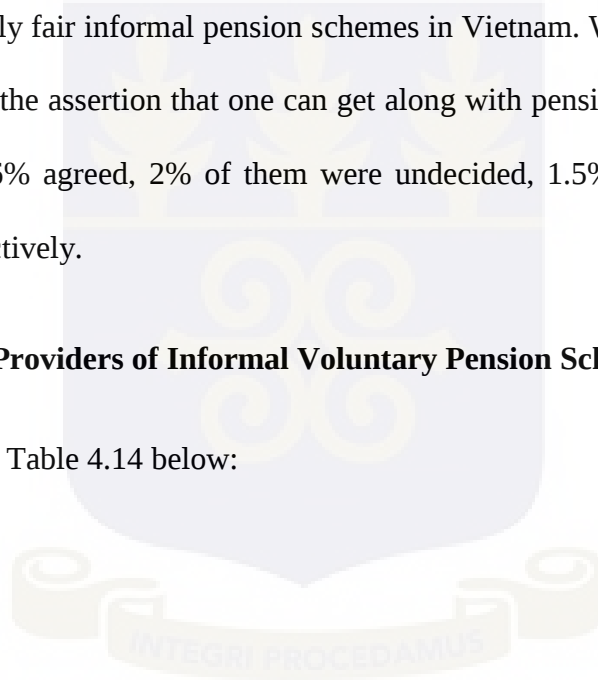


Table 4.14: Perception about Providers of Informal Voluntary Pension Scheme

	<i>Strongly Agree(1)</i>	<i>Agree (0.5)</i>	<i>Undecided (0)</i>	<i>Disagree (-0.5)</i>	<i>Strongly Disagree(-1)</i>	<i>Mean Score</i>
Pension should be provided by the state	115(57.50)	75(37.50)	1(0.50)	7(3.50)	2(1.00)	0.735
Private financial institutions such as banks , savings and loan, cooperative and microfinance companies should provide pension schemes	90(45.00)	78(39.00)	10(5.00)	18(9.00)	4(2.00)	0.580
Pension should be provided by various associations in the poultry agribusiness	123(61.50)	50(25.00)	4(2.00)	14(7.00)	9(4.50)	0.660
Pension should be provided by Insurance companies	112(56.50)	69(34.50)	6(3.00)	10(5.00)	2(1.00)	0.703
Informal voluntary should be provided by pension trust and pension companies only	127(63.50)	64(32.00)	4(2.00)	3(1.50)	2(1.00)	0.778
Perception Index						0.691

Source: Computed from survey data, 2016 (Percentages are in parentheses)

The respondents were asked several questions on which institution should provide informal voluntary pension scheme. About 58% of them strongly agreed that pension should be provided by the state, 37.5% of them agreed to the statement, 0.5% of them were indecisive, and 3.5% disagreed whilst 1% strongly disagreed.

Harrison *et al.*, (2006) concludes that negative or positive perception influence consumer decision making, however the overall perception towards retirement was positive with a mean score of 0.691.

4.2.5 Attitude towards old age

The study also sought the attitude of the poultry agribusiness workers towards old age. It can be seen from Table 4.15 that 68% and 12.5% of them strongly agreed and agreed respectively to the statement “I can’t really accept or think about preparation towards old age”, 2% of them were undecided, and 10.5% disagreed to the statement whilst 7% strongly disagreed.

Table 4.15: Attitude towards Old Age

	<i>Strongly Agree(1)</i>	<i>Agree (0.5)</i>	<i>Undecided(0)</i>	<i>Disagree (-0.5)</i>	<i>Strongly Disagree (-1)</i>	<i>Mean Index</i>
I can’t really accept or think about preparation towards old age	136(68.0)	25(12.50)	4(2.00)	21(10.50)	14(7.00)	0.620
I think it would be nice to have regular income at old age and do what you fancy	143(71.50)	43(21.00)	7(3.50)	5(2.50)	3(1.50)	0.793
I would like to retire early	63(31.50)	27(13.50)	24(12.00)	59(29.50)	27(13.50)	0.1000
I am not going to work all my life	122(61.00)	26(13.00)	35(17.50)	10(5.00)	7(3.50)	0.615
Perception Index						0.532

Source: Computed from survey data, 2016 (Percentages are in parentheses)

4.2.6 Overall Perception of the Poultry Agribusiness workers

It can be inferred from Table 4.16 below that the overall perception about pension scheme was positive (0.423).

Table 4.16 presents the overall perception of the poultry agribusiness workers about pension.

Perception	Index
Awareness and understanding of pension options	0.710
Perception and attitude towards pension schemes	0.461
Perception and attitude towards pension providers	-0.360
Attitude towards retirement	0.502
Perception about providers of informal voluntary pension scheme	0.691
Attitude towards old age	0.532
Overall Index	0.423

Source: Computed from survey data, 2016

Awareness and understanding of pension schemes recorded an index of 0.710, index for the perception and attitude towards pension scheme was 0.461 (which was the least among the index computed for the various perceptions), index for the perception and attitude towards pension providers was -0.360, that of attitude towards retirement was 0.502, and perception about providers of informal voluntary pension scheme was 0.691 whilst the index for attitude towards old age was 0.532.

To gauge the poultry agribusiness willingness to pay for informal voluntary pension scheme in the study area, the result is presented in table 4.17 below.

Table 4.17: Poultry Agribusiness Willingness to Pay for Pension Scheme

<i>Response</i>	<i>Freq.</i>	<i>Percent</i>	<i>Cum.</i>
Yes	162	81	81
No	38	19	100
Total	200	100	

Source: Computed from survey data, 2016

Table 4.17 shows that majority (81%) of the poultry agribusiness workers were willing to pay for the informal voluntary pension schemes specifically designed for the poultry agribusiness workers in a bidding game format whilst 19 % were not willing to pay for pension.

The Table 4.18 presents the various bids done by the poultry agribusiness workers.

Table 4.18: Willingness to Pay Amount (Bids)

Low opening			Medium opening			High opening		
<i>Percent</i>			<i>Percent</i>			<i>Percent</i>		
Bid	<i>Yes</i>	<i>No</i>	Bid	<i>Yes</i>	<i>No</i>	Bid	<i>Yes</i>	<i>No</i>
GHS0.50	99.5	0.5	GHS2.00	89	11	GHS3.50	58	42
GHS1.00	95.5	4.5	GHS2.50	81	19	GHS4.00	58	42
GHS1.50	93.0	7.0	GHS3.00	78	22	GHS4.50	58	42

Source: Computed from survey data, 2016

The bid was categories into three (low, medium, high). For the low bid, majority (99.5%) were willing to pay GHS 0.50 daily for pension whilst 0.5% were not pay. Majority (95.5%) maintained that they will pay GHS 1.00 daily whilst 4.5% of them were not in favour of that amount. Again, majority (93.0%) were willing to pay GHS1.50 whilst 7% were not willing to pay.

For the medium bid, majority (89%) opined they will pay GHS 2.00 daily for pension whilst 11% responded in the negative. Majority (81%) of the agribusiness workers favoured the payment of GHS2.50 daily for pension, but 19% of them were not comfortable with that amount. Majority (78%) were willing to pay GHS 3.00 daily for the informal voluntary pension whilst 22% were not willing to pay GHS3.00 daily.

For the high bid, majority (58%) made it explicit that they will pay GHS3.50, GHS4.00 and GHS4.50 respectively daily for pension whilst 42% stressed that they were not willing to pay GHS3.50, GHS4.00 and GHS4.50 respectively daily for pension.

4.3 Factors Influencing Poultry Agribusiness Workers' WTP and WTP Amount for Pension Schemes

This section presents information and discussion of the factors that influence poultry agribusiness s' willingness to pay and the amount they are willing to pay for pension scheme. The Logit model and Tobit model estimation of the impact of various variables are presented in Table 4.19 and 4.20 respectively. It can be seen from the Table 4.19 that Pseudo R^2 is 0.149 which means that about 14.9% of the variation in the dependent variable (Willingness to pay) is jointly explained by the explanatory variables. The Likelihood ratio χ^2 was used to decide whether the model as a whole has statistically significant predictive capability, that is, whether the regression sum of squares is big enough, considering the number of variables needed to achieve it. The null hypothesis states that the model is not statistically significant while the alternatives states otherwise. The decision rule is that if Likelihood chi-square is statistically significant or exceeds LR χ^2 critical from the statistical table reject the null hypothesis, otherwise do not reject. Since the empirical model produced $LR > \chi^2 (2)$ is statistically significant

at 1% ($Prob > LR = 0.000$) significance level, the study rejected the null hypothesis and concluded that the model specified best fits the analysis.

Table 4.19 indicates that variables such as formal education, marital status, household size, off-farm income, investment, belong, and trust are statistically significant. Level of formal education had positive correlation with willingness to pay for informal voluntary pension. The sign was consistent with the study's apriori expectation which states increase in level of formal education will cause a worker to be willing to pay for a pension. It was statistically significant at 10 % ($P < 0.1$) significance level with a marginal effect (0.193), implying that as level of education increases by one year, a poultry agribusiness worker's willingness to pay for pension increases by 0.193 margin.

