Socio-economic Determinants of Choice between Layers and Broilers Farming among Smallholder Chicken Farmers in Tanzania

Longo, Joseph

Agribusiness Management, College of Economics and Business Studies,
Sokoine University of Agriculture, Morogoro - Tanzania

*Corresponding author e-mail: *longo@sua.ac.tz*

Abstract

Poultry farming is among emerging important sub-sectors in Tanzania. The sub-sector has a potential to spearhead the transformation of the agriculture sector due to its inclusive nature and flexibility for diversified production systems. Data were collected from Dar es Salaam and Morogoro (Eastern zone), Kilimanjaro (Northern zone), Dodoma (Central zone), Mbeya and Iringa (Southern Highlands), Mwanza and Geita (Lake zone), and Mtwara and Lindi (Southern zone), aiming at identifying socio-economic factors that influence the choice of chicken farmers for either broilers or layers production, as these factors are important for business development advisors. The collected data were analyzed through descriptive and inferential approaches. Inferential analysis was done by using a binary logistic regression. The key interest in doing inferential analysis was the identification of socio-economic variables that influence choice between broilers and layers farming. The inferential analysis involved one dichotomous dependent and four dichotomous independent variables. The dependent variable was chicken type kept by the farmer (Y). The independent variables were; gender of the farmer (X_1), marital status of the farmer (X_2), employment status of the farmer (X_3), and labor availability (X_4). Results show that marital status, and labor availability have a significant positive influence at 1% level of significance. On the contrast, salaried employment has a significant negative impact on choice of layers farming at 10% percent level of significance. The paper conclude that in planning chicken development programs, socio-economic factors such as marital status, availability of labor, and employment status have to be considered.

Keywords: Socio-economic, determinants, choice, broilers, layers, farming

Introduction

Poultry farming is among emerging sub-sectors in Tanzania which draw attention of both public and private sectors. The sub-sector has a potential to spearhead the development and transformation of the agriculture sector due to its inclusive nature as well as its flexibility for diversified and dispersed production systems (SACAU, 2020). Besides, poultry has clear health and nutrition benefits as it is the main source of animal protein in many African countries, including Tanzania. It also provides ample opportunity for wealth creation, due to its adaptability to both small-scale and commercial settings, and because of the large numbers of smallholder farmers already involved in poultry production. Its short production cycle, low capital intensity and limited demand for land, coupled to its potential in high-value markets and access to mass decentralised markets, makes it attractive to youth and women as an enterprise of option. Furthermore, the poultry value chain plays an important role in agro-processing, and can therefore be a major driver of development and job creation in the country. Lastly, but not least, poultry has a strong backward linkage with the production of maize and soya for animal feed, as these are key ingredients in the poultry feed production process (PASS, 2013; SACAU, 2020).

Realizing this potential, the livestock development master plan 2017 -2022 planned to invest nearly USD 324 million to develop the sector (Silva *et al.*, 2017). This intervention is expected to result in 465,600 tonnes of chicken

meat production – equivalent to 666% increase and 4.2 billion eggs – equivalent to 40% increase in egg production by 2022 (ibid). That means the potential of the poultry industry in Tanzania to reduce the meat production–consumption deficit, enhance food and nutritional security and contribute to household and national economic growth is enormous (SACAU, 2020).

Types of poultry produced

The types of poultry produced in Tanzania include; chicken, ducks, guinea fowls, geese, pigeons and quails. However, chicken are the most widely kept and traded type of poultry in Tanzania. Chicken rearing is a common activity to many rural poor, peri-urban and urban households (NBS, 2012 and Goromela *et al.,* 2007). Historically, the chicken subsector in Tanzania has been dominated by rearing of local chicken. For instance, the National Bureau of Statistics (NBS) (2016a) reported that local chicken account for about 97% of the total chicken stock in Tanzania. The Bureau further claimed that, commercial chicken breeds specifically layers and broilers account for about 3% of the total chicken stock. However, in recent years there has been a decreasing trend in the number of local chicken kept and an increasing trend in the number of commercial chicken kept. This is evidenced by Government reports in the financial years 2018/2019, 2019/2020, 2020/2021 as summarised in table 1.

and meat from the local chicken that is 70 eggs per bird per year and low growth rate (Dessie, 2015). The commercial chicken (i.e. layers and broilers) are more productive in terms of eggs and meat production, which is over 250 eggs per year (ibid).

