

**INFLUENCE OF THE UTILIZATION OF MONITORING AND EVALUATION
TOOLS ON THE PERFORMANCE OF SMALL SCALE BROILER POULTRY
FARMING PROJECTS: A CASE OF NYERI COUNTY, KENYA**

BY

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DECLARATION

This Research Project Report is my original work and has not been presented in any other university.

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This Research Project Report has been submitted for examination with my approval as the university supervisor.

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DEDICATION

This work is dedicated to the most important people in my life. My late Father, Robert Kariuki Wanyahoro, for lovingly instilling in me the desire to pursue education to the highest level, to my loving Mother, Margaret Wangeci Wanyahoro who has always instilled the same spirit in me and supported me in my studies, to my family, the Wanyahoro family, for their unconditional love. Above all is to God almighty who is my all and everything.

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ABSTRACT

Poultry meat has always been regarded as a delicacy, as white meat and considered healthier than red meat. Broiler chicken grows within the shortest time of three weeks unlike beef and mutton which take time for a cow and sheep to reach maturity. Broiler farming is helping in the easy availability of white meat at a cheaper and faster way since broilers are reared within three to four weeks hence return rates are faster. With time, broiler farming has gained popularity since poultry meat consumption is raising and Kenya is no exceptional. For small scale farmers to maximize on the performance of their broilers and make profits, they need to constantly monitor and evaluate the progressive growth of the broiler chick up to the time they are ready for market. Monitoring and evaluation tools which aid in the measurement of their performance, would easily enhance their farming and performance of the broiler farming in the form of daily rearing records, farm visits by technical experts, broiler farmers support groups and capacity building. In light of this observation, there is a clear need for more extensive researches on the utilization of monitoring and evaluation tools used by small scale broiler farmers in Kenya. In order to fill this knowledge gap, this study sought to investigate influence of the utilization of four monitoring and evaluation tools on the performance of small scale broiler poultry farming projects in Nyeri County, Kenya. Four objectives guided the study. The research objectives sought to; establish how daily rearing records influence the performance of small scale broiler farming; assess the extent to which farm visits by the technical experts influences the performance of small scale broiler farming; analyse how broiler farmers support groups influences the performance of small scale broiler farming; determine how capacity building influence the performance of small scale broiler farming. Literature review focused on the main aspects of broiler poultry farming performance, farm rearing records, farm visits by the technical experts, broiler farmers support groups, and broiler farmers capacity building. The study employed descriptive survey. The target population was a total of 70 small scale broiler farmers rearing a maximum of 2,000 broiler chicks per flock in Nyeri County. A sample size of 59 farmers was obtained from three constituencies out of the six in Nyeri County. Data was collected using questionnaires and observation schedules. The instruments were validated by use of content validity. Test-retest method was used to examine the reliability of the instruments. Data was analysed by use of descriptive statistics and content analysis and was presented by use of frequency distribution tables. The Pearson Moment Correlation Coefficient revealed that there is negligible negative relationship (-0.1) between daily rearing records and performance of small scale broiler poultry farming projects. The findings of the study indicate that majority of the farmers keep mainly record of feed intake and mortality only. Pearson correlation on the broiler farmers support groups revealed that there was negligible negative relationship (-0.163) between broiler support groups and performance of small scale broiler farming. The findings revealed that majority of the farmers did not belong to any group, self-help group or social media and that there was no agricultural cooperative society for broiler farmers. Pearson correlation on technical expert visits to the broiler farms also revealed a weak negative relationship (-0.24) between farm visits by technical experts and performance of small scale broiler farming. The findings showed that there was no assigned technical expert from the government but most of them were from the broiler chicks and feed suppliers companies. Pearson correlation revealed that there is a positive negligible relationship (0.68) between capacity building and performance of broiler poultry farming. Based on the findings, the study concluded that training is very vital before venturing and during broiler farming. The study recommended that the government and NGOs should consider getting involved in broiler farming for better and easy technical support, financial support and standardized broiler farming business regulations.

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

Many people are interested in broilers farming in Kenya. Broilers are meat birds often referred to as fryers in some places according to Rangoma (2011). They are bred to grow fast so that they are ready for the dinner table between 4 and 10 weeks of age. Currently in Kenya there seems to be a huge demand for broilers which may not be satisfied any time soon. Broilers are sold between 1.5 and 3 kg live weight depending on consumers' preferences and market demands. Finding out the market outlets should be the first task before investing in broiler production.

Poultry farming in Kenya is playing an important role in the total economy and fulfilling the nutrition demand in Kenya. Reports show that people are becoming billionaires by commercial poultry farming in Kenya. Most of the farmers of Kenya raise egg laying or broiler chicken. Raising some other domestic birds can also be seen in Kenya. (Poultry Farming in Kenya, 2015)

Poultry farming has a great contribution to the economy and food demand of Kenya. The main benefits of commercial poultry farming in Kenya (either in small scale or large scale), is that, diseases are less in poultry and as a result we don't have to import poultry products from foreign country. Along with gaining profit from commercial poultry farming in Kenya we have to ensure the availability of required food demand. (Poultry Farming in Kenya, 2015)

According to Evans (2013), over the next decade, the USDA's Economic Research Service (ERS) anticipates that the rise in meat consumption in developing countries will average 2.4 per cent per year compared with 0.9 per cent in developed countries. For poultry meat, uptake is expected to rise by 2.8 per cent per year in developing countries between 2013 and 2022. This is much faster than that for pork (2.2 per cent) and beef (1.9 per cent).

According to Evans (2013), looking ahead, globally the human population will expand by a little less than one per cent per year between now and 2030 when it will likely reach 8.3 billion. However the increase in Africa will be at more than double this rate at 2.1 per cent to 1.56 billion. As a result Africa's contribution to the world total will have increased from 15.4 per cent in 2013 to almost 19 per cent by 2030. Kenya was expected to have around 52.6

million people by 2015. The range in poultry meat consumption average per person per year had been estimated at 0.6 kg, an increase from 0.4 kg per person per year in 2000.

Thus, with such an increasing demand for poultry meat, small scale farmers will have to monitor and evaluate their chicken rearing methods so that they are able to meet the projected population increase in Kenya as shown. Farmers have to now understand the influence of chicken rearing records, farm visits by the technical experts, the broiler farmers' support groups support and capacity building in poultry farming if they are to perform.

Accurate tailor made record keeping, farm visits and advice by the technical experts, supportive broiler farmers support groups and regular capacity building are essential to monitor the performance and profitability of broiler operations, to enable forecasting, programming and cash flow projections to be made. The monitoring and evaluation tools also serve to provide an early warning of potential problems, and so is invaluable to all round good management. It is also essential for trouble shooting on the farm.

1.2 Statement of the Problem

A number of researches have been done on the performance of broiler poultry farming. According to Venkys website (2010) a leading company on broiler poultry production, the broiler industry uses numerous monitoring and evaluation tools to measure broiler performance such as feed conversion ratio, liveability, and average weight per bird. This means that most researches centre on how the broiler bird is utilizing the feed and other management efforts to gain the right weight at the right time to fetch the best price for profitability. For instance, Tabler (2003) notes that the most reliable way to accurately measure flock performance is by monitoring and evaluating water consumption on a daily basis. This means that many researches on broiler poultry farming have been subjective on one specific monitoring and evaluation tools to measure the performance. Most researches are conducted among large scale farmers mostly in America, Asian and Europe.

Broiler poultry farming is rather a newer agriculture endeavour and in Kenya, small scale farmers have ventured in it and broiler poultry performance need to be measured using other monitoring and evaluation tools that small scale farmers can use. In light of this observation, there is clear need for more extensive researches on the utilization of other monitoring and evaluation tools that influence the small scale broiler poultry farming projects performance in Kenya. In order to fill this knowledge gap, this study seeks to investigate the uniqueness of

Nyeri County small scale broiler farmers and assess how the utilization of monitoring and evaluation tools influence the broiler poultry farming project performance in this special area.

1.3 Purpose of the study

The purpose of this study is to explore the influence of the utilization of four monitoring and evaluation tools on the performance of small scale broiler poultry farming projects owned by farmers in Nyeri County of Kenya.

1.4 Objectives of the study

The study is going to be guided by the following objectives:

- i. To establish how daily rearing records influence the performance of small scale broiler farming
- ii. To assess the extent to which farm visits by the technical experts influences the performance of small scale broiler farming
- iii. To analyse how broiler farmers support groups influences the performance of small scale broiler farming
- iv. To determine how capacity building influence the performance of small scale broiler farming

1.5 Research Questions

This research aimed to answer the following questions:

- i. To what extent does keeping daily rearing records influences the performance of small scale broiler farming?
- ii. How does the farm visits by the technical experts influence the performance of small scale farming
- iii. How does broilers farmers support groups influence the performance of small scale broiler farming?
- iv. To what extent does capacity building influence the performance of small scale broiler farming?

1.6 Significance of the Study

It is hoped that the research findings will stimulate debate on the need for utilization of various monitoring and evaluation tools for small broiler farmers and enable policy makers develop standardized monitoring and evaluation tools to be used for all broiler farmers to help in enhancing their broiler poultry farming. The research would be helpful to the

government in understanding the challenges of small scale broiler farmers hence will be guided on facts when formulating policy in the poultry industry which is considered a vital economic empowerment for the poor.

It would also raise awareness to the broiler farmers on the significance of daily rearing records, farm visit by the technical experts, broiler farmers support groups and capacity building to build on knowledge to help them become better farmers and yield quality broiler meat while maintaining profit margins.

It is hope that scholars and policy makers will benefit from the research findings presented by this study as a source of secondary data. The study will also contribute to the pool of knowledge in the existence literature.

1.7 Delimitations of the study

This study focused on small scale poultry boiler farmers with Nyeri County. It focused on Nyeri County, for effectiveness and efficiency of data collection. The research had a working knowledge on the industry in Nyeri County with small scale farmers.

1.8 Limitations of the study

Time and financial resources constraints could not allow for a country wide study. The study therefore was confined to Nyeri County as outline in the area of scope, as a mitigation of time management. The research was required to use research assistants to distribute questionnaires and conduct observation schedules. While minimizing the cost, the researcher tried not to compromise the quality. The other limitation were that respondents holding back information which they could consider confidential. This was mitigated by the researcher's assurance that the information would be treated as confidential and used only for the purpose of the study.

1.9 Assumptions of the study

This study assumed that the respondents did answer the questions correctly and honestly and that the sample represented the population. It also assumed that the respondents would return their questionnaires in good time and allow observation schedules conducted on time to ensure that the study was completed within the timeline set. The other assumption, which the researcher made sure was accurate, was that the sample size and the choice of respondents chosen were adequate to come up with the critical inferences, and that the instruments used were valid and measured the required constructs. It was hoped that all the assumptions were met.

1.10 Definition of significant terms

Broiler farmers' support groups	Informal or formal groups where broiler poultry farmer form and belong to assist each other in enhancing their broiler performance
Capacity building	Formal or informal methods of gaining, sharing knowledge and improving skills held as workshops, trainings or seminars for the broiler farmers
Daily rearing record	A system for collecting and recording daily data of a flock happenings that show progress of the chicken growth according to the poultry industrial standards. This could include, feed and water intake, mortality, health status, and general observations
FCR	Feed Conversion ratio is a measure of how well a flock converts feed intake into live weight
Grower	This specifically refers to a farmer who is solely rearing broiler chicken
Monitoring and evaluation tools	Systems that help in the continuous process of collecting information at regular intervals about on-going projects or programs concerning the nature and level of their performance in terms of meeting the quality and impact expected
Mortality	Number of chicken death in a flock for a certain period such as the flock's life span
Performance of small scale broiler farmers	Clearly noted accomplishment in terms of quality and impact such as profitability, increase in broiler chicks reared over time, satisfaction, years of broiler farming. It also means minimum

mortality and the right weight for farmers rearing broilers that are limited in size and scope (for the study's purpose, less than 2,000 chicks) and even if doing in to earn money but for family needs not for large scale production

Poultry farming projects

Farming by solely raising chicken for meeting basic needs, food or for commercial purposes

Technical Expert

This is a veterinary or experience person in the broiler poultry business who advises and educate on proper rearing methods especially visiting the farms and giving hands-on help

1.11 Organization of the study

The research project will be organized in five chapters. Chapter One focuses on the background of the study, statement of problem, objectives, research questions, justification of the study, significance of the study, basic assumptions, limitations and delimitations of the study, definition of significant terms and organization of the study.

Chapter Two will focus on literature review of the study and gives a detailed account of broiler poultry farming monitoring and evaluation tools used to assess the performance. In particular, it focuses on broiler poultry performance, daily rearing records, farm visits by the technical experts, broiler farmers' support groups, and finally capacity building as used to assess the performance and eventual profitability of the business.

Chapter Three will focus on the research design, sampling procedure and sample size, target population, research instruments and their reliability and validity. Data collection procedure and analysis method would be done qualitatively using descriptive method and quantitatively using statistical method. Ethical considerations will be captured and operationalization of variables will be focused on. The summary of the research will be elaborated.

Chapter Four will focus on data analysis, presentation and interpretation, while chapter Five will give a summary of the findings, discussions, conclusions and recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter will seek to review the concept of broiler poultry farming performance according to the poultry industry. The review will also include the four concepts of daily rearing records, farm visits by the technical experts, broiler farmers' support groups and capacity building as monitoring and evaluation tools that influence the performance of small scale broiler poultry farming projects from the global perspective narrowing to Kenya as researched by other researchers.

2.2 Broiler poultry farming performance

Performance is a generally a term used in everyday activities to mean that what was expected is achieved and in projects, it means the set goals are met. In broiler farming, performance is measured with the profits that are made after sales, increase of broiler chicks reared over time, satisfaction in the broiler farming project and the years that a farmer has undertaken the broiler farming. In more technical terms, it means that the broiler chicken reach the right weight at the right age with minimum mortality so that they can be sold at the right price and bring in returns.