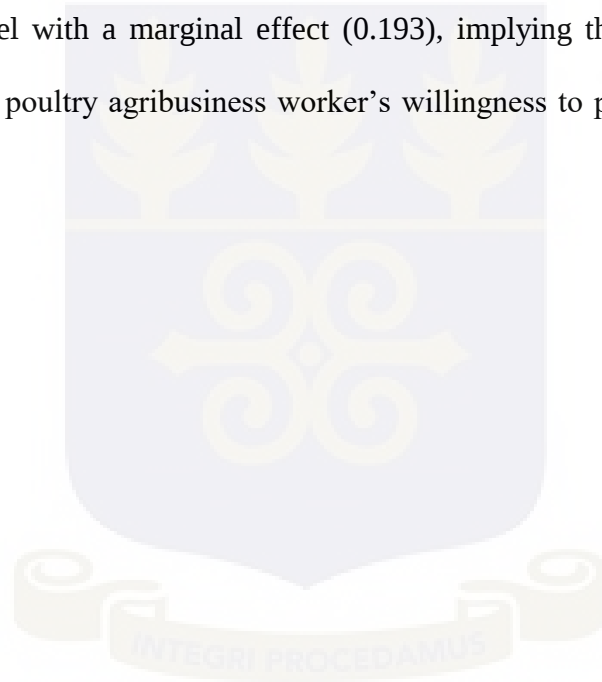


Table 4.19: Logit Model of Factors Influencing Workers' Willingness to Pay for Pension

<i>Variables</i>	<i>Coefficients</i>	<i>Marginal Effect</i>	<i>P-Value</i>
Sex	0.365[0.472]	0.062	0.439
Age	-0.033[0.032]	-0.005	0.297
Education	0.947[0.947]	0.193*	0.066
Marital Status	-0.760[0.441]	-0.133*	0.085
Religion	0.069[0.515]	0.012	0.894
Years of Experience	0.044[0.048]	0.008	0.352
Household Size	-0.267[0.091]	- 0.048***	0.004
Annual income	0.000[0.000]	0.000	0.588
Off-farm Income	0.0004[0.0002]	0.0006*	0.078
Investment	0.976[0.451]	0.183**	0.030
Access to credit	0.254[0.394]	0.045	0.519
Extension Visit	0.492[0.432]	0.085	0.254
FBO Membership	0.246[0.482]	0.046	0.609
Knowledge	0.486[0.466]	0.094	0.297
Belonging to pension	-0.842[0.453]	-0.164*	0.063
Trust	1.084[0.435]	0.222**	0.013
Dependency	-0.131[0.132]	-0.024	0.318
_Cons	1.251[0.208]	-	0.000
Measures of Fit			
<i>Log_Lik Intercept Only</i>	-117.634	<i>Log_Lik Full Model</i>	-100.056
<i>D(181)</i>	200.112	<i>LR(Chi(2))</i>	35.155
<i>McFadden's R²</i>	0.149	<i>Prob> LR</i>	0.009
<i>Max. Likelihood R²</i>	0.161	<i>McFadden's Adj R²</i>	0.012
<i>McKelvey and Zavoina's R²</i>	0.271	<i>Cragg&Uhler's R²</i>	0.233
<i>Variance of y*</i>	4.514	<i>Efron's R²</i>	0.187
<i>Count R²</i>	0.765	<i>Variance of Error</i>	3.290
<i>AIC</i>	1.191	<i>Adj Count R²</i>	0.145
<i>BIC</i>	-758.883	<i>AIC*n</i>	238.112
<i>Pseudo R²</i>	0.1494	<i>BIC</i>	60.215

*, ** and *** denotes 10%, 5% and 1% significant levels respectively (Values in parenthesis are standard errors)

Source: Computed from survey data, 2016

Marital status had a negative correlation with willingness to pay for pension. The sign conformed to the study's *a-priori* expectation although it was expected to be either positive or negative. It was statistically significant at 10 ($P < 0.1$) significance level with a marginal effect (0.133), meaning that if a poultry agribusiness worker is married it decreases his/her willingness to pay for informal voluntary pension by 0.133 margin. Similarly, Zellig *et al.*, (2005) observed that marital status influenced pension payment and divorcee means small portion of women can rely on their husband's pension at retirement in the UK. Household size had negative relationship with willingness to pay for pension. The sign conformed to the study's *a-priori* expectation (negative). Household size was statistically significant at 1% ($P < 0.01$) significance level with a marginal effect of 0.048, implying that increase in the household size by one person the willingness to pay for pension by poultry agribusiness worker will decrease by 0.048 margin.

Off-farm income had a positive relationship with willingness to pay for informal voluntary pension scheme. The sign conformed to the *a-priori* expectation (positive) of the study. It was statistically significant at 10% ($P < 0.1$) significance level with a marginal effect (0.0006), meaning that increase in off-farm income of poultry agribusiness worker will cause his/her willingness to pay for pension to increase by 0.0006 margin.

Investment had a positive relationship with willingness to pay for pension. The sign conformed to the study's *a-priori* expectation (positive). It was statistically significant at 1% ($P < 0.01$) significance level with a marginal effect (0.183), implying that increase in investment will cause the willingness to pay by poultry agribusiness worker to increase by 0.183 margin. Belonging to pension had a negative correlation with willingness to pay for pension. The sign conformed to the study's *a-priori* expectation (negative) although it was expected to be either positive or

negative. It was statistically significant at 1% ($P < 0.01$) significance level with a marginal effect (0.297), implying that increase in investment will cause the willingness to pay by poultry agribusiness worker to decrease by 0.297 margin.

Trust had a positive relationship with willingness to pay for pension. The sign conformed to the study's *a-priori* expectation (positive). It was statistically significant at 1% ($P < 0.01$) significance level with a marginal effect (0.222), implying that increase in investment will cause the willingness to pay by poultry agribusiness worker to increase by 0.222 margin.

Table 4.20: Tobit Model of Factors Influencing Workers' Willingness to Pay Amount for Pension

	<i>Std. Error</i>	<i>Marginal Effect</i>	<i>P-Value</i>
Sex	0.146	0.293	0.145
Age	0.424	-0.111	0.793
Education	0.189	0.263**	0.045
Marital Status	0.096	-0.037	0.702
Religion	0.170	0.191	0.261
Years of Experience	0.175	-0.267	0.226
Household Size	0.019	-0.010**	0.019
Annual income	0.069	0.211	0.537
Off-farm Income	0.064	0.039***	0.002
Investment	0.193	0.299***	0.021
Access to credit	0.138	0.189***	0.005
Extension Visit	0.136	0.213	0.116
FBO Membership	0.129	0.067	0.604
Knowledge	0.182	0.105	0.565
Belonging to pension	0.134	-0.003	0.981
Trust	0.135	0.271	0.400
Dependency	0.032	-0.027**	0.054
Diagnostics Statistics			
LR (Chi(2))	24.42	Pseudo R2	0.306
Prob> chi(2)	0.0008		

*, ** and *** denotes 10%, 5% and 1% significance levels respectively

Source: Computed from survey data, 2016

Table 4.20 presents the results for the willingness to pay amount model. It can be inferred that variables such as education, household size, off-farm income, investment, access to credit and dependency were statistically significant.

Education had a positive relationship with willingness to pay amount for pension. It was statistically significant at 5% ($P < 0.05$) significance level with a marginal effect (0.263), implying that 1% increase in the level of education of a poultry agribusiness worker will lead to 0.263% increase in the amount he or she is willing to pay for pension all things being equal.

Household size had a negative correlation with willingness to pay amount for pension. Household size was statistically significant at 5% ($P < 0.05$) significance level with a marginal effect of 0.010. The result means that all things being equal, 1% increase in the household size of a poultry agribusiness worker will lead to 0.010% decrease in the amount he or she is willing to pay for pension.

Off-farm income had a positive relationship with willingness to pay amount for pension. It was statistically significant at 5% ($P < 0.05$) significance level with a marginal effect (0.039). The empirical result implies that 1% increase in the off-farm income of a poultry agribusiness worker will lead to 0.039% increase in the willingness to pay amount for pension *ceteris paribus*.

Investment had a positive relationship with willingness to pay amount for pension. It was statistically significant at 5% ($P < 0.05$) significance level with a marginal effect (0.299). The empirical result implies that 1% increase in the investment of a poultry agribusiness worker will lead to 0.299% increase in the willingness to pay amount for pension all things being equal.

Access to credit had a positive relationship with willingness to pay amount for pension. It was statistically significant at 1% ($P < 0.01$) significance level with a marginal effect (0.189). The empirical result implies that 1% increase in access to credit by a poultry agribusiness worker will lead to 0.189% increase in the willingness to pay amount for pension *ceteris paribus*.

Dependency had a negative correlation with willingness to pay amount for pension. Household size was statistically significant at 10% ($P < 0.1$) significance level with a marginal effect of 0.027. The result means that all things being equal, 1% increase in dependency of a poultry agribusiness worker will lead to 0.027% decrease in the amount he or she is willing to pay for pension. The results supports the findings of Sowa *et al.*, (2013) who in a similar study analyzed informal sector willingness to participate in micro pension schemes among drivers, woodworkers, beauticians and vegetable growers using Binary logit model and observed that age, education, household size, other income sources influenced their willingness to pay for micro pension schemes.