Farmers opting for commercial chicken production can either opt production of broilers (chicken meant for meat production) or layers (chicken meant for egg production). However, it is not clearly known what socio-economic factors influence farmers into choosing either of the options. Available literature indicate that layers farming is more profitable than broilers farming (Longo, 2015; and Senzighe, 2021). However, in Tanzania, more smallholder farmers have adopted broilers keeping, when compared to layers keeping (MLF, 2020; SACAU, 2020; and ACT, 2021). Previous studies on chicken production in Tanzania have addressed various dimensions including; Value chain analysis of improved chicken in Lindi Rural and Masasi districts (Njile, 2019); Improving African Chicken Genetic Potential (Dessie, 2015); Identification, characterization and composition of scavengeable feed resources for rural poultry production in Central Tanzania (Goromelera, 2007); and Senzighe (2021) who did Profitability Analysis of Broilers and Layers Framing in Tanzania.

In spite of the fact that layers are more profitable than broilers (Senzighe, 2021),

Table 1: Trend in numbers of local vs commercial chicken

Year	Local chicken (Millions)	Commercial chicken (Millions)	Total (Millions)
2018/2019	38.2	36.6	74.8
2019/2020	38.5	40.8	79.1
2020/2021	38.77	44.51	83.28

Source: Ministry of Livestock and Fisheries (MLF) (2018/2019; 2019/2020; 2020/2021)

With time, the number of local chicken is increasing at a decreasing rate while that of commercial chicken is increasing at an increasing rate (Table 1). That means more farmers are shifting to commercial chicken production, in spite of the high resistance to diseases and adaptability to diverse local conditions of the indigenous chicken. The observed trend is attributed by low productivity in terms of eggs

majority of small scale commercial chicken producers in Tanzania are engaged in raising broilers (MLF, 2020; SACAU, 2020; ACT, 2021; Senzighe, 2021). The economic advantage of layers production as revealed in literature (Tables 2 and 3), and the concentration of smallholder farmers in broilers production, presents a dilemma. It would be expected that more farmers would adopt layers production, expecting more
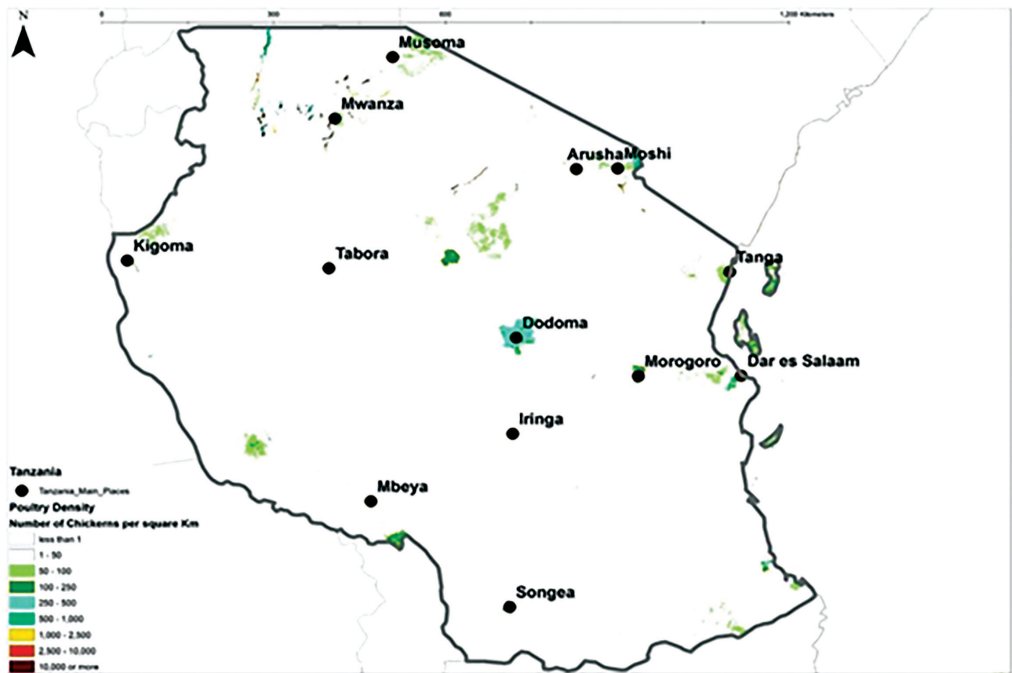
Figure 1: Spatial distribution of poultry production in Tanzania
Source: Tanzanian Ministry of Agriculture, Food Security and Cooperatives (2016)