According to Mollo et al (2009), Brazil is the world's largest broiler meat exporter with a record of 3.3 million tons of chicken meat exports in 2007. Thus Brazilian chicken meat export has occupied a prominent position in the international market placing the country as the largest world exporter with a market volume of 49.78%. That good performance achieved by the industry results from some positive aspects which is appropriate weather, parent stock adaptation conditions, good broiler management (including appropriate feeding and manure management) and well good health control.

For Brazil to maintain their international market share, technological innovation is one of the most important determinants of international competitiveness. Precision tools such as the use of electronic devices, new hardware and software applications, and new types of sensors improve the performance of broiler production process resulting from the input of innovative technology. This means that increasing demand for chicken meat means improving production performance. Technological devices such as Electronic Identification (EID) have been used especially for behaviour studies under different housing condition which showed that broilers present different behaviours according to the environment. (Mollo et al, 2009)

Mollo et al (2009) elaborated another technological tool developed by Hyun and others known as a radio telemetry system devised to measure deep body temperature (DBT) of broilers, in an attempt to control the possible occurrence of diseases. The collected data were used to develop a system that can control broiler house environment in real time based on DBT measurements. These techniques allow real-time monitoring of birds' activities, reporting them, and making changes in the poultry house equipment, including feeders, fans and sprinklers, based on the recorded information.

For small scale broiler farmers, they are no exceptional to the large scale farmers since the broiler chicks have to be a profitable business venture at the end of the day. Small scale farmers are not in a competition for markets as such but they too need returns of their meat and hence other means of measuring their performance are analysed. These are the daily record keeping, farm visits by the technical experts, broiler farmers support groups and the continuous capacity building to improve on their production.

Kawsar et al (2013) observed that in Bangladesh, profitability of broiler farming is affected by various factors such as the flock size. Small scale rural broiler farmers, although take up poultry production as a means of self-employment to maintain rural livelihood, mostly fail to manage their farms efficiently because of their limited resources, lack of knowledge and very low investment. As a result, their profitability is not in a static condition meaning that they sometime earn a profit and sometime not. A sharp rise in the price of chick and feed and failure to obtain fair price of their produce further aggravate the situation. Besides, some of the farmers are illiterate and they do not have adequate knowledge about the nature of input to use and how to make profitable production

2.3 Daily Rearing Records and Performance of Broiler Poultry Farming

According to Arcuri (2013), keeping farm records which to be precise are daily rearing records, is a key component of managing your small farm. One of the main reasons is monitoring progress to help you keep track of the rearing progress. For broilers, it is for keeping track of the age and how they are growing and if you are within the expected standards. Broilers grow with a short time but are delicate hence monitoring is vital.

The second reason is that farm records help in managing the farm such as keeping track of how many broiler chicks are in the farm and how many are dying, their health status, weight gain progress as well as any observable behaviour that might help in improving management.

The third reason is for obtaining loans and grants. This means that if well-kept records can show the progress of the farm and as well as the external audit verification, no grant will pass by and that is what most farms require to enhance their performance by increasing capital to buy more equipment, more structures or cover up un-avoidable losses. The last reason is for taxes' sake. Farm records give order to the progress of the farm and in terms of finances much easier so that paying taxes becomes easier and audit exercises are conducted regularly and smoothly.

Thus daily rearing records worth cannot be under estimated as they influence the performance in a farm as they are a reflection of where a farmer is meeting her/his target or not. Thus for broiler poultry rearing, the daily records should monitor Feed and Water consumption, General observation which is affected by maximum and minimum temperature, Mortality, Health in terms of Medication, vitamins & Vaccination, and gain weighed per week. According to FAO, (2010) smallholder poultry contributes to households and livelihoods thus ...outcomes of poultry keeping mainly include income, consumption and social capital. Farm records will thus be vital in enhancing the small scale broiler farmers' performance.

According to Mariene (1995), a study on small holders perception of farm records in the Embu District (now Embu County, Kenya), the main dimensions used by Small holders in deciding whether or not to adopt formal record keeping were among others that; extension agents to see farm records the way the farmers seem them; and consequently to ensure practicability, records need to be developed in consultation with farmers. From the research conducted, a daily rearing record is highly recommended by farmers since the farmers will relate to it and be able to use it to enhance the performance of their farming methods at individual level.

Tabler (2003), notes growers can use daily mortality patterns throughout the flock and visual appraisals to get a general idea of what's going on, but this is a very subjective measure of performance. Dependable bird and bin scales are commercially available that allow growers to monitor daily feed intake and weight gains. Unfortunately, because of the expense these scales are out of the question for most producers. According to Tabler (2003) the reliable way to accurately measure flock performance which one can have or gain access at relatively little

expense is by monitoring water consumption on a daily basis. Thus daily records are vitals in broiler performance and water intake is one of the aspects.

2.3.1 Feed and water intake

Feed and is a major factor and constitutes 60% – 70% of the expenses incurred under taking a broiler poultry business. Feed and water are vital just as in human for the growth of the broiler chicken and to make them have quality meat within the shortest time of four week (Rangoma, 2011).

Feed conversion ratio (FCR) is a measure of how well a flock converts feed intake (feed usage) into live weight. Solving, or preventing, FCR problems in a flock requires both good planning and good management. The key to preventing FCR problems is ensuring that throughout the brooding and grow-out period, good management practices are in place so that bird performance is optimized (Arbor Acres Service Bulletin,2011). This leads to the connection with daily records of feed intake and weekly weight to be able to assess the performance in broiler farming.

While feeding is just a normal routine even for human being, the nutritional values is vital if feed intake is to influence the broiler to achieve the required weight. According to Arbor Acres Service Bulletin (2011), the starter feed should be fed for a period of 10 days and should be in the form of a good quality crumb or mini-pellet. The starter diet is relatively high in protein content to encourage feed intake and growth. As the bird ages it requires relatively more energy and less protein so feeding the starter feed for longer than recommended will result in an energy deficit and a waste of protein.

In their Aviagen field trial, birds were fed a high quality wheat based control diet or a treatment in which this was roller milled to fines. This created two extremes. The diets were fed for a period of 10 days. At 10 days of age the live weight of birds fed on the treatment diet was, on average, 50g lower than that of birds fed the control diet (234g vs. 284g), and FCR was increased by 21 points (1.26 vs. 1.05). Thus feed form has a significant effect on early broiler performance leading to a reduced live weight poorer FCR and a worse uniformity. (Ross tech Notes, 2005)

During its lifetime, a 5-pound (2.3-kg) broiler will consume about 18 pounds (8.2-kg) of water, compared to approximately 10 pounds (4.6-kg) of feed (Lacy, 2002). Pesti and Co-workers (1985) estimated the daily water consumption of broilers by multiplying the age of

the bird in days by 0.2 ounces (Tabler, 2003). This clearly shows that water is essential just like the feed but is consumed more hence the need to have 24 hour supply of clean and reachable water to broilers.

Rangoma (2011), notes that a broiler will drink approximately 2 litres of water for every kilogram of feed consumed. This means that it takes around 3.5 litres of water for every kilogram of bird grown, that is, if an average life time feed conversion of 1.75 (FCR) is assumed. When broilers are heat stressed, they increase consumption of water in an effort to cool down. Feed and water consumption are very closely correlated so that if you know the water intake you can closely estimate feed intake. Water meters are fairly inexpensive and when used properly can be an excellent management tool (Tabler, 2003). Thus daily monitoring of feed and water intake are vital in assessing the influence to broiler performance. Hence daily records are vital to help in giving a clear picture of the progressive flock performance.

It is undesirable, according to Eekeren (2006), to restrict any bird's water intake, particularly in the tropics, even a 10% restriction in the amount of water available can reduce the growth rate and feed conversion efficiency (amount of feed needed per kg growth) of broilers. Thus, during the first three weeks broilers need a feed that consists of twenty to twenty-four percent protein. The broiler starter crumbs/mash is excellent during this period. At four to six weeks the broilers are placed on a broiler finisher mash which gives them an increased energy level and also reduces the protein level. Some people give pellets to broilers from six weeks until it is time to slaughter. Mix the two rations so that the change is gradual during the changing period of the rations. An abrupt change is stressful to the birds and can affect performance. Vitamins can be provided during this time to reduce the stress. (Rangoma, 2011)

2. 3. 2. Mortality

Mortality is the negative aspect of broiler farming which by all means need to be controlled or minimised since its inevitable due to even other factors such as the hatchery and the adaptation of the chick to the brooder. According to the industry, a maximum of 2% mortality rate is what is given as the standard for any flock at a time and is taken care of by the chick supplier by giving farmers extra chick to cater for that inevitable loss.

Tabler et al (2004), conducted a research where mortality data were gathered from 38 consecutive flocks of straight run broilers from October 1996 through June 2003 at the Applied Broiler Research Unit. Half of the 38 flocks were grown to 49 days or less, while the

other half were grown longer than 49 days. The youngest flock was 39 days at harvest with the oldest harvested at 57 days. All flocks were grown for the same integrator under a standard broiler industry contract. Management practices were the same in all houses. These data show that broiler mortality usually peaks at approximately 3 to 4 days after placement, declines until approximately day 9 or 10 then stabilizes until approximately day 30. After day 30 a gradually increase is seen until approximately day 40 to 45. After day 45, mortality rates increased until harvest. Tabler was able to note the pattern was similar to results reported by Xin et al. (1994) even if their data indicated slightly higher 2-week mortality, somewhat lower 8-week mortality, with similar 6-week mortality on 10 consecutive flocks of 8-week male broilers.

Tabler, et al, (2004) concluded that mortality in broiler flocks represents lost income to growers and integrators alike. Even though mortality is an everyday part of broiler production, growers should tailor management programs to reduce its overall effect on flock performance. An aggressive culling program early in each flock that humanely removes substandard birds as they appear can improve overall flock uniformity and performance with a minimal negative effect on feed conversion ratio. Thus mortality is inevitable but the daily record monitor will enable a farmer to maintain it to the minimum and react to the causes before an entire flock loss.

Allowing cull birds to remain in a flock increases the difficulty in feeder and drinker management throughout the flock. Also, if these birds succumb or are culled late in the flock, they have a much greater negative impact on feed conversion because they have eaten more feed (which is now lost) than they would have if removed at 1 or 2 weeks of age. Management programs later in the flock are often designed slow growth slightly to reduce late mortality due to ascites, heart attacks, and leg problems.(Tabler et al, 2004). Thus the need for a daily monitoring of mortality and culling since it influences the broiler performance and profitability for the farm.

2.3.3. Health status

The greatest risk to a broiler operation is infectious diseases and every attempt must be made to control and prevent them. Rangoma (2011), goes ahead to note that to detect diseases in their early stages, the producer should be aware of the daily status of the birds. This can be judged from the behaviour of the birds, droppings, feed intake, and death rates and thus daily records are vital.

Broilers are much more susceptible to metabolic diseases than other categories of chicken. Broilers sometimes can be so crippled that they cannot walk due to overweight; consequently they die from starvation and dehydration. Metabolic diseases such as ascites, sudden death syndrome, fatty liver and kidney syndrome, and tibial dyschondroplasia (td) have become the serious health problems of fast growing broilers and cause enormous economic losses. (Rangoma, 2011)

A vaccination program is essential in flock health management. This is because the broiler birds are sensitive unlike other birds and should consume the vaccine within 2 hours after mixing it with water. Broilers should be vaccinated against infectious bronchitis (IB), new castle disease (NCD) and infectious bursa disease (IBD / Gumboro). There is a program (Rangoma, 2011) that every broiler farmer should comply with if the vaccination is to help in increasing the health of the birds and overall the flock performance.

Table 2.1 Broiler vaccination programme

Age	Vaccination Method
Day 9 - 12 IB + NCD	Eye drop / drinking water
Day 14 – 16 Gumboro	Drinking water
Day 18 – 20 IB + NCD	Eye drop / drinking water
Day 21 – 24 Gumboro	Drinking water

Vitamins should be administered for a day or two after every vaccination to reduce stress.

Health daily monitoring of the flocks is and will become increasingly important (Penz and Bruno, 2011) which means that a farmer has to understand all the health issues related to broiler chicken. The vaccination program is vital and need to be complied with to increase performance in the production.

Penz and Bruno (2011), adds that the health monitoring is not only to prevent food borne disease but also to avoid performance losses and to ensure bird welfare. Compliance with health programmes (cleaning and disinfection, vaccination, pest control, disease monitoring),

immediate notification and record of abnormal situations, health monitoring programmes and measures for infection control and eradication must be put in place, particularly in a scenario where the use of antimicrobial compounds is increasingly restricted.

Thus, daily records of bird health status as well as the vitamins, vaccination and medicines administered helps to keep track of the flock performance expectations and for a small scale farmer, very vital for broiler performance.

2.3.4. Weight

Weight is a vital aspect in monitoring the performance of broiler. According to the industry standards, chicks should be weighed on weekly basis at days-3, 7, 14, 21, 28 & 35 (Kenchic Broiler Procedure Manual, 2006). Weight gain is a major determining factor and other factors of feed intake, water intake, and the health status of the broiler affect the correct weight gain of the broiler. Only a 10% of the total birds are weighed to give an average weight and help in noting the progress of the growth.

A research was conducted by Arce (2012), on one day old Ross male broilers that were housed in a typical poultry barn that was separated in pens with three treatments in this experiment: Control diet that was typical poultry ration with antibiotics and no Aviator added, Control plus Aviator added at 1 kg per ton, Control plus Aviator added at 2 kgs per ton. Each pen had 50 birds and there were 9 to 10 pens per treatment. There were a total of 1400 birds for the trial. The diets were all equalized so the nutrient levels were the same, other than the test parameters. The diets were sorghum and soybean meal based and formulated into three phases with a starter feed for days 1-21, grower from day 22 to 35, and finisher from day 36 to 42. The chicks were given a Marek's vaccination on day 1 and a Newcastle vaccination on days 8 and 25. All feeds were fed in mash form and contained an AGP (Avilamicin 0.10%) and a Coccidiostat (Nicarbacin/Salinomycin .05%). Feed and water were offered *ad libitum*. All pens were weighed weekly to record weights and calculate Feed/Gain. Feed intake and mortality were monitored on a daily basis. The production index was calculated using the following formula: $\text{Body weight in grams} * \text{Viability (\%)} / \text{Feed Conversion} * 10 * \text{days on feed}$. At the end of the trial both treatments with Aviator had significantly higher weight gain, with 34 to 41 grams more weight on day 42. The birds receiving Aviator in the diet had 2.1% to 2.5% lower mortality.