4.4 Estimating the Factors Influencing Poultry Agribusiness workers Choice of a Pension Scheme

Multinomial Logit Model Estimation on the Factors Influencing the Choice of a Pension Scheme

Table 4.21 presents the result of the multinomial logit model result on factors influencing the choice of a pension scheme by the poultry agribusiness workers. It can be seen from the Table 4.21 that Pseudo R^2 is 0.450 which implies that 45% of the variation in the dependent variables, thus the pension schemes (Retirement, endowment, interest, special and personal) are jointly explained by the independent variables.

The Wald chi-square was used to decide whether the model as a whole has statistically significant predictive capability, that is, whether the regression sum of squares is big enough, considering the number of variables needed to achieve it. The null hypothesis states that the model is not statistically significant while the alternatives states otherwise. The decision rule is that if Wald chi-square is statistically significant or exceeds Wald chi-square critical from the

statistical table reject the null hypothesis, otherwise do not reject. Since the empirical model produced $\text{prob} > \chi^2$ to be statistically significant at 1%, the study rejected the null hypothesis and concluded that the model specified best fits the analysis. Chen *et al.*, (2015) observed that pension type and payment mode, significantly and positively influenced the willingness to pay for a health services in China.

Table 4.21: Marginal Effects from Multinomial Logistic Pension schemes Result

	Retirement		Endowment		Interest		Special		Personal	
Variables	dy/dx	P-value	dy/dx	P-value	dy/dx	P-value	dy/dx	P-value	dy/dx	P-value
Gender	0.069	-0.162	-0.007	0.840	-0.028	0.383	-0.021	0.289	-0.07	0.411
Age	-0.004	0.138	-0.001	0.658	-0.002	0.454	0.009	0.322	0.097*	0.090
Education	0.058**	0.011	0.099***	0.003	-0.194	0.157	-0.121	0.153	-0.006*	0.086
Religion	-0.013	0.671	-0.125*	0.055	-0.088	0.745	0.006	0.529	0.004	0.586
Experience	0.005**	0.026	0.003	0.273	0.000	0.922	-0.002	0.273	0.000	0.463
H/hold Size	-0.125	0.111	0.301**	0.049	-0.527	0.193	0.168***	0.005	0.555**	0.022
Income	0.000*	0.051	0.002	0.100	0.000*	0.084	0.000	0.114	0.000	0.801
Off-farm	0.313*	0.075	0.217***	0.000	0.115	0.160	0.235*	0.095	0.227	0.135
Investment	0.029	0.545	-0.042	0.242	0.012	0.726	-0.009	0.486	0.0122	0.473
Credit	0.005***	0.000	0.014	0.695	0.021	0.331	0.0183**	0.049	-0.016*	0.083
Extension	0.072*	0.062	-0.040	0.338	-	0.047	-0.008	0.617	0.021	0.453
					0.010**					
Membership of FBO	-0.482	0.246	-0.037	0.262	0.147*	0.059	-0.067	0.645	0.003	0.473
Knowledge	-0.332*	0.092	-0.002	0.953	-0.065	0.164	-0.026	0.430	-	0.043
									0.000**	
Belong	-	0.007	0.444***	0.000	-0.022	0.195	-0.001	0.901	-0.009	0.440
	0.271***									
Trust	-0.006	0.893	0.024	0.392	0.012	0.005	0.029*	0.081	0.017	0.484
Dependency	-0.034**	0.012	0.026**	0.021	-0.011	0.259	0.002	0.423	0.000	0.737
Marital Status	0.048	0.256	0.029	0.359	0.029	0.222	0.005	0.732	-0.007	0.541
Attitude	-0.140	0.129	-0.024	0.450	-0.042	0.262	-0.005**	0.046	0.024*	0.062
Diagnostics										
Obs	200	Wald Chi2 (80)		335.11	Base Category		Private Pension			
Pseudo R ²	0.450	Prob>Chi2		0.000						

NB: *, ** and *** denotes 10%, 5% and 1% significance levels respectively

Source: Computed from survey data, 2016

For the retirement pension scheme model, education, experience and dependency were significant at 5%, annual income, off-farm income, knowledge and access to extension visit were significant at 10%, access to credit and belonging to a pension scheme were statistically significant at 1%, consistent with what was observed by Adzawala *et al.*, (2010) in Ghana and Withanage (2000) among farmers in Sri Lanka.

Education was statistically significant at 5% significance level with a marginal effect of (0.058). It had a positive relationship with retirement pension scheme. This implies that the probability of a poultry agribusiness worker with a higher level of formal education to go for retirement pension is 0.058% higher than opting for a private pension scheme. The empirical result can be explained on the basis that due to the benefits associated with the retirement pension scheme high level educated poultry agribusiness workers will prefer it to the private pension.

Experience had a positive relationship with retirement pension scheme. It was statistically significant at 5% (0.05) significance level. This indicates that the probability of a poultry agribusiness worker with a more years joining a retirement pension scheme is higher than joint a private pension scheme. This supposed that a poultry agribusiness worker with more years of experience will choose a retirement pension over private pension.

Annual income shows positive relationship with retirement pension scheme. It was statistically significant at 10% significance level. This shows that the probability of a poultry agribusiness worker joining a retirement scheme instead of private pension increases with annual income. Intuitively, this means that if a poultry agribusiness gets a higher annual income he or she will prefer to join a retirement pension instead of private pension. Zhang (2015) also observed in

China that lower individual's income and household income influenced peasant farmers' willingness to pay for rural pension schemes in rural China.

The result shows there is also a positive relationship between off-farm income and retirement pension. The off-farm generate income was statistically significant at 10% significance level. The empirical result means that the probability that an individual poultry agribusiness worker will join retirement pension increases with the amount of income he or she generates from off-farm activities. This indicates that a poultry worker who earns more from off-farm sources will prefer retirement pension to private pension.

Credit also had a positive effect on poultry agribusiness workers joining a retirement pension. The variable was statistically significant at 1% significance level. The result shows that the probability that a poultry agribusiness worker will join retirement pension in place of private pension increases with access to credit. Castel (2008) found similar results in Vietnam where the results of an ordered logistic regression revealed that access to credit has a positive effect on informal sector workers willingness to pay for pension schemes.

Extension visit was statistically significant at 10% significance level. It had a positive relationship with retirement pension scheme. This means that there is a high probability (0.072%) that agribusiness worker who has access to extension visit will be involved in retirement pension instead of the private one. This implies that the poultry agribusiness who get access to extension visit will go for retirement pension. Intuitively extension officers may advice poultry agribusiness workers to join retirement pension scheme.

Knowledge about pension was statistically significant at 10% (0.1) significance level. Knowledge had a negative relationship with retirement pension. This implies that the probability of poultry agribusiness worker to be part of a retirement scheme decreases with knowledge about pension but increases with private pension. The empirical result means that agribusiness workers with good knowledge about pension will go for private pension instead of retirement pension. Contrary to the findings of Castel (2008) who reported that knowledge about a pension scheme exerts a positive influence on informal sector workers willingness to pay for pension.

Belonging to pension had a negative relationship with retirement pension. It was statistically significant at 1% significance level. The result means that the likelihood that an agribusiness worker will join retirement pension instead of private pension decreases with belonging to a pension scheme.

Dependency was statistically significant at 5% (0.05) significance level. Intuitively, the probability that an agribusiness worker will join retirement pension scheme instead private decreases with dependency. This shows that if the agribusiness worker has a large number of dependent (people ages under 15 years and above 65 years) he or she will prefer private pension to retirement pension scheme.

For the endowment pension model, education, religion, household size, belongs and dependencies were statistically significant. Adzawala *et al.*, (2015), found a similar results in the Tamale Metropolis in the Northern region of Ghana, when they noted that age, marital status ,education, household size , dependency, and income were factors that significantly influenced informal sector workers willingness to contribute to informal sector pension schemes.

There was a positive correlation amongst education and endowment insurance. Education was statistically significant at 1% significance level. This implies that the likelihood that a poultry agribusiness will join the endowment insurance instead of the private pension increases with education. The result means that agribusiness workers with high level of education will go for endowment insurance.

Religion was statistically significant at 10% significance level. Religion had a negative relationship with endowment pension. This indicates that the likelihood that a poultry agribusiness will join the endowment insurance instead of private insurance decreases with religion. The empirical result shows that Christian poultry agribusiness workers prefer private pension scheme to endowment scheme.

Household size had a positive correlation with endowment insurance. It was statistically significant at 5% significance level. This result means that there is the likelihood (0.30%) that the higher household size leads to the joining of endowment insurance instead of private pension by poultry agribusiness workers all things held constant. This implies that a poultry agribusiness worker with a large household size will prefer endowment insurance.

Belonging to a pension scheme had a positive relationship with endowment insurance. The empirical result indicates that there about (0.44%) probability that belonging to a pension scheme will lead to joining the endowment insurance instead of the private pension. The empirical result shows that if a poultry agribusiness is already involved in a pension scheme he or she will join the endowment insurance all things being equal.