economic returns! However, the actual situation in the field is quite opposite. The existing gap, triggered the interest in investigating factors that influence farmers to choose between production of broilers or layers, apart from profit motive, the aspect which has not been covered in the previous studies. Understanding these factors is important, particularly during provision of advisory services by extension agents and other development stakeholders. Due to diverse production cycles between broilers and layers, business development advisors need to be well informed about determinants of choice, taking into account both profit related factors, and socio-economic factors, to be able to offer right advices on enterprise choice, especially to new entrants in chicken farming.

The underpinning theory

This study was guided by the Rational Choice Theory, originated by Adam Smith in the eighteenth century. The rational choice theory states that there is always a rational justification for behaviors. Individuals try to maximize their rewards because they're worth the cost. Based on this theory, it is postulated that chicken farmers do not choose to engage in either broilers farming or layers arbitrarily. There are both economic and socio-economic factors which influence their choice.

Literature review

Relevant literature has been searched for, using various data bases such as Google Scholar and Scopus. We have primarily searched for literature related to Tanzania and Africa in general, as this geographical area bear almost similar climatic, economic, social and cultural environment. Further, although there are other types of chicken, such as indigenous and cross-breeds, focus has been on broilers and layers, as majority of commercializing farmers opt on producing these types of chicken (SACAU, 2020).

Broilers

Broilers are species of chicken which have been specifically bred to put on flesh at a fast rate. This kind of birds are not good layers because in their genetic development, there has been a systematic concentration of the characteristics for rapid growth rather than those of egg production (Obioha, 1992). According to Venkateswara Hatcheries (VH) (2010), the

growth of broiler chicken can be split into three stages as follows; Pre starter stage (0 – 10 days); Starter stage (11 – 21 days); and Finisher stage (22 – 45 days). The marketable age of broilers is 45 days from the when they are received as Day-old Chicks. This schedule is as per Indian environment and management conditions. However, the Agricultural Council of Tanzania (ACT) (2021) reported that under good management conditions, a good broiler should attain mature weight of 1.0 to 1.5Kg in 4 to 5 weeks on the average (i.e. 28 – 30 days. Broiler is an important aspect of poultry production in Tanzania. According to ACT (2021), 14 per cent of primary chicken producers in Tanzania are dealing with broiler production. Further, a study by Longo *et al.,* (2019) revealed that almost 66% of farmers, who keep commercial chicken in Tanzania, keep broilers, while 34% keep layers. More importantly, data by MLF (2020) indicate that, of the total number of hatcheries that operate in Tanzania, 64% produce broiler chicks, 20% produce layer chicks, 12% produce crossbred chicks, while only 4% produce indigenous chicken chicks. That means, within the commercial chicken production subsector in Tanzania, broiler production is the most predominant.

Layers

Layer chickens are a special species of hens which have been purposely bred for egg production. The genetic development of layers, has been focused on systematic concentration of egg laying characteristics rather than those of fast weight gain which are desirable for broilers (Obioha, 1992). Layers start laying eggs commercially from 18-19 weeks of age. They remain laying eggs continuously till their 72-78 weeks of age, and can produce about one kg of eggs by consuming about 2.25 kg of food during their egg laying period (Longo *et al.,* 2019). The growth stages and production cycles of layers are better specified by Venkateshwara Hatcheries (2010). According to (ibid), the layer bird's life passes through the following phases/stages; 0 – 8 weeks (chick stage), 9 – 18 weeks (grower stage), 19 – 45 weeks (layer I stage), 46 – 70 weeks (layer II stage), and 70 weeks to Culling (Layer III stage). According

to (ibid), layers attain 93 per cent and above egg production rate during Layer II stage. It is recommended that culling of layers should be effected when the egg production rate fall below 60% per day. At this level, management costs outweigh the income that accrue in from selling eggs ((Venkateshwara Hatcheries, 2010).