Broilers are sold between 1.5 and 3 kg live weight depending on consumers' preferences and market demands hence the need to weigh every week to sure you are progressing to the right weight according to the age of the broiler so that you sell and make profits.

2.3.5. General Behaviour

Inadequate ventilation, particularly later on in the production cycle, will result in birds becoming too hot. Ventilation rates should be matched to the actual biomass within the house. In order to do this, a sample of birds should be weighed weekly. In areas where external environmental temperatures are high and open-sided housing is used, appropriate feed intakes may be maintained by: Encouraging feeding during the cooler parts of the day and providing correct nutrient levels and balance, together with the use of highly digestible feed ingredients, and the provision of optimum physical feed form. (Arbor Acres Service Bulletin, 2011)

Monitoring and evaluating broiler's behaviour is vital such as the study conducted by Collins using video-capture systems to develop a tracking method to investigate the social behaviour and preferences of broiler chickens during the production cycle which showed that broiler flock density seems to have a little direct effect on broiler individual behaviour.

These means that the way broiler chicken behave can tell you if they are fine or not. If all birds are crowded in one location then the temperature is too low for them and if they have opened their mouths and spread their wings, the temperature is too high hence the need to check on the ventilation. Such observations are necessary since the chick will spend most of the time trying to cool its body and hence reduce feed intake which will affect the gaining of weight appropriately.

Other observable behaviours are the texture and colour of the dropping which can tell if birds are sick. The unhealthy look of dull colour on the feathers also will tell a lot on the feed quality. These are the observations which a farmer can record and use to investigate any issue that will affect the proper growth of the birds and thus ultimately affect performance of the flock.

The five aspects are all interconnected and hence the need to have daily rearing records of the feed and water intake, health status, mortality rate, weight and general observation since these

records will influence the performance of the flock and profitability which is the main goal of a broiler farmer.

2.4 Farm Visits by the Technical Experts and Performance of Broiler Poultry Farming

A veterinary, an experience or a skilled person on broiler farming is very vital in all broiler farming endeavours. The technical experts need to not only train farmers on the rearing methods but also need to make regular visit to the farms to monitor if the broiler chick are doing well. Kawsar et al (2013), on the a research in Bangladesh about productive performance and the profitability of independent small scale broiler farming of 300 flock size or less concluded that training to small scale broiler farmers, introduction of improved management practices, regular monitoring with adequate poultry extension services are the key elements to get satisfactory result from broiler farming. These extension services offered by the government or NGO are vital in the overall performance of broiler farming.

Technical skills need to be considered at both farmer and extension office levels (FAO, 2013), which means that the visit on the farm to continue training and assist when problems occur is very important. Follow up by any extension officer or a technical experts helps the broiler farmers to follow up what they are trained. It will be very vital for technical experts to make farm visit since most of the farmers could be having challenges that only extension services can help. Large scale broiler farmers have technical expert as part of their management team or is on their pay roll and so they are available always to help in their performance. For small scale farmers, they will depend on the agriculture ministry, feed or drug companies as well as the chick breeders to help them improve their broiler performance and make profit from the broiler poultry business.

Farm visits by the veterinary or a skilled person in broiler rearing is vital not only to small scale farmers but also to contract farmers where management of the broiler house is his responsibility with the assistance of the field service representative provided by the chicken company giving the contract. Apart from assisting the farmers on decisions covered in the contract, he / she assist in ventilation, litter management, rodent and fly control and dead bird composting. As earlier discussed broiler need daily attention and new farmers will need to work closely with their field service representative to develop an appropriate care schedule.

According to a research conducted among 96 farmers' learning preference and 21 cooperative extension agents and specialists' instruction methods, Franz et al (2009), showed that farmers preferred learning by hands-on (99%), demonstrations (96%) and farm visit (94%) by the

extension officers. While for the extension agents and specialists perceive that farms visits (100%) are what farmers prefer to learn and improve on their management skills. Broilers farmers thus would do use the farm visits by the veterinary or broiler experts to give them a hands-on learning experience.

Qamar (2005) notes that the extension function, which is played by the technical experts when they visit the farms, is also important for the welfare of farmers, no matter who performs it as long as it is done satisfactorily. The players in the extension function, besides government extension departments could be private extension service companies (from the feed, drugs or breeders companies), private extension advisors (Veterinary), NGOs, universities, farmers associations, research institutes and possibly others. This means that technical experts coming to visit the farms could be from different companies but their importance is relevant to the performance of broiler for the farmer.

In a research conducted by Muhammad (2004), in Tennessee, small farms, which are the same as small-scale farmers, emphasized the importance of extension to provide one-on-one assistance. This means that visits to the farms by a knowledgeable person is very important to small scale farmers as it gives them practical solutions and ideas on how to improve on their performance and broiler farmers needs also.

2.5 Broiler Farmers' Support Groups and Performance of Broiler Poultry Farming

In Indian, according to Kitalyi (2013), there has been great support of small scale farmers and mostly rural poultry farmers through the various support groups such as the Grameen Bank of Bangladesh and the Self-employed Women's Association of India. He goes ahead to propose that if there has to be a change of the village poultry production system from subsistence to income-generating activity, there a great requirement organisational building, particularly for input supply systems and marketing. This means that Capacity building of small scale poultry farmers was a dire need to build on knowledge and improve on performance.

Huque and Quazi (2013), notes that for skill improvement of poultry farmers to be effective, formation of a group with the primary target beneficiaries is a factor which means that the members have to be broiler farmers since the selection is based on interests, needs and their level of social and economic background. This means that broiler farmers will do well when they have a support group that they can lean on and help each other in enhancing their broiler production performance.

In India, the small scale poultry farming has succeeded because IFAD (International Fund for Agricultural Development) assisted Tamil Nadu Women Development Project in South India and which proved that Self Help Groups (SHGs) and NGO linked programmes are particularly helpful for small holder rural women. This means that farmers support groups are always helpful and can be the channel through which funds can be given to assist in broiler performance enhancement for the local broiler farmer who is based in the village.

Organizing poultry farmers is not easy (FAO, 2013), for several reasons but it is necessary to develop them even if flock sizes are small and birds are maintained with minimal land, labour and capital inputs. Small scale farmers generally consider Family poultry be it broiler or layers a secondary activity compared with other agricultural activities.

With the modern technology in Information system advancing at a high speed, broiler farmers also need support from the social media and get support globally. A good example is Australian Chicken Growers Council which represents the interests of contract mean chicken growers and turkey producers at the national level. Broiler farmers have thus a body uniting them and assisting them to enhance their performance. In Kenya, there is Broiler Farmers, Kenya group with 13 members, which shows that broiler farmers are taking up the social media to support each other.

According to Abdolmaleky (2012), Farmers' organizations may be important instruments for empowerment of farmers and that some form of organization of the farmer community, especially the small-scale, is required if farmers are to engage successfully in policy debates, to improve their ability to demand and access services from outside agencies and to negotiate with greater strength in agricultural input and output markets. This is very vital for broiler farmers who need such organisation to support each other and push for better terms in terms of their sales.

Farmer organisations have a strong potential for building linkages to interventions/programmes in other sectors which can enable the collective improvement of farmers' livelihood from a number of government and donor supported interventions. They can facilitate a vertical exchange of information, be enabling farmers to access higher levels of management and contribution in decision-making process (Abdolmaleky, 2012). This means that small scale broiler farmers would improve their performance when they get support from such organisation that aid in decisions that affect their profits.

2.6 Capacity Building and Performance of Broiler Poultry Farming

Capacity building is very vital to any agricultural venture and broiler rearing is no exceptional. Broilers are delicate chicken and need to be managed with care if they are to reach the optimum weight and age for market. Huque (2013), on Bangladesh small scale poultry projects notes that improving skills of the small farmers requires strategies in order to move from “no-input” scavenging poultry keeping to profit oriented egg and meat production because this skill improvement has a great impact on production efficiency and increase their market share which is income and profitability. He notes that about 89 per cent of the rural household keep poultry with an average per household being 6.8. It was noted that small commercial poultry farming was expanding in Bangladesh in the peri-urban areas as layer and broiler farming and cockerel raising. Most of the small commercial poultry keepers received training from Department of Livestock Services, Youth Training Centers and NGOs.

The Small farming poultry development model was used in Bangladesh among the landless poor had two components: prevention coverage of major poultry diseases through self-employment and; improvement of skill of small farmers for higher egg and mean production. Huque and Quazi (2013) noted that the development program proved to be very effective in the skill improvement process of poultry farmers including the broiler farmers. The training targeted Poultry works, chick rearers, key rearers, model rearers, mini hatcheries, egg collectors, and feed sellers. Group formation is an important criterion where one woman is selected to receive the training of 10 – day poultry basics on vaccination and health control and some idea on poultry husbandry where she earns some money through vaccination procedures and any technical advice in her village. The Bangladesh program comes with small collateral less credit depending on the size of the operation. For the women, a vaccination kit and flask is given as a grant after the training. This goes a long way to help in skill improvement of broiler rearing in all villages.

According to Huque (2013), trainings is one of the most important tool for skill improvement which can be in three ways; primary training on poultry production and health care based on class room instruction along with the practical knowledge; functional training at the farm by work in hand from first to last steps of operation; lastly refresher training at certain intervals following the problems faced by the poultry farmers to upgrade their skills and management levels. This means that trainings are a continuous capacity building effort for the broiler farmer from the moment they are ready to rear broilers to always even when a problem

occurs at their farms. Other methods proposed are demonstrations in each step of production, groups meetings with presence of the technical experts, visits of other farms, mass communication through radio and television, publications, advisory services by the extension agents, field day, workshops and seminars, management information system.

Sathe (2013) notes that in Africa, poultry is a small scale rural sector facing problems of planning and execution of projects while intensive production has suffered mostly due to technical, institutional and economic problems as well as poor technology, training and management. A good example Sathe gives is Nigeria which the present suggests that for small rural poultry sector, the priorities are supply of improve birds, disease prevention (especially Newcastle) and supplementing scavenging feeding with home grown feeds. All these challenges can be tackled if the broiler farmers have regular capacity building opportunities to help them tackle their issues.

Capacity building is a challenge for all farmers but more so for the small scale broiler farmers and Reddy and Qudratullah (2013) proposes that research with a farming system's perspective offers a good possibility for increasing productivity and profitability of rural poultry. To promote rural poultry development with limited resources, training of farmers in efficient management with locally available feed resources, disease control, ready markets and a fair price for the produce and adequate credit system for the purchase of required input are necessary. This stressed the need for capacity building of broiler farmers on better methods to enhance their broiler performance.

One of the challenges that Rhodes (2011) notes, is the growers management skills which impact broiler growth rate and death losses. This can only be avoided if there is training on how to watch for feed waste and making necessary adjustments to reduce it, observing for leaking drinker nipples, keeping litter dry and clean, staying alert to fan breakdown and paying attention to signs of stress and disease. This can only happen when farmers has undergone regular training to check for those signs that can affects the broilers and in the end reduce the profits.

2.7 Conceptual Framework

Independent Variable

Utilization of monitoring and evaluation tools

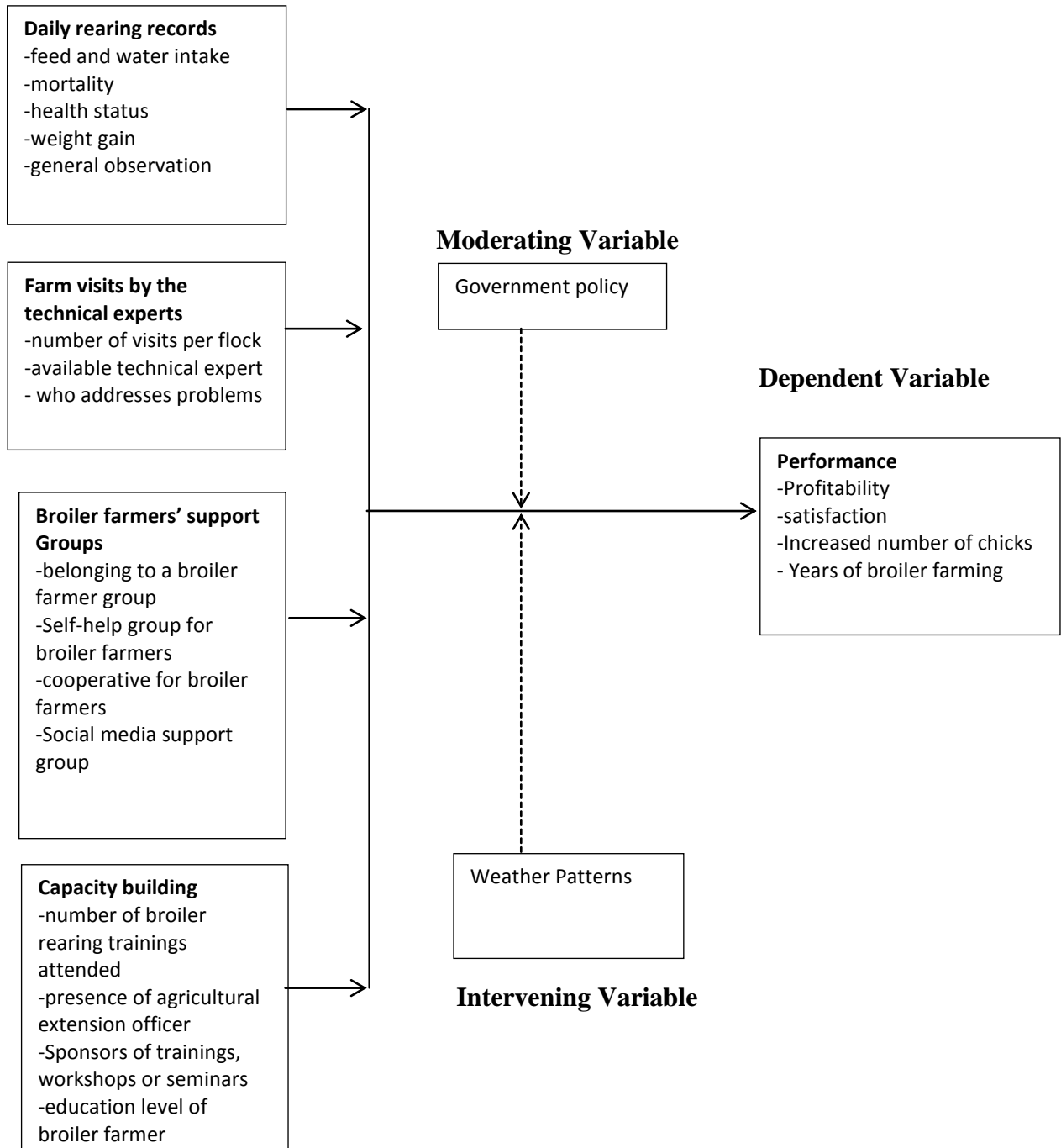


Figure 1. Conceptual Framework

The Conceptual framework presented in figure1.shows the diagrammatical representation of the interrelationship among variables of the study. The figure shows the influence of the

application of monitoring and evaluations tools as the independent variable to the Performance of broiler chicken performance which is the dependent variable. The presumed variables are the daily rearing records; farms visits by the technical experts; broilers farms support groups; and capacity building. There is also the moderating variable which is the Education level and the intervening variable which is the weather patterns.