Dependency was statistically significant at 1% significant levels. Dependency had a positive effect on endowment insurance. The result indicates that there is about 0.026% probability that the more the number of dependent ratio (people ages under 15 years and above 65 years) of a household, the more the poultry agribusiness worker will join the endowment insurance all things being equal.

For the interest earning savings model, annual income, extension visit, and membership of FBO were statistically significant. Annual income was statistically significant at 10% significance level. It had a positive relationship with interest earning savings. This means that the probability of a poultry agribusiness worker joining the interest earning savings pension scheme instead of the private pension increases with annual income. This implies that a worker who gets more annual income will join the interest earning scheme.

Extension visit had a negative relationship with interest earning savings. The variable was statistically significant at 5% significance level. The empirical result indicates that the probability of a poultry agribusiness worker to join the interest earning savings instead of the private pension. This means that when a poultry agribusiness worker gets access to more extension visit she or he will prefer private pension to interest earning savings.

Membership of FBO had a positive relationship with interest earning savings. FBO was statistically significant at 10% significance level. The result means that the probability of a poultry agribusiness worker joining the interest earning savings instead of the private pension increases with FBO membership. The empirical result indicates that if a poultry agribusiness is a member to an FBO he or she will prefer interest earning savings to private pension.

For the special pension savings model, off-farm income, credit, household size, trust, attitude were statistically significant. Off-farm income had a positive correlation with special interest savings. It was statistically significant at 10% significance level. The result means that the probability of a poultry agribusiness to subscribe to the special interest savings instead of the private pension increases with off-farm income. This implies that the worker who get more income from off-farm sources will contribute to the special interest savings while those who get do not or get less income from off-farm source will contribute to the private pension.

Credit was statistically significant at 5% significance level. There was a positive correlation amongst credit and special interest savings. This implies that 1% increase in credit access by a poultry agribusiness worker will make that worker to join the special interest savings instead of the private pension all things being equal. This means that if a worker gets credit from either formal or informal source, he or she will go for the special interest savings.

Household size was statistically significant at 1% significance level. There was a positive correlation amongst household size and special interest savings. The result means that 1% increase in household size will make a poultry agribusiness worker to join the special interest savings instead of the private pension. This implies that when the person in the house goes up the worker will subscribe to the special interest savings.

Trust in a pension was statistically significant at 10%. There was a positive correlation between trust and special interest savings. This means that the probability of a poultry agribusiness worker to join the special interest savings increases with trust in the pension scheme. The empirical result indicates that if a poultry agribusiness worker will join the special savings interest if he or she has some level of trust in the pension scheme.

Attitude had negative correlation amongst special interest savings contrary to the observation made by Castel (2008) who found out that attitude exerts a positive influence on informal sector workers willingness to pay for a pension scheme. It was statistically significant at 5% significance level. This means that 1% increase in the positive attitude towards a pension scheme will make a poultry agribusiness worker to join the private pension instead of the special interest savings all things being equal. The empirical result implies that if a worker has a positive attitude towards pension scheme he or she will join the private savings.

For the personal pension model, age, education, household size, credit, knowledge and attitude were significant statistically. The results show that age, education, credit, and attitude were statistically significant at 10% significance level whilst household size and knowledge were statistically significant at 5% significance level.

Age had a positive relationship with personal pension. This implies that 1% increase in the number of years of age of poultry worker will make him or her to join the personal pension instead of the private pension. The empirical result indicates that as the age of a poultry worker goes up by one year he or she will subscribe to the personal savings. Contrary to observation made by Withanage *et al.*, (2000) who observed a negative correlation between age and pension uptake in Sri-lanka.

There was a negative correlation amongst education and personal pension. This implies that 1% increase in the level of education of a poultry agribusiness worker will make him or her not to join the personal pension instead the private pension. The empirical result shows that as the level of education of the workers go up they will prefer the private pension to the personal pension.

There was a positive relationship between household size and personal pension. The result means that 1% increase in household size will make a poultry agribusiness worker to join the personal pension scheme instead of the private pension. This implies that when the people in the house go up the worker will subscribe to the personal pension.

The result showed a negative correlation amongst access to credit and personal pension. The result implies that 1% increase in access to credit by poultry agribusiness workers will make them not to join the personal pension instead of the private pension. This means that when the workers get access to credit from either formal and/or informal sources they will prefer the private pension to the personal pension.

Knowledge about pension had a negative relationship with personal pension. The result indicates that 1% increase in knowledge about pension scheme by poultry agribusiness workers will make them not to subscribe to the personal but the private pension all things being equal. This implies that when the agribusiness workers have knowledge they will go for the private pension.

There was a positive correlation amongst attitude towards pension and personal pension. The empirical result implies that 1% increase in positive attitude towards pension will make the workers contribute to the personal pension instead of the private pension all things being equal. This means that when the poultry agribusiness workers show positive attitude towards pension, they will join the personal pension scheme. The overall results of the multinomial logit estimates support the findings of Collins-Sowa *et al.*, (2013) who observed that pension type influenced informal sector workers willingness to pay for pension schemes in Ghana.

4.5 Assessing the Old Age Challenges and Anticipated Benefits

Tables 4.22 and 4.23 present the results of old age challenges of poultry agribusiness workers and benefits they sought respectively, while the current benefits provided by Pension providers is captured in table 4.22 in order to reconcile what is provided and what is expected, based on their perceived old age challenges and key or expected benefits sought from pension schemes.

Table 4.22: Pension Providers Current Pension Benefits to the Retired

	<i>Freq.</i>	<i>Percent</i>
Monetary Support	50	100
Housing	3	6
Medical Care	13	26
Disability Benefit	3	6

Source: *Computed from survey data, 2016*

The pension providers were asked about the support they give to their clients. The results are presented in Table 4.22, all (100%) of the institutions reported that they give monetary support, none (0%) of them reported that they give their clients caring as well as guaranteed food, clothing, burial expenses, water and electricity. Six (6%) of them indicated that they provide housing, 26% provide medical care whilst 6% provide other support, which are life covers or death benefits for survivors. These results were obtained from the in-depth interview obtained from pension scheme providers in the study area. The support given to clients in the study area contradicts the findings of Sahu (2014) who noted that regular cash transfers health care and access to service were some of the benefits sought at old age among informal sector workers in India.

Table 4.23: Perceived Old Age Challenges of Poultry Agribusiness Workers

Challenges	Yes		No	
	Freq.	Percent	Freq.	Percent
Health				
Medical care	186	93	14	7.0
Day care	178	89	22	11
Material				
Food	163	81.5	37	18.5
Clothing	170	85	30	15.0
Housing	131	65.5	69	34.5
Physical				
Disability support (wheel chair, etc.)	93	46.5	107	53.5
Financial				
Regular income	179	89.5	21	10.5
Payment bills (Utilities)	164	82	36	18

Source: Computed from survey data, 2016

It can be inferred from Table 4.23 that majority (93%) of the respondents view old age challenges as inadequate medical care whilst 7% were positive that medical care will not be a challenge consistent with observation made by De la Maisonneuve and Mylonas (1999) and Botchwey (2012) who found out that cover for individuality, health care, were some of the benefit sought at old age. Majority (89) also reported that day care will be a challenge in their old age whilst 11% argued that it will not be a challenge. In terms of material challenge, majority (81.5%) of the respondents reported that food will be challenge in their old age whilst 18.5% of them were of the view that it will not be a challenge consistent with the findings of Ce Shen and

Williamson (2010) who noted that majority of the aged needed to pay for necessities such as food, housing, clothing, food and electricity, medicine and burial expenses Consistent with the life cycle hypothesis postulated by Modigliani and Brumberg (1954) and later by Ando and Modigliani(1963) which presents a well-defined linkage between the consumption plans of the individual and his/her income and income expectation from childhood ,through their working life into retirement and death. Majority (85%) of the respondents reported that clothing will be a challenge in their old age whilst 15% stated otherwise.

Majority (65.5%) of the respondents posited that housing will be a challenge in their old age whilst 34.5% said otherwise. Mackeller (2009) who found that housing and education as benefit sought. About 46.5% of the respondents perceived lack of disability support to be a challenge, whilst majority 53.5% did not see it as a challenge at old age. Majority (89.5%) of the respondents illuminated on the fact that lack of regular income will be a challenge in their old age whilst 10.5% while did not see lack of regular income as a perceived old age challenge, perhaps they may want to depend on remittances when they are no more working .

Majority (82%) postulated that payment of utility bills will be a challenge whilst 18% reported that payment of utility bill will not be a challenge in their old age. This is consistent with the findings of Sahu (2014) who noted that regular cash transfer and health care were key benefit sought among informal sector workers in India.

It can be seen from Table 4.24 that majority (49.5%) of the respondents reported that they anticipate monetary support in their quest to subscribe to a pension scheme. About 7.5% anticipate caring and guaranteed food respectively, 5% anticipate clothing benefit, 2% anticipate

housing, and 27% anticipate medical care whilst 0.5% and 1.0% anticipate burial expenses and electricity respectively.