Focusing on egg production cycles (ibid), layer species pass through the following stages of egg production;
19 – 45 weeks (Layer I); 85% egg production rate
46 – 70 weeks (Layer II); 85% - 93 % egg production rate
71 – 76 weeks (Layer III); below 60% egg production rate
The number of eggs per life cycle of a layer bird is estimated at 300 eggs. White leghorn breed can lay up to 320 eggs per life cycle (VH, 2010).

Choice between broiler and layer production

Within Tanzanian and African context, nothing has been documented about socio-economic determinants of choice between broilers and layers production. Existing studies have addressed aspects such as profitability analysis between the two types of birds, production systems (deep litter versus battery cage), production modality or style (i.e. Brood-and-sell versus Brood –and-finish), record keeping, feeding and feed standards, chicken value chain analysis, investment potential in in the poultry value chain, general management principles and disease control.

Based on profitability parameter, Anang *et al.* (2013), did an analysis on profitability of broiler and layer production in the Brong Ahafo Region of Ghana, aiming at comparing the profit abilities between the two types of chicken. The analysis was carried out using the cost, revenue and profit functions to derive total cost, total revenue and total profit respectively. Though (ibid) did not categorically underpin the extent of profitability between broiler and layer farming, it was concluded that, based on costs of production and revenues that accrued, both broiler and layer farming were profitable in the Brong Ahafo Region of Ghana.

Similarly, Senzighe (2021) did a study on profitability of layer and broiler farming in

Morogoro Region of Tanzania based on cost-benefit ratio (CBR) and Return on Investment (ROI). Her analysis results revealed that the CBRs were 20.8 and 62.1 for broilers and layers respectively. The returns on investment (ROI) were 46.0 and 80.4 for broilers and layers respectively. As it was the case with Anang *et al.* (2013) in Ghana, Senzighe (2021) concluded that both broiler and layer farming are profitable enterprises in Tanzania. However, the profitability of layers by far exceeds that of broilers.

With respect to chicken housing systems, the Southern African Confederation of Agricultural Unions (SACAU) (2020), did a rapid assessment of the status and prospects of poultry production and trade in Tanzania. The SACAU's final report highlighted that the predominant housing system for commercial chicken (i.e. broilers and layers) in Tanzania is deep litter system. What was reported by SACAU (ibid), was quite opposite to what was observed by Longo (2015) in Ajmer District of Rajasthan, in India. In India, the predominant chicken housing system is Battery-Cage-System. The Deep-Litter- System is practiced by few marginal farmers, who are mainly broiler farmers. Though costly, the battery-cage-system is more efficient and reduces risks of chicken diseases. However, most marginal farmers can't afford to adopt it due to high costs that are involved (ibid). Neither profitability issues between broilers and layers, nor choice issues were addressed by SACAU (2020).

Ike and Oboh (2010) examined socioeconomic factors influencing the choice of type of broiler enterprise among poultry farmers in Delta state Nigeria. Their study was basically on production modality of broiler chicken. In this study, two modalities called Brood-and-sell and Brood-and-finish were considered. Brood-and-sell refers to the system where a farmer broods a reasonable number of chicks for about 4 – 5 weeks and then sells them to other farmers who fatten them to maturity. This method of nursing baby chicks and selling the infants is popularly called brood-and-sell. This system is advantageous to the farmer as the capital required for brooding one chick to four weeks of age is small so that a farmer can

now have a bigger flock size with the same amount of capital. There is also the advantage of quick turnover of invested capital. On the other hand, brood-and-finish involves all the practices carried out in order to help bring up the chicks usually from day old till the time they have attained maturity which is between 10 – 12 weeks of age (Ike and Oboh, 2010). The 10 – 12 weeks gestation period stated by Ike and Oboh (2010) appears to be excessively long. May be it applies to specific management modality under Nigerian conditions. With current technology, particularly under Tanzanian environment, the gestation period of broilers stands at 30 days (4 weeks) (ACT, 2021). At this age, birds are mature enough for the market. An important point to note here is that, the analysis by Ike and Oboh (2010) was focused on choice of production modalities of broilers and not choice between broilers and layers.

Njile (2019) did a value chain analysis of the tropically adapted improved chicken in Lindi rural and Masasi districts of Tanzania. The focus of the study was mapping and characterizing actors in the tropically adapted improved chicken value chain, to determine gross margin of different actors along the chicken value chain and to analyze factors influencing gross margin at farm level. In this study, determinants of choice between various types of birds, including broilers and layers was not addressed.