2.8 Knowledge Gap

It is clear that broiler poultry farming performance has been an area of research with different research using various monitoring tools to measure how broiler meat bring in profits for the framers. Among small scale broiler farmers, several researches have been conducted such as by Tabler (2003), on water intake as a good measure of broiler performance in the USA and was able to conclude that 5-pound broiler will consume about 18 pounds of water if it is to reach its optimal weight. Closer home, Oladoja and Olusanya (2009) conducted a research among poultry farmers in Nigeria and were able to show that technical expertise ranked higher among constraints of private feed production efforts. Apantaku (2006) in his research among poultry farmers in Nigeria was able to show that there are too few elements of farmer – researcher participatory research (PPR) in Lagos state which means that there are less researches conducted among poultry farmers and more so among broiler farmers. This clearly shows that it seems that there are no specific researches conducted on the utilization of the four monitoring and evaluation tools that this research will undertake. Daily rearing records, farm visits by the technical experts, broiler farmers’ support groups and capacity building are some of the monitoring and evaluation tools that influence the performance of small scale broiler farming projects. The research will be conducted in Nyeri County an area where such a research has not been documented.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This Chapter describes the procedure that was used in conducting the research. It gives details of the research design, the target population, the sample and sampling techniques, data analysis and presentation. Wherever necessary and appropriate, the presentation and discussion in each section is backed by justification based on the expert opinion and other scholars.

3.2 Research Design

The Descriptive Survey design was used in this research. The researcher found it appropriate since this design is used in fact-finding enquiries of different kinds. It is description of the state of affairs as it existed at present, the researcher has no control over the variables; he / she can only report what has happened or what is happening and it seeks to measure such items, also include attempts by researchers to discover causes even when they cannot control the variables. The methods of research utilized in descriptive research are survey methods of all kinds, including comparative and correlational methods (Kothari, 2009). The Research used most of Quantitative inferential approach to form a data base from which to infer characteristics of population.

The method was found appropriate for the study because it assisted the researcher to produce statistical information on the influence of the utilization of four monitoring and evaluation tools namely: daily rearing records, farm visits by technical experts, broiler farmers; support groups and capacity building, on the performance of boiler chicken business and establish the relationship between the influences identified.

3.3 Target Population

The study population of this research consisted of small scale broiler farmers who kept a flock of less than 2000 broiler chicken in Mathira, Othaya and Nyeri Town constituencies of the six Nyeri County constituencies, numbering 70 which were based on Kenchic Limited current estimate data. The farmers are geographically distributed within the three constituencies of the county. Their location was close to the researcher, so it was convenient in data collection, in terms of time available and the cost involved in the data collection.

3.4 Sample Size Selection and Sampling Procedure

In this section, the study discussed sample size selection and sampling procedure to be adopted. According to Mugenda and Mugenda (2003), there must be a rationale for defining and identifying the accessible population from the target population. The accessible must be the most representative of the target population and the two populations must be comparable on many characteristics which are important to the study.

3.4.1 Sample Size Selection

This is the selection of a sample from the accessible population. Mugenda and Mugenda (2003) go ahead to support that for descriptive studies, ten percentage of the accessible population is enough.

Stratified sampling technique was used in order to obtain a representative sample. Under stratified sampling the population is divided into several sub-populations that are individually more homogeneous than the total population (the different sub-populations are called ('strata') and then we select items from each stratum to constitute a sample. Since each stratum is more homogeneous than the total population, we are able to get more precise estimates for each stratum and by estimating more accurately each of the component parts; we get a better estimate of the whole. In brief, stratified sampling results in more reliable and gives detailed information. (Kothari, 2009)

The study preferred to target 3 of the six constituencies due to the high number of the small scale broiler farmers' population distribution available and easy to reach. According to Kenchic (Nyeri Office) current estimate data, Mathira had 15 farmers, Othaya 10 and Nyeri Town 45 farmers totalling to 70 broiler farmers rearing 2000 chicks and below as the population. According to the Krejcie and Morgan Table (Appendix 4) of determining Sample size (KENPRO, 2012) for the 70 small scale broiler farmers; the researcher randomly picked a sample size of 59.

3.4.2 Sampling Procedure

A researcher must decide the type of sample she will use, i.e., he must decide about the technique to be used in selecting the items for the sample. In fact, this technique or procedure stands for the sample design itself. There are several sample designs out of which the researcher must choose one for his study. Obviously, he must select that design which, for a given sample size and for a given cost, has a smaller sampling error. (Kothari, 2009)

The respondents will be initially purposively selected, since only 3 constituencies of Nyeri County have the high population of small scale farmers geographically located for easy reach and within minimum resources which is Mathira, Othaya and Nyeri Town. The respondents' will be stratified to either male or female to give each group a fair chance of being in the study. As Kothari (2009), notes that we are able to get more precise estimates for each stratum and by estimating more accurately each of the component parts, we get a better estimate of the whole.

Simple random sample technique will be used to get the final 59 respondents. According to Korb, (2012), in simple random sampling, every individual in the target population has an equal chance of being part of the sample. This requires two steps: Obtain a complete list of the population and then randomly select individuals from that list for the sample. Random, Korb continues, is a technical term in social science research that means that selection was made without aim, reason, or patterns. If any study uses the word random, it means that specific scientific procedures were used to ensure that the sample was selected purely by chance.

3.5 Methods of Data Collection

This section will focus on the Research instruments that were used in the study as well as the Data collection procedures.

3.5.1 Research Instruments

The study used questionnaires and observation schedule. Questionnaires are commonly used to obtain important information about the population. Each item in the questionnaire is developed to address a specific objective, research question or hypothesis of the study. The researcher must also know how information obtained from each questionnaire item will be analysed (Mugenda and Mugenda, 2003). The questionnaires will adopt both open and closed ended questions which will be administered to the small scale broiler farmers. With Questionnaires, large samples can be made use of and thus the results can be made more dependable and reliable since there is low cost even when the universe is large and is widely spread geographically (Kothari, 2009).

Observation method was also used. The main advantage of this method is that subjective bias is eliminated, if observation is done accurately. Secondly, the information obtained under this method relates to what is currently happening; it is not complicated by either the past behaviour or future intentions or attitudes. Thirdly, this method is independent of respondents' willingness to respond and as such is relatively less demanding of active cooperation on the part of respondents as happens to be the case in the interview or the questionnaire method. This method is particularly suitable in studies which deal with subjects (i.e., respondents) who are not capable of giving verbal reports of their feelings for one reason or the other (Kothari, 2009). The Research used a checklist to record what she observed during the data collection and in some case a rating scale such as the Likert Type scales with 3 or 5 response categories...and about ten behaviours are satisfactorily (Mugenda and Mugenda, 2003). 15 Observations from the farms as the researcher distributes the questionnaires were used to capture any format and forms of chicken rearing records being used by the farmers and how they influenced broiler performance. Secondary data was obtained from the library, Kenchic Limited, Unga Limited, World Wide Web, Journals and Print media.

3.5.2 Data Collection Procedure

An introductory letter was sought from The University of Nairobi, which was handed to the respondents together with the data collection instruments which were the questionnaires. The study used both primary and secondary data. Questionnaires used were well structured and used both open and closed questions. The closed ended questions provided quantitative data while open ended questions provided qualitative data. The questionnaire had five sections which included respondents' basic information, farm visits by the technical experts, broiler farmers' support groups and capacity building.

The questionnaires was administered by the researcher and research assistants and collected on the same date or a later date as agreed with the respondent. That helped the respondents to complete the questionnaire at their convenience, as well as have enough time to get accurate information. This personal administering also ensured those who could not read and write were assisted so that the return rate of the questionnaires would be high, as well those who received the questionnaires were prompted to give them back.

3.6 Validity and Reliability

This section will look at the Validity of the instruments used in data collection as well as their Reliability in terms of the data that was collected.

3.6.1 Validity of the instruments

Validity is the accuracy and meaningfulness of inferences, which are based on the research results. Mugenda and Mugenda (2003), goes ahead to elaborate that it is the degree to which results obtained from the analysis of the data actually represent the phenomenon under study meaning how accurately the data obtained in the study represents the variables of the study. The researcher thus used content validity to check whether the items in the questionnaire and observation schedule answered the research objectives. The researcher discussed the content of the questionnaires and observation schedule with the Supervisor to improve its validity as well as her colleagues to verify the validity of the content of the research instruments.

3.6.2 Reliability of the instruments

Mugenda and Mugenda (2003), elaborates that reliability of a measure of the degree to which a research instrument yields consistent results of data after repeated trials. According to the study the test –retest method was found appropriate in measuring the reliability of the instruments. This was whereby 5 same questionnaires were administered to farmers and other 5 after a period of one week. The test was administered twice to the same farmers first time in a central location in Nyeri town and the second time at their farms. This was then used to assess the consistency of the questionnaire responses across time. This type of reliability was able to show that there was no change in the quality or construct of broiler farming projects being measured. The reliability of the instrument was estimated by examining the consistency of the responses between two sets. The researcher was able to measure the coefficient of not less than +0.7 which was a very strong positive relationship or high similarity between the responses of the first set of questionnaires to the second set.

3.7 Data collection procedure

The researcher sought permission from the local administration of Nyeri County to conduct the study in the area. After getting informed consent, the researcher recruited two research assistants to assist in data collection. They were trained on the research objectives and guided on techniques of administering the questionnaires and observation schedule. The questionnaires were administered to the small scale broiler farmers while the observation schedule was conducted on randomly selected farms

3.8 Operationalization of variables

Table 3.2 Operationalization Framework

Objective	Variable	Indicators	Measurement	Level of Scale	Data Collection Method	Data Analysis Method
	Dependent Variable: Performance of small scale broiler farming projects	Profitability Satisfaction Number of chicks Years of broiler farming	Profits made Years of broiler farming Type of fixed assets Increase in the number of broiler chicken reared with time	Nominal	Structured and unstructured Questionnaires and observation schedule	Mean Frequency Percentage
To establish how daily rearing records influence the performance of small scale broiler farming	Independent Variable: Daily rearing records	Daily feed and water intake records Daily mortality rate records Records of health status Records of weekly weight gain Daily general observation records	Type of feeding and water equipment Records of feed and water consumed Intervals of feed and water given Records of mortality rate per day Records of vaccines, medicines and vitamins administered daily Availability of a weighing Machine Records of weekly weight Records of general observations	Nominal	Structured and unstructured Questionnaires and Observation Schedule	Mean Frequency Percentage
To assess the extent to farm visits by the technical experts influences the performance of small scale broiler	Independent Variable: Farm visits by the technical experts	Number of visits per flock Practical advice given Demonstrations on farm	Number of farm visits by the technical experts Availability of a technical expert Availability of a government extension officer	Nominal	Structured and unstructured Questionnaire and Observation Schedule	Mean Frequency Percentage

farming			Reporting of farm problems to the technical expert			
To analyse how broiler farmers support groups influences the performance of small scale broiler farming	Independent Variable: Broiler farmers' support groups	Availability of a broiler farmers group Self – help group for broiler farmers Cooperative for broiler farmers Social media support group	Membership in a broiler farmers group Self-help group available for broiler farmers Agricultural Cooperative for broiler farmers Poultry site, facebook account and whatsApp group for broiler farmers in Nyeri	Nominal	Structured and unstructured Questionnaire and Observation Schedule	Mean Frequency Percentage
To determine how capacity building influence the performance of small scale broiler farming	Independent Variable: Capacity building	Number of rearing trainings attended Presence of a field extension officer Technical experts available to broiler farmers	Number of trainings, workshops and seminars on broiler rearing attended over the years in broiler farming Agricultural extension officer availability Trainings sponsored by government technical experts, medicines, feed and breeders companies	Nominal	Structured and Unstructured Questionnaire and Observation Schedule	Mean Frequency Percentage

Once data was collected from the field, it's raw and needed to be interpreted. Mugenda and Mugenda (2003) explain that such data need to be cleaned, coded, key-punched into a computer and analysed. It is thus the process of data coding, data entry and the use of common statistical procedures used in data analysis so that that is checked whether it answers the research questions and hypothesis set for the study.

Descriptive statistics and content analysis was used to analyse the collected raw data. Closed questions were analysed using the latest Statistical Package for Social Sciences version, by first coding the responses for analysis of quantitative data. Raw data was then be entered into IBM SPSS version 20 computer software and analysed using descriptive and inferential

statistics such as the percentages, means and correlations. This technique was preferred since it is efficient and gives straight formal analysis. Content analysis technique was applied to analyse qualitative data by identifying patterns and themes. After data analysis, the results were presented in tabulation.

3.10 Ethical Considerations

There are five ethical issues that were considered during the study which include voluntary participation, informed consent, confidentiality and anonymity, the potential for harm and communicating results.