Table 4.24: Key Benefits Expected at old Age From Retirement Packages

	<i>Freq.</i>	<i>Percent</i>
Monetary Support	99	49.5
Caring	15	7.5
Guaranteed Food	15	7.5
Clothing	10	5.0
Housing	4	2.0
Medical Care	54	27.0
Burial Expenses	1	0.5
Electricity	2	1.0

Source: Computed from survey data, 2016

4.6 Identifying the Constraints to the Development of Pension Schemes

In Table 4.25 below shows constraints that were identified and ranked by poultry agribusiness workers in the study area from the most pressing (1) to the least pressing (7). Table 4.25 shows that complicated paper work, low benefit and low knowledge of the scheme were three most pressing constraints identified by the poultry agribusiness workers with mean scores of 3.57, 3.77 and 3.88 respectively. The results is consistent with that which was reported by Castel (2008) and Niguyen *et al.*, (2009), who also identified complicated paper work and low benefits as a constraints to the development of informal voluntary pension schemes.

Adzawala *et al.*, (2010) also observed that low level of knowledge in the scheme, was a constraint to informal sector pension uptake in the Tamale Metropolis in Ghana. Wintanage *et al.*, (2000) also reports of inflation as a constraint to informal pension in Sri Lanka. Kendall's W^A was 0.553 meaning there is 55.7% agreement among the rankers of the constraints as shown below: Others include, difficult in accessing contribution, low confidence, low and regular flow of income and difficulty in access to fund manager's office.

Table 4.25: Constraints to Pension Schemes by Workers

<i>Constraints</i>	<i>Mean</i>	<i>Rank</i>
Complicated paper work	3.57	1 ST
Low benefit	3.77	2 nd
Low knowledge of the scheme	3.79	3 rd
Difficult in accessing contribution	3.88	4 th
Difficulty in access to fund manager's office	4.24	5 th
Low confidence	4.31	6 th
Low and regular flow of income	4.44	7 th
Diagnostics Statistics		
<i>Kendall's W^A</i>	0.553	
<i>Chi-square calculated</i>	277.776	
<i>Chi-square critical</i>	12.5916	
<i>Degree of Freedom</i>	6	
<i>Asymptotic sig.</i>	0.000	
<i>Number of Observation</i>	200	

Source: Computed from survey data, 2016

Kendall's W^A was 0.553 meaning there is 55.3% agreement among the rankers of the constraints. The chi-square (χ^2) calculated from the simulation was 277.776 and the chi-square (χ^2)

obtained from the statistical table with 5% (0.05) significant level and 6 degrees of freedom was 12.5916. Since the chi-square (χ^2) calculated from the Kendall's concordance simulation is greater than the chi-square (χ^2) obtained from the statistical table, the null hypothesis was rejected meaning there is an agreement among the rankers of the constraints. The result was supported by the probability value of 0.000 which less than 1% ($P < 0.01$) significant levels.

The chi-square (χ^2) calculated from the simulation was 58.145 and the chi-square (χ^2) obtained from the statistical table with 5% (0.05) significant level and 6 degrees of freedom was 11.07.

Table 4.26 shows that: high operating cost, no protection against inflation, and information systems were three most pressing constraints identified by the pension scheme providers with mean scores of 2.11, 2.91 and 3.44 respectively.

Table 4.26: Constraints to Development of Pension by Institution

<i>Constraints</i>	<i>Mean Score</i>	<i>Rank</i>
High Operating Cost	2.11	1 ST
No protection against Inflation	2.91	2 nd
Information Systems	3.44	3 rd
Management Capacity	3.70	4 th
Fraud/Misrepresentation	4.26	5 th
Information Asymmetry	4.58	6 th
Diagnostics Statistics		
<i>Number of Observation</i>	50	
<i>Kendall's W^A</i>	0.427	
<i>Chi-Square Statistic</i>	58.145	
<i>Chi-Square Critical</i>	11.07	
<i>Degree of Freedom</i>	5	
<i>Asymptotic Sig.</i>	0.000	

Source: Computed from survey data, 2016

Similarly Mackeller (2009) observed that high operating cost was a constraint to the development of informal sector pension scheme. While Winthanage *et al.*, (2000) and De la

Maisonneure and Mylonas (1999) also reported of lack of protection against inflation in Sri Lanka and Fraud/Misrepresentation respectively as constraints to uptake of informal sector pension.

Since the chi-square (χ^2) calculated from the Kendall's concordance simulation is greater than the chi-square (χ^2) obtained from the statistical table, the null hypothesis was rejected meaning there is an agreement among the rankers of the constraints. The result was supported by the probability value of 0.000 which less than 1% ($P < 0.01$) significant levels.

4.7. Suggestion to Improve Informal Sector Pension Patronage

To gauge poultry agribusiness workers suggestion to improve the informal voluntary pension Scheme in the study area, table 4.27 shows that 60% of the respondents indicates that improving awareness on the importance of pension through education and marketing is extremely important. About 24.5% of them posit that it is important, while 5.5% of them opined that it is somewhat important, 5.5% of them also asserted that it is not very important whilst 4.5% indicated that it is not important at all.

About 53% of them were also of the view that it is extremely important for associations to purchase informal voluntary pension on behalf of poultry agribusiness workers, with 28.5% indicated that it is important, while 8% perceived it is somewhat important, whilst 6% and 4.5% indicated that it is not very important and not important at all for associations to buy informal pension for the agribusiness workers. About 48% of the respondents indicated that it extremely important pension providers should locate in communities with poultry agribusiness workers. About 37.50% of them reported that it is important, 7% indicated that it is somewhat important, 3.50% maintained that it is not very important whilst 4% reported that it is not important at all.

For pension providers should design affordable product, 45.5% said it is extremely important, 37% indicated that it is important, 8% contended that it is somewhat important, 6% reported that it is not very important whilst 3.5% said that it is not important at all. The respondents also ranked the importance of the simplification of pension payment and claim process.

Table 4.27: Suggestion to Improve Informal Sector Pension Patronage

	<i>Not Important at all</i>	<i>Not Very Important</i>	<i>Somewhat important</i>	<i>Important</i>	<i>Extremely Important</i>
Improve awareness on the importance of pension through education and marketing	4.50	5.50	5.50	24.50	60.00
Associations to purchase informal voluntary pension on behalf of poultry agribusiness workers	4.50	6.00	8.0	28.50	53.00
Pension providers should locate in communities with poultry agribusiness workers	4.00	3.50	7.00	37.50	48.00
Pension providers should design affordable product	3.50	6.00	8.00	37.00	45.50
Simplification of pension payment and claim process	3.50	3.50	9.50	31.50	52.00
Law enforcement policies on informal voluntary pension scheme specifically for the poultry agribusiness	5.03	2.01	2.01	26.13	64.82
Government intervention	41.21	5.03	3.52	18.09	32.16

Source: *Computed from survey data, 2016*

About 52% of them posit that it is extremely important, 31.5% indicated that it is important for the pension providers to simplify the pension process, 9.5% reported that it is somewhat important, 3.50% of the respondents indicated that it is not very important and not important at

all respectively. About 65% of the respondents opined that it is extremely important for law to be enforced on informal voluntary pension scheme specifically for the poultry agribusiness. About 26% iterated that it is important, 2.01% of them said it somewhat important and not very important respectively whilst 5.03% reported that it is not important at all. For Government to intervene in the informal sector pension, 32.16% of the respondents agreed that it is extremely important, 18.09% of them said it is important. About 3.52% of them argued that it is somewhat important, with 5.03% succinctly opined it that it is not very important whilst 41.21% reported that it is not important at all.

4.7.1 Ranking the Suggestion to Improve the Informal Pension Intake

Table 4.28 presents the ranking in order of most pressing (importance) of the suggestions to improve the informal pension. It can be inferred from the Table 4.28 that law enforcement policies on informal voluntary pension schemes was ranked highest. Improving awareness on the importance of pension through education and marketing was ranked second (2nd) whilst Simplification of pension payment and claim process was ranked third (3rd). The empirical result implies that enforcing law to govern the informal sector pension will motivate more poultry workers to subscribe to the scheme as well as more awareness creation, educating and marketing.

Table 4.28: Ranking of Suggestions to improve the informal sector Pension

	<i>Mean Scores</i>	<i>Rank</i>
Law enforcement policies on informal voluntary pension scheme specifically for the poultry agribusiness	4.55	1 st
Improve awareness on the importance of pension through education and marketing	4.40	2 nd
Simplification of pension payment and claim process	4.18	3 rd
Associations to purchase informal voluntary pension on behalf of poultry agribusiness workers	4.11	4 th
Pension providers should locate in communities with poultry agribusiness workers	4.02	5 th
Pension providers should design affordable product	3.94	6 th
Government intervention	2.80	7 th

Source: Computed from survey data, 2016



CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

This chapter presents a summary of the findings of the study. Conclusions are then made, followed by recommendations for policy consideration and agribusiness improvement.

5.1 Summary

Pension refers to financial arrangement to build asset for old age. It reflects a kind of arrangement, where the current working population contributes to pay for those who have retired. Pension is a special type of saving and insurance that addresses old age income, insecurity and vulnerability. Pension is paramount to an individual's future standard of living; there is the need for individuals of all ages to make provision towards retirement by contributing to pensions schemes.