The analytical model
Theoretical model

Data analysis for determination of socio-economic factors that determine choice between broilers and layers was done through binomial logistic regression. A binomial logistic regression forecasts the probability that an observation falls into one of two categories of a dichotomous dependent variable based on one or more independent variables that can be either continuous or categorical (Gujarati *et al.,* 2009)

Mathematically, the binomial logistic regression model is presented by the following equation;

$$P(Y) = {1}/{[1 + e^{-(\alpha - \sum \beta_{ii} X_{ii})}]} \quad \text{............(1)}$$

Y is a dichotomous random variable that takes

on the values of 0 or 1, where 0 denotes non-occurrence of the event in question and 1 denotes its occurrence.

This equation is simply an expression of a multiple linear regression equation (MRA) in logarithmic terms and thus overcomes the problem of violation of the assumption of linearity. That means the logistic regression equation is linear in nature.

Generally, there are four fundamental assumptions which underlay the application of a binomial logistic regression as follows;

i)   The dependent variable must be measured on a dichotomous scale. For example, "yes or no"
ii) There must be one or more independent variables, which can be either continuous (i.e. interval or ratio variable) or categorical
iii) There should be independence of observations and the dependent variable should have mutually exclusive and exhaustive categories.
iv) There needs to be a linear relationship between any continuous independent variables and the logit transformation of the dependent variable (Gujarat, *et al.,* 2009; Chawla and Sondhi, 2011)

The empirical model

The binomial logistic regression model has been widely employed to determine factors affecting the use of technology in several social-economic studies (Katungi *et al.,* 2011). The binary response in this study was whether the respondent keeps broiler or layers.

In order to linearize the right-hand side, a logit transformation was applied by taking logarithm of both sides as:

$$Log\ P(Yi) = \alpha + \sum \beta_{ii}X_{ii} + E_i^t \ldots\ldots(2)$$

Where;
Y_i = (1 in case the respondent keeps layers: 0 in case the respondent keeps broilers)
α = Constant term
X_i = Farmers characteristics,which are;
X_1 = Gender of the farmer (Male = 0, Female = 1)
X_2 = Marital status of the farmer (Married = 1, Single = 0)

X_3 = Employment status of the farmer (Self-employed = 1, Salaried = 0)
X_4 = Labor availability
β = Logistic regression coefficients
Ei = Error term

Methodology
Location of the study

Data used for this study were collected in the year 2021, aiming at identifying socio-economic determinants of choice between broilers and layers among poultry farmers. In Tanzania, chicken production is done in the entire country, though at different rates (Figure 1). Production of indigenous chicken is more concentrated in the central zone, while that of exotic breeds, that is broilers and layers is more concentrated on the Eastern and Lake Zones. The southern zone is comparatively having less number of chicken when compared to other zones (Fig. 1). Therefore, the study sample was drawn from all administrative zones of the country so as to obtain the overall picture all over the country. The study areas included Dar es Salaam and Morogoro (Eastern zone), Kilimanjaro (Northern zone), Dodoma (Central zone), Mbeya and Iringa (Southern Highlands), Mwanza and Geita (Lake zone), and Mtwara and Lindi (Southern zone). Consideration of all zones was perceived as an important element to see if there is any variation in the adoption rates of broilers against layers. Both physical and virtual interviews were used as means of data collection. The sampled farmers were mainly obtained from poultry farmers associations and from local council's livestock offices.

Source of data and collection methods

A random sample of 200 chicken farmers was used in the study which was generated from five administrative zones as follows; Eastern zone (50 respondents), Northern zone (30), Central zone (20), Southern Highlands (30), Lake zone (50), and Southern zone (20). The sample proportion assigned to each zone was determined by the popularity of the particular zone in commercial chicken farming (i.e. broiler and layer farming) (Fig. 1). Primary data were collected through enumerator administered structured questionnaires. Primary data from

farmers were supplemented by secondary data from various sources, including Government records, such as MLF budget speeches for (2018/2019; 2019/2020; 2020/2021) financial years.