The Table 3.2 gives the operational definition of variable used in this study. The table has provided the indicators and measurement for independent variables, namely, feed and water intake, mortality, health status, weekly weight gain and general observation. The indicator and measurement for dependent variable, namely, performance of broiler poultry projects are also given. Both the measurement scales and the data analysis method used are explained.

3.9 Data analysis Techniques

The researcher sought permission from relevant authorities before commencement of the study. A letter of introduction was sought from the university. The researcher explained to the respondents the purpose of the study before involving them. She also explained how the results of the study would be important to them. The researcher also assured the respondents that the information they provided would be for the purpose of the study and their identity would be treated with confidentiality.

The Participants were not be forced or pressured to participate in the study but on voluntary participation. For farm workers who filled the questionnaire on behalf of the Farm owners, the researcher had to seek consent from the farm owner before any farm worker participated in the study and had to highlight that no penalties would be levied against any farm worker who refused to participate in the study.

To establish informed consent, participants were made fully aware of what they were being asked to do so that they understood what was required of them before participating in the survey. A cover letter from University of Nairobi was appended together with the survey questionnaire so as to inform respondents that this study was an official university activity.

To avoid any potential of harm (includes physical, psychological, emotional, social etc.), consent forms were made available together with the cover letter to indicate that individuals had agreed to participate.

To ensure confidentiality and anonymity of farmers, the questionnaire were distributed within the respective constituencies and had the farmers give them back confidentially / anonymously. In this way, neither the researcher nor the Research assistants could identify who participated.

When communicating results, information that had been included in the proposal will be cited and referenced where appropriately to avoid plagiarism.

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND INTERPRETATION

4.1 Introduction

This chapter presents the analysis and interpretations of the data collected from the small scale broiler farmers in 3 constituencies in Nyeri County, on the influence of the utilization of monitoring and evaluation tools on the performance of their broiler projects. All data accessed and collected through the questionnaire and observation schedule were analysed quantitatively and qualitatively. The analysis was done through descriptive statistics and findings of the study were presented in form of tables showing frequency distribution, percentage and correlations. The interpretation of the outcome is based on the outputs from the IBM SPSS Version 20 as per the objectives of the study.

4.2 Questionnaire Return Rate

Questionnaire return rate is the proportion of the questionnaire returned after they have been issued to the respondents. Out of the 59 questionnaires distributed, 50 were completed and returned, which represented 84.8% response rate. According to Fincham (2008), 60% response rate should be the goal of researchers and the researcher agrees to the fact that the higher the response rate, the more appropriate the generalization for the research finding for a population thus above 50% is a good return rate.

4.3 General and demographic information collected through questionnaire

This section provides the results of the data analysis of the study and the interpretations of general and demographic information. Respondents of the study consisted of small scale broiler poultry farmers rearing 2000 and below chicks in Mathira, Othaya and Nyeri Town constituencies of Nyeri County.

4.3.1 Gender composition

The Table 4.1 shows the representation of the respondents either as male or female which is vital in determining if both genders are represented actuality in the sample size.

Table 4.1 Gender of the respondents

Gender of respondents	Frequency	Percent
Male	16	32.0
Female	34	68.0
Total	50	100.0

Out of 50 respondents, there were more responses from female small scale broiler farmers than male who accounted for 68% and 32% respectively. This shows that more female are involved in small scale broiler farming thus showing that broiler farming is female dominate. While broiler farming is a good business, chicken rearing is associated more as a homestead business and that explains why the percentage of women is more than half of the men.

4.3.2 Age of the respondents

The Table 4.2 shows age of the respondents which helps in getting knowledge which age group was engaged in the small scale poultry business which is also a major factor in choosing the business venture.

Table 4.2 Age of the small scale broiler farmers

Age of the respondents	Frequency	Percent
21 - 30 Years	2	4.0
31-40 Years	11	22.0
41 - 50 Years	19	38.0
Above 50 Years	18	36.0
Total	50	100.0

The table 4.2 shows that majority of respondents were aged between 41 – 50 years which represented by 38%, followed by above 50 years with 36%, 31 – 40 years being 22 % and

the lowest percentage of 4% being respondents between 21 – 30 years. This shows that broiler farming is taken up by older people and mostly starting at age 31 and being dominated by people age 41 – 50 years. This could be because at this age, they own their own land and can afford to engage in the farming or can employ workers.

4.3.3 Marital status of the respondents

The Table 4.3 shows the marital status of the respondents which is vital in getting a clearer picture who engages in poultry farming to show how that contributed to engaging in poultry farming.

Table 4.3 Marital status of the respondents

Marital Status	Frequency	Percent
Married	39	78.0
Single	6	12.0
Other	5	10.0
Total	50	100.0

The study shows that majority of the respondents are married at 78% while 12% were single and 10% being either widowed, separated or divorces. This shows that many married people are engaged in the broiler farming to supplement family food and increase income.

4.3.4 Family size of the respondents

The Table 4.4 shows the family size information which is necessary as it represents the number of family members in the homes rearing broilers and that is connected to the choice in engaging in the farming.

Table 4.4 The family sizes of the respondents

Family size	Frequency	Percent
Less than 3	11	22.0
Between 3 - 5	27	54.0
More than 5	12	24.0
Total	50	100.0

Table 4.4 shows that majority of the respondents had a family size of between 3 – 5 at 54% followed by those who had more than 5 family members 12% while the ones who had less than 3 members were 22%. This showed majority of the small scale broiler farmers had more than 3 family members hence the need to engage in the farming for availability of white meat and increase of income to cater for the family members.

4.3.5 Broiler Poultry farming status

The Table 4.5 shows respondents broiler farming status which is necessary in this research as it gives a picture of how small scale farming engage in the farming either as a full time business or as part time while having other regular occupation.

Table 4.5 Broiler Poultry farming status

Broiler farming status	Frequency	Percent
Full time Broiler farming	20	40.0
Part time Broiler farming	30	60.0
Total	50	100.0

The table 4.5 shows that majority of the broiler farmers were part time farmers at 60% while 40% of them were full time farmers. This shows that small scale broiler farming is taken as an added business to the regular occupation and majority of the famers are full time employed but need the added income to meet their family and financial needs.

4.3.6 Level of Education attained by broiler farmers

Broiler farming is a delicate farming venture and Table 4.6 shows the literacy level which is necessary since it is helps in proper management of the broiler chicks, prevention of mortality and total loss of broiler chicken.

Table 4.6 Highest level of education attained

Level of education	Frequency	Percent
Primary School	3	6.0
Secondary School	10	20.0
University	17	34.0
Others	20	40.0
Total	50	100.0

According to Table 4.6, the majority broiler farming who were 40% had attained either a college, tertiary or masters education level. Following were those who had attained university degree at 34%. Those who had attained a secondary school certificate were 20% while the rest had attained till Primary level certificate at 6%. This shows that all the farmers were literate and thus could handle broiler farming business more professionally and majority being with a college and university certificate shows that it is an attractive business for the more educated.

4.3.7 Number of years in broiler farming

The Table 4.7 shows the number of years small scale farmers have practised broiler farming according to the respondents in the study which is important, as it shows whether the business is worth continuing. Most business ventures do not make it up to two years but successful ones do reach and continue.

Table 4.7 Number of Years practicing broiler farming

Number of years in broiler farming	Frequency	Percent
Less than one year	5	10.0
Less than two years	8	16.0
More than two years	37	74.0
Total	50	100.0

The study was able to reveal that 74% of the small scale broiler farmers had practised broiler farming for more than two years. 16% of the famers had practised for less than two years while 10% had practised for less than one year. The table shows that most of the farmers had been in the business for a while and shows that it had broken even and thus were comfortable in the business.

4.3.8 Number of broiler chicks reared the first time

The study wanted to get the information from the respondents on the number of chicks per flock they reared for the first time so that they are able to compare with the current flock size to show increase in stock.

Table 4.8 Number of chicks reared the first time

The Table 4.8 shows the number of broiler chicks that each farmer started rearing for the first time.

Number of broiler chicks reared the first time	Frequency	Percent
Less than 100	20	40.0
Less than 200	11	22.0
Less than 500	19	38.0
Total	50	100.0

According to the study, it is necessary to understand an increase in the number of broiler chicks reared to show business progress. Table 4.8 shows that the majority of farmers who were 40% started with less than 100 chicks. Following closely were 38% who started with less than 500 chicks and 22% started with less than 200 chicks, showing that the majority of farmers started with a minimum number of chicks to learn the farming of broilers, which are quite delicate and if handled poorly can bring loss and demotivate farmers.

4.3.9 The number of broiler chicks being currently

Table 4.9 shows information from the respondents on the number of chicks per flock being kept currently, which was very helpful in helping to compare if there was an increase from the first time flock size, which represented progress.

Table 4.9 Current number of broiler chicks

Current number of broiler chicks	Frequency	Percent
less than 500	12	24.0
501 - 1000	14	28.0
1001 - 2000	24	48.0
Total	50	100.0

Table 4.9 shows that 48% of the broiler farmers who responded to the questionnaire were currently rearing 1001 – 2000 chicks per flock. Following were 28% who were rearing by then between 500 – 1000 chicks per flock while 24% were rearing by then less than 500 chicks per flock. This study shows that the majority of farmers had a big flock of chicks per flock since they had enhanced their management skills in broiler farming with time, hence could handle relatively large flocks.

4.3.10 Level of Increase in broiler chicks reared over time

The Table 4.10 shows the level of increase in broiler chicks reared over time which was one of the indicators to show the performance in broiler farming and the respondents were grouped as either having increased their flock sizes highly, slightly or no increase.

Table 4.10 Level of increase in the number of chicks reared over time

Increase of number broiler chicks over time	Frequency	Percent
High Increase in number of broiler chicks reared	26	52.0
Slight Increase in number of broiler chicks reared	10	20.0
No Increase in number of broiler chicks reared	14	28.0
Total	50	100.0

The study revealed as explained in Table 4. 10 that 52% broiler farmers had highly increased their broiler flocks per flock from the first time they started rearing to the current flock size. This means that farmers who started with less than 200, less than 500 and less than 100 were rearing between 1000 – 2000 chicks per flock by the time the study was being conducted which was a big reap in flock size. The other 20% farmers had slightly increased their flock size from less than 500 chicks to currently between 501 – 1000 chicks per flock which was an increase but a slight one. The last 48% farmers had not increased or had no significant increase in their flock sizes either from less than 100, 200 or 500 to still less than 500. This shows that most 72% farmers had stayed in the farming business and had increased their flock sizes over time because of the success of their performance such as profits.

4.4. Analysis and interpretation per objective

This section provides the analysis and interpretation of each objective using descriptive analysis.

4.4.1 Influence of daily rearing records

Records are vital in any business and broiler farming is no exceptional. Daily rearing records are monitoring and evaluation tools that influence the performance of small scale broiler poultry farming. The researcher wanted to find out the extent to which utilization of daily rearing records as a monitoring and evaluation tool influence the performance of broiler

farming. The study thus obtained the respondents responses on the type of equipment they use, whether they note and keeping records of feed, water, mortality, medicines, vaccines, vitamins, weekly weights and general behaviour. Also if the number of times they administered the feed and water and if they owned a weighing machines for weekly weight taking.

4.4.2 Type of feed and water equipment in use

The Table 4.11 shows responses on the type of feed and water equipment farmers used.

Table 4.11 Type of equipment

Type of equipment in use	Frequency	Percent
Automatic equipment	9	18.0
Semi-automatic	27	54.0
Others	14	28.0
Total	50	100.0

The study sought to establish the level of education type of equipment that farmers have since that can help a farmer be able to records and monitor the feed and water intake and thus help in management of broiler farming. Table 4.11 shows that 54% who are the majority farmers had semi- automatic equipment. This means that mostly the drinker were automatic while the feeders were manual. 18% of the farmers had automatic equipment while 28% farmers had manual equipment. The study reveals that majority farmers did not have fully automated equipment hence measuring and monitoring how the feed and water is consumed is not possible.

According to Rangoma (2011), feed consist of 60 – 70% of the expenses in rearing broilers, thus with records of the feed and water intake, one can measure and predict the performance of broiler chicks.

4.4.3 Records of Feed and water intake

The Table 4.12 shows responses on whether farmers kept records of feed and water intake.

Table 4.12 Daily records keeping of feed and water intake

Do your keep daily feed and water intake records	Frequency	Percent
Yes	36	72.0
No	14	28.0
Total	50	100.0

According to the study, the table 4.12 reveals that 72% of the farmers keep daily records of feed and water intake while 28% never kept any records. This means that most farmers keep the records because of good management and calculating expenses of broiler farming inputs. The broiler farmers have a way of tracking down by keeping records mostly for the feed intake since it vital in broiler performance.

4.4.4 Number of times feed and water is given

The Table 4.13 shows small scale broiler farmers' number of times in a day they gave feed and water to their broiler chicks.

Table 4.13 Number of times feed and water is given

Number of times you give feed and water	Frequency	Percent
Twice	25	50.0
Thrice	10	20.0
Others	15	30.0
Total	50	100.0

According to the table 4.13, 50% farmers responded to be giving their broiler chicks feed and water twice. 20% farmers gave them thrice while 30% of the farmers would give feed and water more than three times meaning continuously according to the intake. This explains that half of the farmers do not have workers who are based at the chicken house so they check on their chicken in the morning before leaving for their regular work and when they return in the evening and at night. Also the other half has workers who given feed and water thrice to many times as the chicks required.

4.4.5 Recording daily mortality

The Table 4.14 shows broiler farmers indication if they kept records of the daily mortality of their broiler chicks since the ideal is to have all chicks reach maturity and get to the market.

Table 4.14 Daily records of mortality

Do you keep daily mortality records	Frequency	Percent
Yes	45	90.0
No	5	10.0
Total	50	100.0

The table 4.14 reveals that 90% of the farmers did record the daily mortality of their flock and only 10% that did not record their daily mortality. This elaborates that mortality management is vital in the success of broiler farming since the aim is to rear all chick until they reach the market and bring in money to the farmer.