This study assessed poultry agribusiness workers' perception, knowledge and attitude towards pension. It also assessed the factors that influence a poultry agribusiness workers' choice, willingness to pay and the amount the workers are willing to pay for pension. The study further assessed old age challenges and benefits they anticipate after retirement. Lastly, the study identified the constraints to the development of the pension scheme for the agribusiness poultry workers.

The study employed simple descriptive statistics, contingent valuation method as well as Logit and Tobit models in estimating the relationship between selected factors and workers'

willingness to pay and willingness to pay amount respectively. Descriptive statistics was used to show the workers perception, knowledge, attitude, old age benefits and challenges. The contingent valuation method was employed to determine the amount workers are willing to pay. The Kendall's ranking technique was used to identify and rank the constraints to the development of pension.

5.3 Conclusions

Poultry agribusiness sector is gendered in favour of males in the study area as 75.5% of the workers sampled were males. Moreover the sector is dominated by youth with a mean age of 38years with 54% having secondary education. Most poultry agribusiness workers are engage suppliers of poultry products as 77.0% are sellers of poultry products.

The results of the study indicated that mean retirement age from poultry farmers perspective is 70years but 60 for the providers. The results of the survey showed that majority (99%) of the respondents had knowledge about pension scheme. The respondents had a positive (0.461) perception about pension schemes. They also had a positive (0.706) perception about pension providers. Also majority (81%) of the respondents was willing to pay for the informal involuntary pension scheme but perception towards provider is negative with a negative perception index of -0.368 and 89% wanted to contribute GHS 2 daily which is a medium bid and were willing to retire at 70, instead of 60 for full pension and 55 for reduced pension which is currently being offered by pension providers.

The empirical result showed that benefits provided by institutions are only monetary, and medical benefits while the workers wanted food, housing, disability, and support of care workers

in addition. Majority (49.50%) of the respondents sought to gain medical support as a benefit from the pension providers after retirement. It was also reported by majority (93.%) of the respondents that the challenge they anticipate during their old ages is medical care. The logit model revealed that education, marital status, household size, off-farm income, investment, belonging to pension scheme, and trust statistically influenced willingness to pay for pension. For the Tobit model, education, household size, off-farm income, investment, and access to credit were statistically significant. This implies that they either influence willingness to pay amount positively or negatively.

The study showed that the three most pressing constraints to the pension scheme development by the poultry agribusiness workers are complicated paper works, low benefit, and poor knowledge of the pension scheme with mean scores of 3.57, 3.77 and 3.88 respectively.

The study showed that the three most pressing constraints to the development of pension scheme by the pension providers are high operating cost, lack of protection against inflation, information systems with mean scores of 2.11, 2.91 and 3.44 respectively.

Some of the results of the study run counter to pension theories while others supported it.

About 18% of pension providers in the study area uses the pay as you go financing model for their informal voluntary pension schemes in defiance of the chain latter theory, which viewed pension as intergenerational issue where one generation finance the retirement benefit of the other generation in a form of a Ponzi scheme.

The fact that poultry agribusiness worker willing to retire at age 70 instead of 60 to enjoy full pension defied the Lumb of Labour theory which suggest that government want to redistribute jobs in favour of the young, by taking the job from the old to the young ones.

The existence of both government and private pension providers in the study area so as to alleviate old age poverty through informal voluntary pension schemes and not informal mandatory pension scheme to alleviate old age poverty also defied the rational prodigality theory, where individuals expect government to play a paternal role by forcing citizens to defer current consumption and save portions of their income in pension schemes towards the future in order smoothing their consumption at old age.

5.4 Policy Recommendations

The study indicates that the pension scheme still remain very crucial to national development and the willingness to pay and willingness to pay amount for pension are influenced by several factors. In the light of the evidence presented, the study provides these recommendations:

Firstly, pension providers should educate the informal sector on the benefits of the informal voluntary pension schemes and also embark on reputation risk management so as to foster trust since poultry agribusiness workers have negative perception towards providers. This should be done through pension trust and insurance companies collaborating with radio stations and registered associations in the form of client education and training for poultry agribusiness workers, and also disseminate information on the benefits of Informal voluntary pension scheme to poultry agribusiness workers in the study area as empirical results from the study showed that

trust, education and training exerted a significant and positive effect on poultry agribusiness willingness to pay for informal voluntary pension schemes.

Secondly, pricing of informal voluntary pension products should range from GHS 0.50 to GHS 3.00 daily, but preferably GHS2.00 since most of the poultry subsector workers were willing to pay such amount. Thirdly, since social security is a combination of social assistance and social insurance, informal pension benefits should not be restricted to only monetary, insurance and medical but the scope should be expanded to embrace coupons for food, housing, disability support and provision on call care providers as well based on the results. This can be achieved through social public assistance in the form of levies, earmarked funds from donors, charity donors, support from charity and corporate social responsibility portfolios of organizations as well as direct and indirect tax financing from the government, to provide an informal voluntary pension scheme similar to the National Health Insurance Scheme (NHIS) to make the scheme sustainable.

While retirement age from poultry agribusiness workers in the Kumasi metropolis should be revised to 70years instead of 60years for poultry agribusiness workers in the Kumasi Metropolis in the Ashanti Region.

Again, Government policy aimed at encouraging financial institutions to provide credits to poultry agribusiness workers would enhance their choices of informal voluntary pension scheme. This will encourage them to increase their productivity. This is based on the fact that access to credit is one of the factors that influence the workers willingness to pay amount for pension.

Moreover, pension providers should devise a means to ease the process that involves the contribution to pension or redeeming of benefits. Macroeconomic policies aimed at reducing inflation and subsidization of operational cost of informal voluntary pension providers would positively promote pension schemes; however providers should find innovative ways of improving pension benefits and also reduce paper work for poultry agribusiness workers in the study area. This is based on the fact that complicated paper work is one of the most pressing constraints militating against poultry agribusiness workers in the development of pension scheme. Also, social assistance programmes in the form of subsidies for larger household sizes with high number of dependence will reverse the negative influence on the amount poultry agribusiness workers are willing to pay for informal voluntary pension schemes. Moreover, means testing and needs stating for large household size with married couples will reverse the negative influence on the poultry agribusiness workers willingness to pay for informal voluntary pension scheme.

5.5 Limitations and Suggestion for Future Studies

The study was restricted to the Kumasi metropolis of the Ashanti region and did not look at poultry agribusiness workers' perceived distribution channels for marketing pension schemes. Consequently, this study should be replicated in the rest of Ashanti region, Greater Accra and Brong Ahafo regions. This should also include identifying their perceived distribution channels for marketing the scheme to the poultry agribusiness workers in order to be conclusive on a framework for providing informal voluntary pension schemes for poultry agribusiness workers in Ghana.

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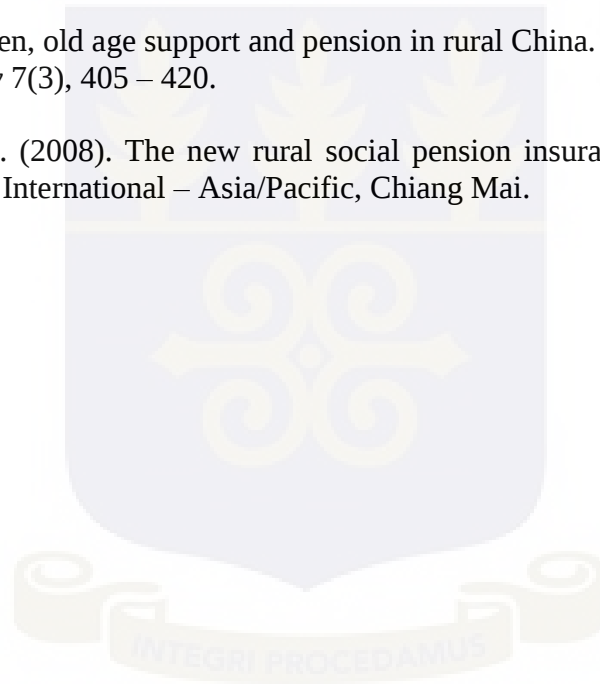
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APPENDICES

APPENDIX 1

SAMPLE QUESTIONNAIRE

UNIVERSITY OF GHANA; DEPARTMENT OF AGRICULTURAL ECONOMICS AND AGRIBUSINESS, LEGON

A. General Information

1. Household Code: [.....]
2. Name of worker: [.....]
3. Sex of worker [.....] 1. Male 0. Female
4. Age of worker: [.....]
5. Type of Worker 1. Farmer 2.Seller of Poultry products 3.other specify.....
6. Highest level of formal education of worker: [.....] 0. None 1. Basic
(Primary/JHS/Middle) 2.Secondary (SHS/Vocational) 3.Tertiary(Training college/Poly/Varsity)
- 7.Marital status of worker: [.....] 0. Single 1.Married 2.Divorced/Separated 3. Widowed
- 8.Religion of the worker: [.....] 1. Christianity 2.Islamic 3.Traditionalist 4. Otherwise (Please, specify).....
- 9.Years of experience [.....]