Data analysis and presentation

It was hypothesized that farmers who choose to embark in production of either broilers or layers do not do it arbitrarily. There are socio-economic factors that influence the choice. Available literature reveal that several factors determine choice of various production aspects in relation to chicken farming. In identifying factors that influence record keeping behavior among poultry farmers in Ekiti State, Nigeria, Adedapo and Adekunmi (2019) considered socio-economic factors such as gender, marital status, education level, age of the farmer, flock size, and experience. Similarly, Ike and Oboh (2010) considered cost of production, return on investment, household size, education level, flock size and access to credits, in identifying socio-economic factors that influence choice of broilers production modality between Brood-and-Sell and Brood-and-Finish, in Delta State of Nigeria. In determining choice between keeping broilers and keeping layers among chicken farmers in Tanzania, this study considered; gender of the farmer, marital status, employment status, and labor availability. The choice of these socio-economic variables was based on related previous studies (Adedapo and Adekunmi 2019; Ike and Oboh, 2010). The collected data were cleaned, entered in a Statistical Package for Social Sciences (SPSS) version 20, and analyzed using a binomial logistic regression model.

Results and Discussion
Characteristic of respondents

As highlighted earlier, a total of 200 respondents were interviewed. Of the surveyed respondents, 40 (20%) were keeping layers, while 160 (80%) were keeping broilers. With respect to gender, 128 (64%) were females while 72(36%) were males. These results are synonymous to the observations by Njile (2019) who claimed that in many African countries small stocks such as chicken, goats, and sheep are owned by women. On the other hand large stocks such as cattle are owned by males. Small stocks, particularly chicken contributes a lot to women empowerment in terms of income. Marriage wise, 61 (30.5%) were singles, while 139 (69.5%) were married. Another aspect of under consideration was employment status. In this case, 44 (22%) had salaried jobs and 156 (78%) were self-employed. Though not under category of respondents characteristics, access to laborers was another socio-economic variable of interest. In this variable, 54 (27%) of the respondents claimed that labor was easily available, while 146 (73%) of the respondents commented that labor availability was difficulty.

Descriptive statistics and t-tests

Although the focus of the paper was on socio-economic determinants of choice between broilers and layers farming, some quantitative aspects such startup capital, running costs, profitability and return on investment were analyzed, based on descriptive statistics and t-tests. Generally, results from descriptive analysis of quantitative economic variables revealed that layers farming is more profitable

Table 2: Descriptive results of quantitative variables

Enterprise	Analytical variables		
	Mean annual running costs (TZS)	Mean annual profit (TZS)	Mean return on investment (ROI) (%)
Broilers farming	2,594, 757	4,034,330	46
Layers farming	6,191,246	24,919,457	80.4

Source: Survey data analysis, 2022

than broilers farming. Summarized information is as presented in Table 2.

T-test of same variables was done and the result was as summarized in Table 3.

Results on table 3 hint that annual running costs, as well as profit from layer farming are significantly higher than those on broiler farming. On the other hand, the return on investment from the two enterprises is insignificant. The magnitude of running costs sheds light on why chicken farmers are more concentrated on broilers farming than it is in layers farming. Based on quantitative aspects, layers farming is more profitable than broilers farming. Based on the rational choice theory, one would expect that more farmers would choose the more profitable category of chicken, simply because farmers are rational producers, their aim being profit maximization. However, a striking contrast has been observed, that is to say, more farmers chip into broilers farming as opposed to layers farming. That means profit level is not the

Table 3: T-test results of quantitative variables

Enterprise	Analytical variables		
	Mean annual running costs (TZS)	**Mean annual profit (TZS)**	**Mean return on investment (ROI) (%)**
Broilers farming	2,594, 757	4,034,330	46
Layers farming	6,191,246	24,919,457	80.4
T-test	t=3.853, p=0.000	t= 1.839, p= 0.068	t=1.244, p=0.217

Source: Survey data analysis, 2022

Table 4: Summarized list of variables and their impact on choice between broilers and layers production

Variable	Description	Regression coefficient (β)	Effect on choice between broilers and layers farming	Wald-value	p-value	Exp(B)
Chicken type (Y_i)	Type of chicken the farmer is engaged in production	-	-	-	-	-
Gender	Gender of the farmer involved in chicken farming	0.201	Positive	0.370	0.543	1.123
Marital status	Marital status of the farmer involved in chicken farming	0.938	Positive	7.977	0.005	2.554
Employment	Employment status of the farmer	-0.708	Negative	3.109	0.078	0.492
Labor	Views of the farmer on labor availability	1.189	Positive	8.976	0.003	3.284
Constant	The constant term (The status of choice between broilers and layers at the point where the analyzed qualitative factors are kept constant)	-1380	Negative	9.410	0.002	0.252