4.4.6 Daily records of vaccines, medicines and vitamins administered to the chicks

The health of the broilers is very important to be monitored since broilers are very delicate bird. It is a vital component in rearing them since they need to be vaccinated and if any disease, medicines need to be administered. Vitamins are vital since these are delicate birds and it helps in stress reduction. The Table 4.15 shows broiler farmers indication if they kept any records on the health of their flocks.

Table 4.15 Daily health records

Do you keep vaccines, medicines and vitamins records	Frequency	Percent
Yes	36	72.0
No	14	28.0
Total	50	100.0

The table 4.15 reveals that 72% of the farmers who responded to the questionnaire actually kept records of the vaccines, medicines and vitamins they administered to their broiler chick.

The other 28% farmers did not keep records. This explains why many farmers are keen on the health of their chicks so that they are able to mature well and be ready for market at the right time with the right weight and healthy.

4.4.7 Weighing machines specifically for weighing broilers

Weight is vital in broiler farming as the chicks have to be 1 – 3 KGS by the time they are ready for market. The Table 4.16 shows farmers’ responses whether they had any weighing machine specifically for their broiler chicks.

Table 4.16 Weighing machine specifically for broiler chicks

Do you have a weighing machine for broiler chicks	Frequency	Percent
Yes	19	38.0
No	31	62.0
Total	50	100.0

The study sought to know if farmers have weighing machines for their broilers. The table 4.16 reveals that only 38% of the farmers had weighing machines specifically for broiler chicks while 62% of the farmers did not have a weighing machine. All farmers know that weight is an important in the sale of broilers and thus the need to weight them but it seems most do not weight at home but at the point of sale or use of the buyer weighing machine.

4.4.8 Weekly taking and recording of broiler chicks weight

Weight is key component in broiler farming because they need to reach 1 kg or more for sale within 3 -4 weeks. The study sought to find out and the Table 4.17 shows the responses of whether farmers took a sample to their chicks and weighed weekly to monitor the weight gain of their flocks.

Table 4.17 Records of weekly weight of your broiler chicks

Do your note and records weekly weight	Frequency	Percent
Yes	6	12.0
No	44	88.0
Total	50	100.0

The table 4.17 reveals that 88% farmers did not weigh and record a sample of the weekly weight of their flock. Only 12% farmers who did weigh and record their weekly weight of a sample of their flock to monitor the weight gain of their flock. This explains that most farmers only weighed their broilers during the sale to ascertain the right weight and did not bother with weekly monitoring of the weight gains.

4.4.9 Observing and noting general behaviour of broiler chicks

General observation during the rearing of broilers is vital and the Table 4.18 shows if farmers take it seriously such as the location of the chicks in the house, the deformities, dropping and any unique behaviour that hinder the proper growth of broilers.

Table 4.18 Observing general behaviour of broiler chicks

Do you observe and note the general behaviour of your broilers	Frequency	Percent
Yes	46	92.0
No	4	8.0
Total	50	100.0

The table 4.18 reveals that 92% of the farmers actually observed and noted any behaviour with their broiler chicks and act. The study also showed that only 8% farmers that did not observe and note the general behaviour. This explains that most farmers understand the broilers are delicate and need constant care hence keep observation is vital in their performance.

4.5 Farm Visits by the technical experts

From the study conducted, the researcher sought out to know if the technical experts in broiler farming influence the performance of small scale broiler farming.

4.5.1 The technical expert who visits farms to assist broiler farmers in their farming

Broiler farmers like all livestock farmers need the experts in the poultry industry to visit their farms and help them in improve on their rearing knowledge and skills. The Table 4.19 shows farmers' indication of the technical expert who made visit to their farms.

Table 4.19 Technical experts who visit your farm

Technical expert who visit your farm	Frequency	Percent
Veterinary	6	12.0
Feed sales person	14	28.0
Drugs sales person	1	2.0
Breeders sales person	24	48.0
None	4	8.0
Others	1	2.0
Total	50	100.0

The table 4.18 reveals 48% farmers responded that breeder sales people are the one who visit their farms. The Feed sales people were also indicated by 28% that they are the technical expert, who visits their farm to give guidelines, help them in case of any technical challenge and generally assist them in broiler rearing. 12% indicated to be veterinary while 2% indicated a drugs sales person. 8% indicated none of the technical person visits their farm. 2% indicated that farmers who have been in the broiler for many years visit their farms and assist them. This reveals that there is high chance of a technical or experience farmer being consulted to assist farmers.

4.5.2 Number of times the technical expert visits the farm during a flock life span

The Table 4.20 shows broilers farmers' responses of how many times a technical expert visited their farm during a flock life span. This in order to get information how technical experts lender their services.

Table 4.20 Number of times the technical expert visits your farm

Number of visits by technical expert in a flock life span	Frequency	Percent
Once	17	34.0
Twice	12	24.0
More than five times	4	8.0
None	17	34.0
Total	50	100.0

The table 4.19 reveals the number of times the technical experts visit the farmers during the life span of a flock. The 34% responded that technical experts visit their farms once and none at all respectively. 24% indicated twice while 8 % indicated that they get the visits more than five times. In total 66% of the farmers in study indicated that technical expert do visit their

farm either once or more. This shows that majority farmers consult technical experts in their broiler rearing.

4.5.3 Reporting to the technical expert when a problem occurs with the broiler chicks

It was necessary to also get information from the broiler farmers if they ever report to a technical expert when a problem occurs with their chick and Table 4.21 captures the responses from the broiler farmers. Broiler chicks are sensitive and outbreaks are common if care is not taken which is among other challenges broiler face.

Table 4.21 Reporting to the technical experts

Do you report to the technical expert	Frequency	Percent
Yes	46	92.0
No	4	8.0
Total	50	100.0

The study was able to reveal from the analysis in table 4.20 that 92% of the farmers do report to the technical person when a problem occurs with their broiler chicks. Only 8% indicated they do not report to the technical expert but to other experienced broiler farmers.

4.5.5 Whom do you report to when problems occurs to your broiler chicks apart from the technical expert

For the 8% who responded NO to the question that they do not report to any technical expert when a problem occurs with their broiler chicks, some indicated that they have not found any challenge yet while other indicated they consult other experienced broiler farmers. Thus, broiler farmers with more years in broiler farming can be categorised as technical expert and that shows that they is learning among the broiler farmers.

4.6 Broiler farmers support groups

The study also sought to understand if there are any broiler farmers support groups which would greatly influence the performance of broiler farming with sharing of information, markets, and representation in government.

4.6.1 Membership to a broiler farmers support group

The Table 4.22 shows farmers indication whether they belonged to any support group specifically for broiler farmers.

Table 4.22 Membership to a broiler support group

Do your belong to a broiler farmers support group	Frequency	Percent
Yes	10	20.0
No	40	80.0
Total	50	100.0

Table 4.21 reveals that 80% of the respondents did not belong to any broiler farmers support group. Only 20% farmers indicated they belonged to a group. This means that broiler support group is a new phenomenon.

4.6.2 Which broiler support group do farmers belong

For the 20% of the farmers who indicated they belong to a group from the previous question, they gave the following groups they have among the broiler farmers:

1. Friends in broiler production (Nyeri County)
2. Wealth creation group
3. Mt. Kenya Chicken farmers
4. Nyeri broiler farmers
5. Embasaka broiler farmers
6. Kenya broiler farmers

4.6.3 Self-help group (SHG) available for broiler farmers only

The farmers were asked to indicate if there was any SHG specifically for broiler farmers and Table 4.23 shows their responses. SHGs help in members supporting each other financially, with information and representation.

Table 4.23 Broiler farmers' self-help groups (SHGs) available

Broiler farmers SHG available	Frequency	Percent
Yes	3	6.0
No	47	94.0
Total	50	100.0

The study sought to investigate if there are SHGs specifically for broiler farmers in Nyeri County. The table 4.22 reveals that 94% of the respondents indicated that there were no SHGs for Broiler farmers while only 6% of the farmers indicated there were SHGs for broiler farmers. This means that there is almost no financial support group for broiler farmers.

4.6.4 Name of the Self-help group for broiler farmers

The 6% respondents of the previous questions who indicated that there are SHGs available for broiler farmers also gave the following names of the SHGs;

1. Nyeri Broiler Farmers
2. Kenya Broiler Farmers

This reveals that that are only two SHGs that financially support broiler farmers which apparently are not know by many broiler farmers.

4.6.5 Agricultural Cooperative Society composed of Broiler Farmers

The broiler farmers were also asked to indicate if there was an agricultural cooperative society specifically for broiler farmers and Table 4.24 was able to capture the broilers farmers responses.

Table 4.24 Broiler farmers Agricultural Cooperative Society

Is there an Agricultural Cooperative Society for Broiler Farmers only	Frequency	Percent
No	50	100.0

From the analysis in Table 4.23, 100% farmers responded that there is no any ACS for broiler farmers like other livestock farmers. This explains that there is no clear representation in government for broiler farmers.

4.6.6 Social Network group for Broiler farmers

With technologically changing world, social network is vital for any industry and helps in enhancing performance in many ways. Broiler farmers were asked to indicate if there was any social network group for broiler farmers specifically in Nyeri County and Table 4.25 shows the farmers' responses.

Table 4.25 Broiler farmers Social Network groups

What social network group for broiler farmers is there in Nyeri County	Frequency	Percent
WhatsApp group	8	16.0
None	42	84.0
Total	50	100.0

The study also sought to find out what social network groups such as a poultry website, Facebook account and a WhatsApp group that Nyeri county small scale broiler farmers have access to or belong to. According to Table 4.24, 84% farmers indicated a whatsapp group. There was no farmer who knows of a Facebook account or a poultry website specifically for Nyeri County broiler Farmers. Only 16% indicated knowledge of a WhatsApp group. This explains that the support mechanism for broiler farmers is almost not there.

4.7 Capacity Building

The researcher also wanted to understand the trainings either formal or informal that broiler farmers have attended and how they influence the performance on small scale broiler farming.

4.7.1 Number of workshops, trainings or seminars attended on broiler rearing

The Table 4.26 was able to capture the number trainings, seminars or workshops that farmers had ever attended on rearing broiler chicks before and after they started rearing broilers.

Table 4.26 Number of trainings on broiler rearing

Number of workshops, trainings or seminars attended since starting to rear broiler chicks	Frequency	Percent
Once	7	14.0
Twice	13	26.0
More than five	25	50.0
None	5	10.0
Total	50	100.0

Table 4.25 reveals 50% of the respondents have attended more than five workshops, seminars or trainings on broiler farming. Following are 26% who have attended twice while 14% have attended once. Only 10% have never attended any workshop, seminar or training on broiler rearing. This explains 90% farmers had attended any training either formal or informal on broiler rearing before and during their broiler farming. This means that trainings are vital in broiler farming.

4.7.2 Sponsors of the trainings, workshops and seminars on broiler rearing

The Study also sought to find out from the farmers, who sponsors or organisers the trainings, workshops or seminars that broiler farmer attend and Table 4.27 was able to capture that.

Table 4.27 Sponsors of the trainings, seminars and workshops

Who are the sponsors of workshops, trainings and seminars	Frequency	Percent
Private Veterinary	1	2.0
Drugs sales person	2	4.0
Broiler feed sales person	18	36.0
Breeders sales person	24	48.0
None	5	10.0
Total	50	100.0

The study went ahead to inquire from the positive respondents of the previous question who was sponsoring the workshop, training and seminars that the attended. 48% of the farmers indicated that breeders sales person sponsored their training while 36% indicated it was broiler feed sales person. 2% and 4% indicated it was a private veterinary and drugs sales person respectively. 10% indicated it was none of the above. It was noted that government agricultural officers and the NGOs did not sponsor any training.

4.8 Level of satisfaction in broiler poultry farming

The Table 4.28 was able to capture the level of satisfaction of the broiler farmers which is an indicator of performance since you they have to be enjoying the business apart from the profits gained to keep doing it.

Table 4.28 Level of satisfaction in broiler farming

Rate the level of satisfaction on broiler poultry farming	Frequency	Percent
satisfactory	18	36.0
Slightly satisfactory	29	58.0
Not satisfactory	3	6.0
Total	50	100.0

Table 4.27 reveals that 58% indicated that broiler farming to them is slightly satisfactory while 36% indicated it to be satisfaction and only 6% indicated it as not satisfactory. It means that 94% of farmers have a level of satisfaction in broiler farming which comes with not just making profits but enjoying the business since there are other benefits such as availability of white meat and keeping one busy while making progress in knowledge and skills.

4.9 Level of profits from broiler farming as a business venture

The study also sought to know the level of profitability that broiler farmers would rate their broiler farming. Since this is a business venture, performance is measured also by the level of profits gained. The Table 4.29 shows the broiler farmers' responses if the broiler venture was profitable, slightly profitable or not profitable since it was vital for the study.

Table 4.29 Level of profits from broiler farming

Rate the level of profits from broiler farming as a business venture	Frequency	Percent
Profitable	11	22.0
Slightly profitable	39	78.0
Total	50	100.0

The table 4.28 revealed that 78% of the farmers were gaining profits slightly while 22% indicated it as a profitable business venture. This shows that broiler farming is considered a profitable business for the small scale broiler farmers in the study.

4.10 Level of performance of small scale broiler farming

The Table 4.30 shows the level of performance of the broiler farming among small scale farmers. This was determined by the number of years in broiler rearing, the level of satisfaction, the profits made and the increase of broiler chicks over the years of rearing.

Table 4.30 Level of performance in small scale broiler farming

The level of performance of broiler farming	Frequency	Percent
High Performance	22	44.0
Fair Performance	22	44.0
Low Performance	6	12.0
Total	50	100.0

Table 4.30 reveals the rating of performance among farmers. 44% would be rated as highly performing while 44% were rated as fairly performing. 12% were rated as low performing. This means that broiler farming performs indicated by 88%, as a business venture that is why we have many farmers still in the business.

4.11 Observation Schedule Analysis

The second research instrument was the observation schedule that was conducted in 15 small scale broiler farms.

4.11.1 Number of broiler chicken being reared

The Table 4.31 shows the number of broiler chicks that were being reared at the time of the farm visit by the researcher to ascertain the farmer was rearing broilers.