B. Asset

Q	10.Household assets owned – Circle the items the household owns and provide the current value or amount paid			
		Item	Number	Number
	1	Radio	.....	Cedis.....
	2	Television	.....	Cedis.....
	3	Mobile Phone	.....	Cedis.....

	4	Bicycle	.....	Cedis.....
	5	Refrigerator	.....	Cedis.....
	Animals owned – Provide the approximate number the farms owned of each type of live animal.			
		Cattle	.....	Cedis.....
		Draft animals (oxen, donkeys, horses etc.)	.....	Cedis.....
		Poultry	.....	Cedis.....
		Rabbits	.....	Cedis.....
		Sheep	.....	Cedis.....
		Goats	.....	Cedis.....
		Pigs	.....	Cedis.....
		Fish (estimate number)	.....	Cedis.....
		Beehives	.....	Cedis.....
		Others (Please specify)	.....	Cedis.....

C. Household Composition

11. How many persons are in your household? Total: [.....] Male: [.....] Female: [.....]
12. Number of persons with ages below 15 years. Total: [.....] Male: [.....] Female: [.....]
13. Number of persons between ages of 15 and 65 years. Total: [.....] Male: [.....] Female: [.....]
14. Number of persons with ages above 65 years. Total: [.....] Male: [.....] Female: [.....]

D. Household Income Sources

15. What is the total annual income obtained from poultry agribusiness (in Ghana Cedis)?
[.....]
16. Do you engage in any off-income generating activities? [.....] 1. Yes 0. No

17. If yes, please provide the details below

Activity	Please, Tick (), if applicable
Petty trading	
Handicraft making	
Gathering something from the wild or water bodies	
Timber processing	
Small scale mining	
Others (Please, Specify)	

18. If yes, how much do you earn from these activities annually (in Ghana Cedis) [.....]

19. Aside working in the poultry agribusiness, do you engage in other investment activities? [.....] 1. Yes 0. No

E. Access to Credit

19. Do you have any kind of savings account? [.....] 1. Yes 0. No

20. Do you get credit or support for your poultry agribusiness? [.....] 1. Yes 0. No

21. If yes, state the source (s) of the credit (Multiple response): []/[]/[]/[]

Codes: 1. Relatives/Friends 2. Banks 3. Non-Bank Financial Institution 4. Local money lenders
5. Non-Governmental Organizations (NGOs) 6. Others (Please, specify).....

22. How do you pay back credit or grant? [.....] 1. In-cash 2. In-kind 3. Others (Please, specify).....

F. Social Network

23. Have you received any extension service or training from the poultry agribusiness in the past 12 months? [.....] 1. Yes 0. No

24. Have you received any formal agricultural extension service in the past 12 months? [.....] 1. Yes 0. No

25. If yes, what are the services provided (Multiple response) []/[]/[]/[]

Codes: 1. Establishment of demonstration farm 2. Facilitates access to input 3. Facilitates access to credit 4. Advice on poultry management 5. Awareness creation 6. Introduced new varieties 7. Others (Please, specify).....

26. Are there farmer organization networks, groups or associations in the community? [.....] 1. Yes 0. No

27. Are you a member of any of them? [.....] 1. Yes 0. No

28. If yes, what are their functions?

Association/network	Functions/Assistance provided for farmers

29. If no why?.....

30. How often do you get assistance from these agencies?

	Very often	Not often	Not at all
Training			
Loans			
Other.....			

G. Pension Scheme

1. Pension scheme is a form payment given to contributors to a scheme which is a specialist type of saving and insurance which addresses old age income, insecurity and vulnerability after the end of the working life of employees in both the formal and informal sector.

2. It is mandatory for formal sector workers and voluntary for informal sector worker

31. Have you heard of pension scheme? [.....] 1. Yes 0. No

32. If yes, what is the source of information about pension scheme? [.....] 1. Registered Associations

2. Banks 3. Microfinance 4. News print 5. Pension companies

6. Insurance companies 7. Radio stations 8. Other specify.....

33. Do you belong to any pension scheme? [.....] 1. Yes 0. No

34. If yes, to 33 above which one? [.....] 1. Private pension 2. Retirement savings 3. Endowment insurance 4. Interest earning savings 5. Special pension savings scheme 6. Personal pension scheme

7. Others (Please, specify).....

35. Have you been paying any premium for the scheme? [.....] 1. Yes 0. No

36. If yes, how much have you been paying (GHS)?

37. Do you have any trust in pension scheme? [.....] 1. Yes 0. No

38. If no, why?

39. If you belong to a pension scheme, do you know of any other? [.....] 1. Yes 0. No

40. If yes, which ones?

41. At what age do you want to be considered as old, where you cannot work?.....

42. What old age challenges do you anticipate? [.....]

Challenges	Please, Tick where appropriate
A.Health	
i .Medical care	
ii. Day care	
B.Material	
i. Food	
ii. Clothing	
ii. Housing	
C.Physical	
i.Disability support (wheel chair, etc.)	
D.Financial	
i.Regular income	
ii.Payment bills (Utilities)	
E. Others (Please, specify)	

43. What support do you anticipate in your old age? [.....] 1. Monetary support 2. Caring 3. Guaranteed food 4. Clothing 5.Housing 6. Medical care 7. Burial expenses 8. Water 9.Electricity 10. Others (Please, specify).....

H. Willingness to pay (WTP) for informal voluntary pension scheme

1. Informal Voluntary Pension scheme is where informal sector workers contribute voluntary to a scheme which is specialist type of saving and insurance which addresses old age income, insecurity and vulnerability by paying a retirement income to contributors.

2Contributors to the informal voluntary pension scheme may pay a daily premium of either GHS 1, 2 or 4 and enjoy benefits such as life cover, collateral for loans, and withdrawal benefit, as specified in the Table below:

Cost	Benefit
Payment of premium	Social protection at retirement
Late retirement age	Life cover for dependents
	Financial benefit in the form of income
	collateral for loans and withdrawal benefit

44. Given the benefits and costs provided about “Pension”. Are you willing to pay for pension/insurance? [.....] 1. Yes 0. No

45. If yes to 44, what will be your motivation for paying for pension? [.....] 1. Save towards old age 2. Financial security 3. Interest 4. Sustainability 4. Others (Please, Specify).....

46. Are you willing to pay for the pension? 1. Yes 0. No

A. Low opening bid

Cost	Benefit
Payment of premium	Social protection at retirement
Late retirement age	Life cover of GHS 1000 for dependents
	Financial benefit at 8% guaranteed interest rate
	collateral for loan and 25% withdrawal benefit

47. Are you willing to pay GHS0.50 **daily only** as premium for pension scheme?

1. Yes [] 0. No []

48. What if the premium is GHS 1.00 daily for the pension scheme?

1. Yes [] 0. No []

49. What if the premium is GHS 1.50 daily for the pension scheme?

1. Yes [] 0. No []

50. What is the maximum premium that you are willing to pay daily for the pension scheme?
GHC.....

51. Are willing to pay in kind if you are assisted financially? 1. Yes [] 0. No []

B. Medium opening bid

Cost	Benefit
Payment of premium	Social protection at retirement
Late retirement age	Life cover of GHS 2000 for dependents
	Financial benefit at 10% Guaranteed interest rate
	Collateral for loan and 30% withdrawal benefit

52. Are you willing to pay GHS **2.00 daily only** as premium for pension scheme?

1. Yes [] 0. No []

53. What if the premium is GHS 2.50 daily for the pension scheme?

1. Yes [] 0. No []

54. What if the premium is GHS 3.00 daily for the pension scheme?

1. Yes [] 0. No []

55. What is the maximum premium that you are willing to pay daily for the pension scheme?
GHC.....

56. Are willing to pay in kind if you are assisted financially? 1. Yes [] 0. No []

C. High opening bid

Cost	Benefit
Payment of premium	Social protection at retirement
Late retirement age	Life cover of GHS 4000 for dependents
	Financial benefit at 15% guaranteed interest
	Collateral for loan and 35% withdrawal benefit

57. Are you willing to pay GHS **3.50 daily only** as premium for pension scheme?

1. Yes [] 0. No []

58. What if the premium is GHS 4.00 daily for the pension scheme?

1. Yes [] 0. No []

59. What if the premium is GHS 4.50 daily for the pension scheme?

1. Yes [] 0. No []

60. What is the maximum premium that you are willing to pay daily for the pension scheme?
GHC.....

61. Are willing to pay with poultry if you are assisted financially? 1. Yes [] 0. No []

62. What will discourage from paying for pension? [.....] 1. High premium 2. Lack of money to contribute 3. Low confidence 4. Difficulty in access to office 5. Poor awareness 6. Others (Please, specify).....

63. What are your fears of paying for pension? [.....] 1. Possibility of failing contribution 2. Difficulty in access 3. Others (Please, specify).....