Source: Data analysis, 2022

only determinant of choice between or among projects alternatives. There are other factors which influence the choice. In fact, these results are synonymous to the observations by ACT (2021), who commented that broilers are more adopted by chicken farmers in Tanzania than layers. That means quantitative aspects such as profit volume and return on investment are not the only determinants of choice between the two enterprises. There are socio-economic aspects which influences the choice as well. These aspects were ascertained by inferential analysis of the selected socio-economic variables.

Inferential statistics
    The results from inferential analysis were as summarized in Table 4. After obtaining clues from the descriptive analysis, which was mainly centered on quantitative variables, inferential analysis was done with an interest of identifying socio-economic variables that influence choice between the two enterprises. The inferential analysis involved one dichotomous dependent and four dichotomous independent variables. The dependent variable was chicken type kept by the farmer (Y_i). The independent variables were; gender of the farmer (X_1), marital status of the farmer (X_2), employment status of the farmer (X_3), and labor availability (X_4). The binary logistic regression approach was used, and the model specification was as follows;
$Y_i = β_0 + β_1 (Gender) + β_2 (Marital status) + β_3 (Employment status) + β_4 (Labour availability) + Ei$ ……(3)

Impact of socio-economic factors on choice between broilers and layers among chicken farmers
    Socio-economic factors have impact on choice between broilers and layers keeping among farmers in Tanzania (Table 4). Although it has lacked statistical significance, gender of the farmer has influence on choice between broilers and layers among chicken farming. A female farmer is more inclined to layers faming by 12.3% when compared to the male counterpart. On the other hand, marital status, and labor availability have a significant positive influence at 1% level of significance. That means, being in marriage increases the likelihood of a farmer

choosing layers farming by 155.4%. Similarly, availability of labor increases the likelihood of a famer choosing layers by 228.4%. That means, management of layers is an intensive work which does not only require a socially settled person, but also labor support. On the contrast, salaried employment has a significant negative impact on choice of layers farming by smallholder farmers at 10% percent level of significance. This is mainly attributed by the project's gestation period, that is to say, the time span from buying the Day-Old Chicks (DOCs) to the point when they are disposed for the market. Venkateshwara Hatcheries (2010) stipulate that broilers require about 30 - 45 days to be ready for the market, from the day they were received as DOCs. On the contrast, layers spent about 4.5 – 6 months from DOCs stage before they commence laying, and have to remain productive for 1.5 years after laying commencement point. This extended period of time poses a lot of risks in terms of diseases. For broilers, the risk is minimized by short duration of staying with them before they are marketed. Salaried employment decreases the likelihood of a farmer choosing layer farming by -50.8%. From practical experience, what is observed here is quite logical. Given the nature of the birds, a layer farmer needs to spent sufficient uninterrupted time, taking care of the flock to minimize disease risk and enhance productivity. Salaried employment will definitely minimize the time for layers care, which will eventually negatively affect the flock. Though the salary can enhance ability of the farmer to hire laborers for support, still his/her close supervision is still needed. Keeping birds is a delicate project, it can't be just left in the hands of laborers.
    The significant negative constant reveals that in Tanzania, farmers engaged in layers production are significantly fewer than those engaged in broilers production.

Conclusion and recommendations
    Apart from quantitative aspects, qualitative socio-economic factors such as marital status of farmers, employment status, and labor availability, play a significant role in determining whether a farmer will engage in broilers or layers farming in Tanzania. Based on

the study results, the researcher recommends the following;

Firstly, chicken development programs which focus on increasing productivity and profitability by promoting adoption of improved breeds particularly in rural areas, should among other things consider marital status of the candidates. Married candidates are more likely to perform better in chicken production than unmarried counterparts.

Secondly, salaried employees should understand that chicken farming is an employment in its own right. It requires commitment of sufficient time for enhanced performance. It is particularly so with layers due to their extended production cycle which amounts to 18 months (1.5 years), as opposed to broilers whose production cycle ranges from 30 - 45 days (1 – 1. 5 months). Those who opt for production of layers should be fully committed in terms of time, otherwise they will incur loss emanating from death of birds. Moreover, it is risky in terms of diseases, to totally depend on hired laborers for taking care of the flock, who might not be as committed as the business owner, particularly for small scale producers. A very close supervision is always important.