Table 4.31 Number of chicken being reared

Number of broiler chicken being reared	Frequency	Percent
Less than 500	4	26.7
500 - 1000	5	33.3
1000 - 2000	6	40.0
Total	15	100.0

The table 4.31 shows that during the time of observation schedule, 40% of the farmers were rearing 1000-2000 broiler chicken while 33% were rearing 500 -1000 and only 26% were rearing 500 chicken and below. This reveals that majority of farmers were rearing 500 chicks and above at a go and that shows growth.

4.11.2 Age of the flock size

The Age of the flock size was also very important as it would indicate if all farmers were rearing chicks to harvest them at the same time and Table 4.32 shows the age of the broiler chicks at the time of the observation. This is because broiler reared is affected like any other business by the demand and supply theory.

Table 4.32 Age of the flock size

Age of the flock size	Frequency	Percent
Less than 21 days	4	26.7
28 - 42 Days	6	40.0
42 Days and above	5	33.3
Total	15	100.0

The table 4.32 reveals that 40% of the farms that were observed had chicks between the age of 28 – 42 days while 33% had chicks of 42 days and above. 26% farms had chicks with less than 21 days. This shows that majority farmers had chicken within the same age since they took them at the same time and who would sell then at the same time.

4.11.3 Type of records in the chicken house

The was the need to see the type of records that the farmers kept for their farms and prove what was their main focus in monitoring and evaluating their chicks performance and Table 4.33 capture the main records that farmers kept in the farms on broiler rearing.

Table 4.33 Type of records available

Type of records available observed	Frequency	Percent
Feed Intake Records	9	60.0
Mortality and Culls Records	6	40.0
Total	15	100.0

Table 4.33 reveals the records that were observed in the broiler farms. 60% were feed records only while 40% were mortality and culls records. This reveals that farmers only kept feed and mortality records to monitor and evaluate their flock performance.

4.11.4 Interest of the farmer in keeping any type of rearing record in the farm

As the researcher was conducting her observation schedule, The Table 4.34 shows a rating on how the farmers valued the keeping of rearing records and this was according to interest shown in referring to their records and the keenness to monitor the flock size and performance.

Table 4.34 Interest in keeping any type of records in the farm

Rate of interest in records keeping	Frequency	Percent
Interested	14	93.3
Slightly interested	1	6.7
Total	15	100.0

Table 4.33 reveals that 93% of the farmers were interested in record keeping in their broiler farms while the remaining 6.7% had slight interest in keeping any type of rearing records. This shows that broiler farmers have an interest of keeping rearing records as according to the farmers' choice of either keeping feed or mortality records.

4.11.5 Type of feed and water equipment

The Table 4.35 shows the type of feed and water equipment used by the farmers which was important since it was an indicator if farmers can be able to measure the feed and water intake, and at the same time, it show the business level since the better the equipment the more the investment in the farming which proves the business is performing.

Table 4.35 Type of feed and water equipment

Type of feed and water equipment	Frequency	Percent
Semiautomatic	10	66.7
Others	5	33.3
Total	15	100.0

Table 4.34 reveals that 67% of the farms observed had semiautomatic feed and water equipment for the broilers while 33% had the manual equipment. This shows that majority of the farmers had invested in automatic drinkers while the feed equipment were manual that showed that they were keen in investing in enhancing their farming methods.

4.11.6 Type of chicken house structure

The Table 4.36 shows the chicken house structure which was also important to be observed as it indicated the level of investment in broiler farming which means that the farmers had gained in the business over time.

Table 4.36 Type of chicken house structure

Type of chicken House structure	Frequency	Percent
Permanent	3	20.0
Semi-Permanent	6	40.0
Temporary	6	40.0
Total	15	100.0

Table 4.35 reveals that 15 of the farms visited, 40% had semi-permanent broiler chicken house which means that they had used timber for the walls, as well as 40% had temporary chicken house structures which means they used earth ware and the floor was earth. Only 20% of the farms had permanent chicken structure meaning they were made of stone with cemented floor.

4.11.7 Farm workers employed

The Table 4.37 shows the presence or absence of Farm workers which was vital in indicating if the farm was making enough money or the workload was high to afford a worker, or if the owner had another occupation and had to hire workers to stay for the day.

Table 4.37 Farm workers employed

Are there farm workers employed	Frequency	Percent
Yes	8	53.3
No	7	46.7
Total	15	100.0

Table 4.36 reveals that 53% of the broiler farms had farm workers employed apart from the owner while 47% did not have farm workers. This shows that most farmers were part time broiler farmers as earlier studies showed hence the need to have a farm worker to rear the chicks when the owner is not there. The other notion is that the farmer was able to make enough money to afford to hire a worker hence broiler farming was making even.

4.11.8 Visits made by the technical expert in the farm

The Table 4.38 shows if there was any record showing if there was any technical expert who visited the farms, indicated they did visit or a follow up in case of a problem in the farm. A signature, a receipt or a written note is what was needed to prove that.

Table 4.38 Records of visits by technical expert

Records of visits by technical expert in the farm	Frequency	Percent
No	15	100.0

The table 4.37 reveals that there was 100% no record showing that technical experts visits the farm. This shows that there is no planned visits made by the technical exert in the farms and so no follow up. This is supported by earlier findings that showed that there no government agricultural extension officer for broiler farming in Nyeri County and most of the technical expert are feed and breeders' sales person who could be mainly coming to market and supply their products.

4.11.9 Literature materials on broiler farming in the farm

Table 4.39 shows if there were any Literature material on broiler farming in the farm or chicken houses which was also important as an indicator if farmers referred to them or farm workers used them to guide them in the rearing stages.

Table 4.39 Literature materials on broiler farming in the farm

Are there literature materials on broiler farming in the farm	Frequency	Percent
Yes	3	20.0
No	12	80.0
Total	15	100.0

Table 4.38 reveals that in 80% of the farms observed, there was no literature materials on broiler farming, while only in 20% of the farms were there few literature materials on broiler farming. This shows that most farmers never referred to any written materials. This can be supported by the fact that many famers have many years in broiler rearing hence have acquired the knowledge and skills well. This also means that farms workers if any had to be given instructed by the owner or acquired them as well.

4.12 Correlations between the Variables and the performance of small scale broiler farming in Nyeri County

The study also sought to show how the four variables; keeping rearing records, farm visits by the technical experts, broiler support groups and capacity building, influences the performance of small scale broiler farming in Nyeri County. Pearson correlation is used for each variable accordingly.

Table 4.40 Pearson Correlation of keeping daily rearing records and performance of small scale broiler farming

The Table 4.40 showed from the study, the relationship between the utilization of daily rearing records as a monitoring and evaluation tool, and the performance of small scale broiler farming through the Pearson correlation.

Correlations			
		Records	Performance
Records	Pearson Correlation	1	-.100
	Sig. (2-tailed)		.489
	N	50	50
Performance	Pearson Correlation	-.100	1
	Sig. (2-tailed)	.489	
	N	50	50

Table 4.39 shows that there no or negligible relationship (-0.1) between keep daily rearing records and the performance of broiler farming among small scale farmers. The results show that records keeping though vital in any business did not influence performance in broiler

farming. This explains that farmers keeping record or not did not influence their performance and if there any that were kept, it was for feeds and mortality. This is according to earlier findings which showed that only records on feeds and mortality are highly kept.

Table 4.41 Pearson correlation of farm visits by the technical experts

Table 4.41 shows the relationship between the utilization of farm visits by the technical experts as a monitoring and evaluation tool, and the performance of small scale broiler farming using the Pearson correlation.

Correlations			
		Visits	Performance
Visits	Pearson Correlation	1	-.240
	Sig. (2-tailed)		.093
	N	50	50
Performance	Pearson Correlation	-.240	1
	Sig. (2-tailed)	.093	
	N	50	50

The Table 4.40 shows that there is a weak negative relationship (-0.240) between farm visits made by technical expert, and the performance of small scale broiler farming. This shows that farm visits to the broiler farms did not influence performance of broiler rearing. The findings could be attributed to the fact that there is not specified agricultural extension officer assigned by government to assist broiler poultry farmers thus they did not have farm visit at a regular basis. This is consistent with earlier findings that breeders and feeds sales people are the ones who visit their farms and they could be visiting as they market or deliver their products thus not on a regular basis.

Table 4.42 Pearson correlation of Farmers support group and performance of small scale broiler farming

The Table 4.42 shows the relationship between the utilization of farmers support groups as a monitoring and evaluation tool, and the performance of small scale broiler farming in Nyeri County using the Pearson Correlation.

Correlations

		Group	Performance
Group	Pearson Correlation	1	-.163
	Sig. (2-tailed)		.259
	N	50	50
Performance	Pearson Correlation	-.163	1
	Sig. (2-tailed)	.259	
	N	50	50

The table 4.41 shows that there is a weak negative relationship (-0.163) between the farmers support groups and the performance of broiler farming. The results show that farmers support groups did not influence the performance of small scale broiler farming. The findings could be attributed to the fact that only few farmers had formed their own whatsapp groups and were in Self-help groups according to the earlier findings which show most farmers did not belong to any group and there was no cooperative society for broiler farmers.

Table 4.43 Pearson Correlation of capacity building and performance of small scale broiler farming

From the study findings, the Table 4.43 shows the relationship between the utilization of capacity building as a monitoring and evaluation tool, and the performance of small scale broiler farming in Nyeri County using the Pearson correlation.

Correlations

		Trainings	Performance
Trainings	Pearson Correlation	1	.068
	Sig. (2-tailed)		.639
	N	50	50
Performance	Pearson Correlation	.068	1
	Sig. (2-tailed)	.639	
	N	50	50

The table 4.42 shows that there is positive negligible relationship (0.68) between the trainings on broiler rearing with the performance. The results show that trainings either formal or formal did influence the performance of broiler farming among small scale farmers. This is the only positive correlation which mean that these findings can be attributed to the fact that training in broiler farming is vital since thy are delicate birds and require a level of technical knowledge to rear them successfully. This is consistent with the earlier findings in this study that 90% of the farmers have attended at least a single training on broiler farming since they started rearing broiler chicks.

The study also was able to capture from one respondent that the challenges of broiler farming are market availability, capital to buy chicks and high feed prices.

CHAPTER FIVE

SUMMARY OF THE FINDINGS, DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary of the findings, discussion, conclusions and recommendations emanating from the results of his study, to understand how utilization of monitoring and evaluation tools identified influences the performance of small scale broiler poultry farming in Nyeri County.

5.2 Summary of the major findings

The study focused on influence of the utilization of monitoring and evaluation tools on the performance of small scale broiler poultry farming projects in Nyeri County, Kenya. The study was guided by the following objectives: establish how daily rearing records influence the performance of small scale broiler farming; assess the extent to farm visits by the technical experts influences the performance of small scale broiler farming; analyse how broiler farmers support groups influences the performance of small scale broiler farming; determine how capacity building influence the performance of small scale broiler farming.

5.2.1 To establish how daily rearing records influence the performance of small scale broiler farming in Nyeri County

The study showed that daily rearing records do not have an influence of the performance of small scale broiler farming projects. The study went ahead to reveal that while a business is as good as its records, 72% of the farmers do keep a record of their feed intake but not the water intake. This is because over 54% have semi-automatic equipment meaning that only the drinkers are automatic while the feeders are manually operated, while 28% used manual equipment meaning that monitoring daily feed and water intake is not easily possible. They can only monitor the number of bags of feed per flock. The farmers also vary in the number of times they give feed to their broilers with 50% giving twice in a day which is in the morning and evening for those who have a regular job and have to leave the farm. The other 50% give from three times to more since they are full time broiler farmers or they have farm workers to assist them.

Mortality is vital in broiler farming since it represents loss and 90% of the farmers are keen on keeping the records while weighing is not considered important in monitoring the growth progress of the chicks with 88% not weighing their chicks. 60% do not have a weighing machine for broiler chicks meaning that the buyer is the one who weighs the chicken at the

point of sale and so that can be a challenge for a farmer if the chicks do not reach the right weight. General observation is very important since broiler chicks are delicate birds and 92% note any unique observation and it helps them monitor the progress.

The study found out that daily rearing record keeping is vital but most farmers are not keen on all the aspects but only with the feed intake, mortality and general observation.

5.2.2 To assess the extent to farm visits by the technical experts influences the performance of small scale broiler farming

Farm visit by the technical expert, according to the study, did not influence the performance of small scale broiler farming. The study revealed that there was no agricultural extension officer visiting broiler farmers. Broiler feed sales people and Broiler breeders' sales people were the major technical experts that visited the farms with 28% and 48% farmers indicating them. 12% indicated private veterinary while 2% indicated the drugs sales people. 2% farmers indicated they never had a technical expert visit their farms while 8% indicated others such as the experienced broiler farmers.

The study revealed that there is not specific technical expert who visits the farms but the breeders and feed sales person are the ones who do visit with 66% farmers indicating they visit once or more in a flock life span with 34% indicating that there is not technical expert who visits their farms and they operate successfully. 92% farmers indicate they do report to a the above technical experts when a problem such as a disease outbreak with 8% indicating they never with other indicating they did not have a challenge with their chicks warranting the visits of a technical expert. Other technical experts indicated were the experienced broiler farmers who gave advice and guidelines to the new farmers. It shows that technical consultation was very minimal in broiler farming or it was not there.

5.2.3 To analyse how broiler farmers support groups influences the performance of small scale broiler farming

Availability of broiler support group does not influence the performance of small scale broiler farming projects. This study showed that 80% of the farmers did not belong to any group composed of broiler farmers with 6% indicated they belong to one with the following names;

1. Friends in broiler production (Nyeri County)
2. Wealth creation group

3. Mt. Kenya Chicken farmers
4. Nyeri broiler farmers
5. Embasaka broiler farmers
6. Kenya broiler farmers

The study also revealed that there 94% of the farmers did not belong to any Self-help group while only 6% belonged to two broiler SHGs whose names were: Nyeri Broiler Farmers and Kenya Broiler Farmers. This could mean that there are only two financial support institutions specifically for broiler farmers and which very few belonged to. The study showed that there is no Agricultural Cooperative society for broiler farmers and that can mean that there is no exact government representation. The other support system is through the social network in which 84% did not know of a poultry website, facebook group or a whatsApp group specifically for broiler farmers in Nyeri County while only 16% knew and belong to broiler farmers' whatsApp groups.