I. Perceived constraints to the development of voluntary informal pension scheme

64. Rank the following constraints to the development of pension scheme from the most pressing to the least pressing using the numbers 1,2,3.....7

Perceived constraints	Please, rank (1 most and 7 least constraints)
Difficulty in accessing contribution	
Low confidence	
Low and irregular flow of income	
Low knowledge of the scheme	
Difficulty in access to fund manager's office	
Low benefit	
Complicated paper work	

J. ATTITUDE, KNOWLEDGE AND PERCEPTION**ji attitude towards pension schemes**

Attitude and Perception	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
I am concerned about pension benefits					
Pension scheme is something for rich people					
Premium is expensive					
Pension is necessary to protect you and your family					
Pension should be provided by the state					
Private companies should provide pension schemes					
Individuals and association should set up their own pension scheme					
I think those who make ₵50,000 a year do not need pension because they can save towards their retirement.					

Pension companies just tell you good things about themselves					
Pension funds are not secured					
It is possible to lose your money in pension schemes, will you set aside money each month/week for contribution towards pension.					

Jii. Attitude and perception towards informal voluntary pension schemes

Jiii. Attitude towards old age

Attitude	Strongly Agree (%)	Agree	Undecided	Disagree	Strongly Disagree
I can't really accept or think about preparation towards old age					
I think it would be nice to have regular income at old age and do what you fancy					
I would like to retire early					
I am not going to work all my life					

Jiv. Attitude towards retirement

Attitude	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
It will be nice to think about life with regular contribution from pension provider at 60					
You feel black mailed if you don't have pension/state pension at 60					
I can get along with pension when I am old					

Jv. Attitude and perception towards the pension provider

Attitude and Perception	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
When it comes to paying claims, pension providers will always try to delay and / make it difficult					
When it comes to making claims, pension providers will normally try to cheat you					
I can trust pension provider to be fair to me					
Pension providers care more about saving money than about helping you.					

=

Jvi. Awareness and understanding of pension options

Awareness and Understanding	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
I know about pension schemes					
Pension scheme is provided by SSNIT and Companies					
Without pension, will be poor and can't afford life at retirement					
Plenty poultry agribusiness workers don't have pension only those in the formal sector have					
What does pension means?					
There are many pension schemes and companies to choose from to make pension decisions					
I don't know of pension benefit					

Jvii. Perception about providers of Informal Voluntary pension scheme

Perception	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
Pension should be provided by the state					
Private financial institutions such as banks , savings and loan, corporative and microfinance companies should provide pension schemes					
Pension should be provided by various associations in the poultry agribusiness					
Pension should be provided by Insurance companies					
Informal voluntary should be provided by pension trust and pension companies only					

K. Suggestion to improve informal sector pension uptake

Could you please put in order of importance suggestion to improve uptake of informal sector pension for poultry agribusiness workers.

Uptake Factor	
Suggestion to improve uptake	1–not important at all, 2–not very important, 3–somewhat important, 4–important, 5–extremely important
A. Improve awareness on the importance of pension through education and marketing	
B. Associations to purchase informal voluntary pension on behalf of poultry agribusiness workers	
C. Pension providers should locate in communities with poultry agribusiness workers	
D. Pension providers should design affordable product.	
E. Simplification of pension payment and claim process	
F. Law enforcement policies on informal voluntary pension scheme specifically for the poultry agribusiness	
G. Government intervention	
H. Others (Please, specify)	

64. Would you like to add any other information.....

Thank you for your attention!

APPENDIX 2

SAMPLE QUESTIONNAIRE FOR FINANCIAL INSTITUTIONS

UNIVERSITY OF GHANA; DEPARTMENT OF AGRICULTURAL ECONOMICS AND AGRIBUSINESS, LEGON

This study is being carried out by Nicholas Oppong Mensah, a graduate student of the University of Ghana, Legon, on the topic **Willingness of Poultry agribusiness workers to participate in the Informal Voluntary Pension Schemes in the Kumasi Metropolis in the Ashanti Region in Ghana**, in partial fulfillment of the award of master of philosophy in Agribusiness. All information gathered will be treated with much confidentiality and would solely be for academic purposes. Your support and contribution would be very much appreciated. For further enquiries, please contact me at nicoppmens@yahoo.com or call 0207069499

A. General Information

1. Company name: [.....]
2. Name of respondent: [.....]
3. Position of respondent: [.....]
4. Highest level of formal education of farmer: [.....] 0. None 1. Basic
(Primary/JHS/Middle) 2.Secondary (SHS/Vocational) 3.Tertiary (Training college/Poly/Varsity)
5. Years of experience: [.....]

B. Pension Scheme

6. What kind of pension scheme do you give to your client? [.....] 1. Private pension 2. Retirement savings 3.Endowment insurance 4. Interest earning savings 5 Special pension savings scheme 6. Personal pension scheme 7. Others (Please, specify).....
7. What method of financing do you offer to your clients? 1. Defined contribution 2. Defined benefit 3. Pay-as-you-go 4.Fund investment/management 5. Others (Please, specify).....
8. How frequent does your institution take deposit from clients? [.....] 1. Daily 2. Weekly 3.Monthly 4.Quarterly 5.Semi-annually 6.Annually 7.Seasonally 8. Others (Please, specify).....
9. At what minimum and maximum age do clients qualify for pension benefit.....
10. What support do you give to your client in their old age? [.....] 1. Monetary support 2. Caring 3. Guaranteed food 4. Clothing 5.Housing 6. Medical care 7. Burial expenses 8. Water 9.Electricity 10. Others (Please, specify).....

11. In what form do you pay benefit to your client? [.....] 1. Lump sum 2. Monthly contribution
3. Weekly contribution 4. Installment 5. House/health 6. Others (Please, specify).....

C. Institutional Constraints

12. Rank the following constraints to the development of pension scheme from the most pressing to the least pressing using the numbers 1,2,3.....7

Constraints	Please, rank (1 most and 7 least constraints)
Management capacity	
No protection against inflation	
Information systems	
Information asymmetry	
Fraud/misrepresentation	
High operating cost	

12. Would you like to add any other information?

.....
.....

Thank you for your time!

APPENDIX 3

CORRELATION MATRIX

Appendix

Correlation matrix of coefficients of tobit model

e(V)	model	Sex	LAge	Educ	Married	Religion	Exp	Hhd	Income	Offfarm	invest-t	credit	Extens-n
model													
Sex	1.0000												
LAge	0.0533	1.0000											
Educ	0.2108	0.0588	1.0000										
Married	0.0710	-0.4644	-0.1575	1.0000									
Religion	-0.0628	-0.0052	0.3638	0.0231	1.0000								
Exp	-0.0352	-0.4909	0.0705	-0.0499	-0.0938	1.0000							
Hhd	0.0242	-0.1296	-0.1180	0.0157	-0.0471	-0.0848	1.0000						
Income	-0.0338	-0.1086	-0.0475	0.1559	0.0883	-0.1274	0.0255	1.0000					
Offfarm	-0.0734	-0.0264	0.0456	0.0419	-0.0499	-0.0254	-0.1214	-0.0264	1.0000				
investment	0.1151	0.0487	-0.0013	-0.1569	0.0359	0.1004	0.0091	0.0776	-0.5145	1.0000			
credit	0.0639	0.0407	-0.0697	0.0657	-0.0473	-0.1234	-0.0785	0.0714	-0.0645	-0.0908	1.0000		
Extension	-0.1991	0.1020	0.0128	-0.0331	0.0549	-0.0792	-0.0530	-0.1050	0.0901	-0.1333	-0.2738	1.0000	
FBO	-0.0291	0.0788	-0.1239	-0.0002	0.0099	-0.0941	-0.0568	-0.1559	0.0037	-0.1212	-0.0118	-0.0911	1.0000
Knowledge	-0.0209	0.0684	0.0706	-0.1294	0.0079	-0.0572	-0.0152	-0.0515	-0.0510	0.0242	-0.1602	-0.0582	-0.0582
belong	-0.1245	-0.0328	-0.1911	0.0684	-0.1689	-0.0168	-0.0999	-0.0897	0.0416	-0.0306	0.0488	-0.2374	-0.2374
Dependent	-0.0718	0.0281	-0.0293	0.0274	0.1218	-0.0640	-0.3770	0.0885	-0.0294	-0.0109	-0.0015	-0.0732	-0.0732
Trust	-0.1367	0.0263	-0.0661	-0.0171	0.0876	-0.0711	-0.0661	0.1070	-0.0605	0.1022	-0.0281	0.1395	0.1395
_cons	-0.1301	-0.9679	-0.2096	0.4393	-0.1620	0.4430	0.1207	0.0937	0.0490	-0.0922	-0.0390	-0.0999	-0.0999
sigma													
_cons	-0.0026	-0.0077	-0.0026	0.0000	-0.0104	0.0036	0.0031	0.0060	-0.0101	0.0142	-0.0027	0.0164	0.0164
e(V)	model	FBO	Knowledge	belong	Dependent	Trust	_cons	sigma					
								_cons					
model													
FBO	1.0000												
Knowledge	0.0820	1.0000											
belong	-0.1906	-0.1056	1.0000										
Dependent	-0.0005	0.0490	0.0073	1.0000									
Trust	0.0436	-0.0694	-0.1807	0.0780	1.0000								
_cons	-0.0733	-0.1391	0.0969	-0.0299	-0.0911	1.0000							
sigma													
_cons	-0.0051	0.0195	-0.0059	-0.0115	0.0326	0.0023	1.0000						