Thirdly (and lastly), chicken farmers should consider doing it commercially, including among other things hiring permanent employees for managing their projects. Managing layers is laborious and time consuming. Laborers who are committed to the work, under known legal contractual arrangements are needed to enhance productivity. Luckily enough, Livestock Training Institutions (LITIs) in Tanzania offer tailor made short courses to youth on poultry management. Given the importance of labor component in determining project success, layer farmers are advised to take advantage of employing these young people who possess practical chicken management skills.

References

Adedapo, A.O., & Adekunmi, A.O. (2019). Factors influencing the choice of record keeping among poultry farmers in Ekiti state, Nigeria. *Ife Journal of Agriculture,* 31(1), 1-15.

Agricultural Council of Tanzania (ACT) (2021). Assessment of the Extent of Inclusiveness of Young Agripreneurs in the Poultry Value Chain in Tanzania - Opportunities and Challenges.

Anang, B.T., Yeboah, C., & Agbolosu, A.A. (2013). Profitability of broiler and layer production in the Brong Ahafo region of Ghana. *ARPN Journal of Agricultural and Biological science*, 8(5), 423-430.

Chawla, D., and Sondhi, N. (2011). Research Methodology; Concepts and Cases; Vikas Publishing House Pvt Ltd

Goromela, E., Kwakkel, R., Verstegen, M. and Katule, A. (2007). Identification, characterization and composition of scavengeable feed resources for rural poultry production in Central Tanzania. African. *Journal of Agricultural Research* 2 (8): 380-393.

Gujarat, N.D., Porter, D.C., and Gunaseker, S. (2009). Basic Econometrics, Fifth Edition; McGraw-Hill Companies Inc.

Ike, P.C. and Oboh, V.U. (2010). Socioeconomic factors influencing the choice of type of broiler enterprise among poultry farmers in delta state Nigeria; *Journal of Agriculture and Food Sciences,* 8(2): pp. 78 – 89

Isack, N. (2019). Value chain analysis of the tropically adapted improved chicken in Lindi Rural and Masasi Districts, Tanzania; A Dissertation submitted in partial fulfillment of the requirements for the degree of Master of Science in agricultural and applied economics of Sokoine University of Agriculture. Morogoro, Tanzania, available in the Sokoine National Agricultural Library (SNAL)

Longo, J. (2015). Chicken Feed Formulation at Farm Level in Ajmer District of Rajasthan; Thesis submitted for a degree of Doctor of Philosophy in Agri Business, at Institute of Agri Business Management, Swami Keshwanand Rajasthan Agricultural University Bikaner- 334006, Available at Swami Keshwanand Rajasthan Agricultural University Library

Longo, J.A., Akyoo, A.M., & Sørensen, O.J. (2019). Awareness and compliance with feed quality standards: the case of chicken feeds in Tanzania. *African Journal of*

Economic and Management Studies, 10(4), 475-492..

Ministry of Livestock and Fisheries (MLF). (2018/2019; 2019/2020; 2020/2021). Annual Ministerial Reports of the respective financial years, Tanzania.

NBS, National Bureau of Statistics (2016a). 2012 Population and Housing Census.264pp. NBS, National Bureau of Statistics (2012). National Sample Census of Agriculture 2007/2008.187pp.

Private Agricultural Sector Support (PASS) (2013). Draft Investment Potential in Poultry Industry (Layers & Broilers)

Senzighe, J. (2021). Profitability of layers and broilers farming in Tanzania; The Case Morogoro Municipality; A Research paper submitted in partial fulfilment of the requirements for the degree of Master of Business Administration of Sokoine University of Agriculture. Morogoro, Tanzania, available in the College of Economics and Business Studies Library, at Sokoine University of Agriculture.

Silva, M.D., Desta, S., and Stapleton, J. (2017). Development of the chicken sector in the Tanzanian livestock master plan. Tanzania Livestock Master Plan Brief 7, October 2017

Southern Africa Confederation of Agricultural Unions (SACAU) (2020). A rapid assessment of the status and prospects of poultry production and trade

Venkateshwara Hatcheries (VH) Pvt Ltd. (2010). Layer Management Guide