5.2.4 To determine how capacity building influence the performance of small scale broiler farming

Capacity building does influence the performance of small scale broiler farming projects according to the study and the correlation .The findings revealed that 50% of the farmers had attended broiler rearing training, workshop or seminar more than five times before they ventured in the farming, with 26% having attended twice and 14% once. Only 10% had not attended any training. This study showed that broiler rearing capacity building is vital and influence the performance of broiler farming. The study also showed that most of the capacity building was sponsored by the broiler breeders companies followed by the broiler feed companies at 48% and 36% respectively. 4% farmers indicated that trainings were sponsored by the drugs companies and 2% by private veterinary. Government technical expert and NGO did not sponsor any training and that can shows there is no evidence of government involvement in broiler farming in Nyeri County.

5.2.5 Performance of small scale broiler farming Project

The study target was small scale broiler poultry farmers who were rearing 2000 chicks per flock in three constituencies in Nyeri County. Performance was being measured according to the four indicators:

Level of Profitability

Level of Satisfaction

Number of years in broiler farming

Increase in the number of chicks per flock over the years

The study revealed that 44% farmers are highly performing and the same percent are slightly performing with 12% low performing. This shows that more than 80% of the respondents can be categorized as performing well to sustain the farming as a business venture.

5.3 Discussion of the findings

The research found out that majority of the small scale broiler farmers were women who represented more than half of the respondents and thus broiler farming is dominated by women. This findings support a report that 70% of the poultry farmers in Africa are women (African Farming and Food Processing, 2015). Majority of the respondents were between the age of 41 – 50 years followed by the farmers who were 50 years and above. This may be associated to broiler farming being a delicate business endeavour with paying as time goes by hence the older people can be patience to make even. Also starting broiler farming needs rather high capital and land and most young people do not have the land and the capital to start that venture.

Majority of the respondents were married with more than half of the respondents having 3-5 family members and less than 30% having more than 5 family members. The findings showed that most farmers are married with few family members and that can tell that they have enough capital and land to do broiler farming and can comfortably provide for their families white meat.

The farming status of the farmers shows that majority of the farmers are doing it as a part time since they have regular jobs which is further explained with more than half of the farms visited having farm workers. The findings show that broiler farming is another source of income and a cheap source of white meat for family members. It is also to keep the farmers occupied when not on their regular jobs.

According to broiler farming management, it calls for a certain literacy level since its deals with vaccines, medicines and vitamins. The findings of this study show that all farmers had acquired education with the highest number having attained college and degree education with other farmers having acquired master's degree. This explains that broiler farming is an

attractive business venture that captures even the most literate farmers. The findings also show that it's a performing business and thus attracts the more educated people because they get returns.

The study also showed that almost all broiler farmers have an interest in keeping rearing records and have been keeping the feed intake, mortality, health status and general observation. The only records they have not been keeping is the weight gain progress per week which is also very vital which is supported by Arcuri (2013) that, records help in keeping track of the progress of the farm and weight gain vital in broiler farming. Records are, of course, connected to the level of education and the study shows that all the respondents have achieved Primary education with majority having technical training and so keeping records would not be a challenge.

The study also revealed that the technical experts that visit broiler farms are the broiler breeders' sales people and the broiler feeds sales person. Other people who have been categorized as technical experts are farmers with many years in broiler farming. Though in all farms there were no records to show technical expert visits, they do report to a technical expert when a problem occurs. The study shows that there is no government representative or NGO representative in Nyeri County dealing with broiler farming which means that broiler farming is yet to engage with the government and the NGOs for its support especially in provision of one-on-one assistance as Muhammad (2004) stated.

Broiler farmers' involvement in support groups are important where Quazi (2013) notes skill improvement can only happen when broiler farmers are in groups comprising of only broiler farmers. According to the study, most of the farmers do not belong to any broiler support group and few respondents indicated of only two self-help groups. There is no Agricultural cooperative society specifically for broiler farmers and the only source of social media for Nyeri County broiler farmers is WhatsApp groups in which majority did not belong to.

The study has shown that capacity building is vital in broiler farming with almost all farmers having undergone a training prior to their rearing of broilers and as Huque (2013) notes that trainings is of the most important tool for skill acquisition and improvement. The sponsors for their capacity building sessions were the broiler breeders companies and the broiler feeds companies. This is supported by the study findings that the same companies' sales person, are the ones who make broiler farm visits. With no government involvement and the NGOs, the companies are the only sought out technical expertise to the broiler farmers.

The study also was able to grade the level of performance of all farmers with more than eighty percent being rated from fair to high performing. The study was able to show this through the number of years the farmers had been in broiler farming, the increase of chicks per flock reared over time, level of profitability and the level of satisfaction. This findings support a research conducted in Ondo State, Nigeria which showed that backyard poultry production either broiler or layers, is a profitable venture (Amos, 2006). Broiler farming is a good business amidst the challenges, most of the farmers are in it for more than two years and broiler farmers would not be in a business venture if it is not bringing in returns. Most farmer have temporary to permanent chicken structures and semi-automatic equipment meaning that there is a level of upgrading of structures and equipment which means that the business performs and is able to offer capital for farm improve to enhance performance.

The study was able to show that only the capacity building had positively influenced the performance of small scale broiler farming projects in Nyeri County. While utilization of daily rearing records, farms visits by the technical experts and the broiler farmers support groups are vital monitoring and evaluation tools, their utilization did not have a positive correlation with performance

5.4 Conclusion

Daily Rearing records are vital in farming ventures just as they are in any business. There is need to encourage small scale broiler farmers to give more attention to records to help them in the monitoring and evaluation of their performance. While each farmer is entitled to record keeping according to his/her desire, some vital information need to be captured daily such as the feed and water intake, mortality rate, weight gain per week, general observation as well as the health status of their flocks.

Farm visits by the technical experts are also important and the government intervention is needed so that there is an availability of agricultural support officer who offers not only one-on-one support to broiler farming but also trains and avail to any farmer who faces challenges.

Farmers support groups are vital since network in the real business world is needed and farmers are not exceptional from those other business ventures. Farmers groups, self-help groups and their network on social media are important if they are to gain more in their farming.

Capacity building is the only monitoring and evaluation tool that influences the performance of broiler farming. Broiler farming is a delicate farming venture and involves vaccines, medicines and vitamins and thus training is most important to avoid loss of birds. Fortunately the main sponsors are the same companies that supply the chicks and feed meaning that their main interest is for their products to be bought and the absence of government and NGOs in training makes it hard to have farmers' voices heard and their complaints addressed. No wonder the main challenge of broiler farmers are good market availability, capital to buy their day old chicks and the high feed prices are yet to be addressed.

5.5 Recommendation

1. There is need for a simplified broiler daily rearing record to be designed with the involvement of broiler farmers so that they can have uniform monitoring and evaluation of their farming. This can help farmers track down their progress easily and measure their performance at a glance
2. There is clear need for broiler farmers to form support groups where forums for sharing information and assisting each other in their farming can be going on. Broiler farmers are no exceptional from other livestock farmers who have agricultural cooperative societies so there is need for one so that there is clear government intervention. This support group will also come as self-help groups and offer financial support at a discounted prices for the capital and feed prices that seem to be some of the main challenge in broiler farming. With the technology advances, social media is also another source of support group that farmers need to embrace to be at par with the technologically changing world.
3. The government involvement in broiler farming cannot be over emphasised since most of the capacity building and the technical experts are from the private companies who supply chicks and feed to broiler farming. Government involvement always comes in to regulate and assist the farmer to make farming easy, successful and profitable.

5.6 Suggested areas of further research

The study was limited in its scope of the monitoring and evaluation tools utilized by small scale farmers as well as the target population of broiler farmers in Nyeri. Based on the research findings, the researcher suggests other researches could be conducted to explore more from this research and hence build more knowledge that would be very helpful to the broiler poultry farmers and the poultry industry as well. The two suggestions are listed below:

1. Further research on the utilization of other monitoring and evaluation tools that influence the broiler poultry farming
2. Further research on how Government and NGOs can get involved in broiler poultry farming

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APPENDICES

Appendix 1: Letter of Transmittal

Reginah Wanyahoro,

P. O. Box 511,

Nyeri

Date.....

Dear Respondent,

Ref: Kindly Participate in the Research

I am a Postgraduate student pursuing Master Degree in Project Planning and Management at The University of Nairobi and I am currently carrying out a research on *the Influence of the utilization of monitoring and evaluation tools on the Performance of Small Scale Broiler Poultry Project: A Case of Nyeri County, Kenya*. You are kindly requested to take part in the study. In order to ensure outmost confidentiality, do not write your name anywhere in this questionnaire. The findings of this study will be used only for research purposes.

Thank you for your cooperation.

Yours Faithfully,

Reginah Wairimu Wanyahoro,

L50/71647/2014

Appendix 2: Questionnaire for the Small Scale Broiler Farmers

Please tick in the appropriate box and also fill in the blank spaces provided for those questions where elaborate answers are required. Please do not include your name on the questionnaire. Participation will be voluntary and information will be used for research only. Kindly spare your time to provide answers as honestly and objectively as possible.

Constituency Name: _____

Location: _____

Section A: Demographical Characteristics

1. What is your gender?

Male ()

Female ()

2. Please indicate your age group

Below 20 years ()

21 – 30 years ()

31- 40 years ()

41 – 50 years ()

Above 50 years ()

3. What is your marital Status?

Married ()

Single ()

Other (specify) _____

4. What is your family size?

Less than 3 ()

Between 3 – 5 ()

More than 5 ()

5. What is your Broiler Poultry Farming status?

Full Time Farming ()

Part Time Farming ()

6. Please indicate the highest level of education you attained.

Never attended School ()

Primary School ()

Secondary School ()

University ()

Others (Specify) _____

7. How long have you practised broiler poultry farming?

Less than one year ()

Less than two years ()

More than two years ()

8. How many broiler chicks did you start rearing for the first time?
Less than 100 () less than 200 () less than 500 ()
9. How many broiler chicks are you keeping currently?
Less than 500 () 501 - 1000 () 1000 – 2000 ()

Section B: Daily rearing records

10. Please indicate the type of feed and water equipment you use
a. Automatic equipment () b. Semi-automatic () c. Others ()
11. Do you keep every day records of feed and water intake by the broiler chicks?
Yes () No ()
12. How many times of the day do you give feed and water to the broiler chicks?
Twice () Thrice () Others _____
13. Do you note and record daily mortality rate of the broiler chicks?
Yes () No ()
14. Do you note and record the vaccines, medicines and vitamins administered to your broiler chicks as well as the day administered?
Yes () No ()
15. Do you own or have a weighing machine specifically for weighing broiler chicks?
Yes () No ()
16. Do you note and record weekly weights of your broiler chicks?
Yes () No ()
17. Do you observe and note the general behaviour of your broiler chicks?
Yes () No ()

Section C: Farm Visits by the technical Experts

18. Please indicate the technical expert who visits your farm to assist you.

Veterinary () Agriculture Extension office () Feed sales person ()

Drugs sales person () Breeders Sales person () None ()

Others: _____

19. If YES to any of the above, how many times does the technical person visit your farm during a flock life span?

Once () Twice () More than five times () None ()

20. Do you report to the technical person when a problem with your broiler chicks occurs?

Yes () No ()

21. If NO, whom do you report to if a problem occurs with your broiler chicks in your farm?

Section D: Broiler Farmers support groups

22. Do you belong to any Broiler farmers support group?

Yes () No ()

23. If YES, what is the name of the support group you belong to?

24. Are there self-help groups available for broiler farmers only?

Yes () No ()

25. If YES, what are their names? _____

26. Is there an Agricultural Cooperative Society composed of broiler farmers only?

Yes () No ()

27. Do you have any of the below for the broiler farmers of Nyeri County?

Poultry site Yes () No ()

Facebook account Yes () No ()

WhatsApp group Yes () No ()

None _____

Section D: Capacity buildings/ trainings

28. How many workshops, trainings or seminars have you attended on broiler rearing since you started rearing broiler chicks?

Once () Twice () More than five () None ()

29. If attended any, please indicate the sponsors of the trainings, workshops or seminars on broiler rearing you have attended?

Government technical experts ()

Private veterinary ()

Drugs sales person ()

Broiler feed sales person ()

Breeder sales person ()

30. In a scale of 1 – 3, what would you rate your level of satisfaction on broiler poultry farming?

1=Satisfactory 2=slightly satisfactory 3=Not satisfactory

1 () 2 () 3 ()

31. In a scale of 1- 3, would you rate the level of profits from the broiler farming as a business venture?

1=profitable 2=slightly profitable 3=Not profitable

1 () 2 () 3 ()

Appendix 3: Observation Schedule for Small Scale Broiler Farms

Constituency Name: _____

Location: _____

Farm Number: _____

1. Number of Chicken being Reared

Less than 500 () 500 – 1000 () 1000 – 2000 ()

2. Age of the flock size

Less than 21 days () 28 – 42 Days () 42 days and above ()

3. Type of Records in the chicken house>

Feed Intake Records ()

Water Intake Records ()

Mortality and Culls Records ()

Health Status Records ()

Vaccination administered Records ()

Vitamins Records ()

Medicines administered Records ()

General Observation records ()

4. Type of feed and water equipment

Automatic () Semiautomatic () Others _____

5. Type of chicken Structure:

Permanent () Semi Permanent () Temporary ()

6. Are there farm workers employed?

Yes () No ()

7. Are the records kept in the farm helpful in measuring broiler performance?

Yes () No ()

8. Is the farm owner interested on keeping farm records?

Yes () No ()

9. Are there literature materials on broiler farming to refer to in the farm?

Yes () No ()

Appendix 4: Determining Sample Size for a Finite Population

<i>N</i>	<i>S</i>	<i>N</i>	<i>S</i>	<i>N</i>	<i>S</i>
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	100000	384

Note.—*N* is population size. *S* is sample size.

Source: Krejcie & Morgan, 1970