ANALYSIS OF GENDER ROLES IN GOAT PRODUCTION MANAGEMENT IN SOME SELECTED LOCAL GOVERNMENT AREAS IN KANO STATE, NIGERIA

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SPS/15/MEX/00018

A Dissertation submitted to the Department of Agricultural Economics and Extension, Faculty of Agriculture , Bayero University, Kano in partial fulfilment of the requirements for the award of the degree of master of science agricultural extension.

JUNE, 2019

DECLARATION

I hereby declare that this work is the product of my own research efforts; undertaken under the supervision of Prof. M. I. Daneji and Dr. I. Tafida, and it has not been presented and will not be presented elsewhere for the award of a degree certificate. All sources have been duly acknowledged.

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CERTIFICATION

This is to certify that the research work for this dissertation and the subsequent preparation of this Dissertation by Nurudeen Olayinka, Sabitu (SPS/15/MEX/00018) were carried out under our supervision.

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LIST OF ACRONYMS/ ABBREVIATIONS

FAO Food and Agriculture Organization

IFAD International Fund for Agricultural Development

ILRI International Livestock Research Institutes

ADF African Development Fund

CAH Congenital Adrenal Hyperplasia

TS Turner Syndrome

HH Household

ABSTRACT

The study on analysis of gender roles in goat production management in some selected Local Government Areas of Kano State was aimed at analyzing gender roles of goat production management activities. Multi-stage sampling techniques was used to arrived at sample size. Primary data was collected with the aid of structure questionnaire from the 143 randomly selected from goat farmers; 77 male and 66 female respectively. Data collected was analyzed using descriptive and inferential statistics. The result shows that the mean annual income for male and female goat farmers was ₦51,506.49 and ₦33,477.27 respectively. The mean herd size of 12 and 11 goats for male and female respectively. The result also reveals that 35.1% of male and 45.5% of female goat farmers received livestock extension services. The result of Logit regression revealed that the annual income, herd size and extension contact were positive and significant to goat production activities at 1%, 1%, and 10% level of significance respectively among the male goat farmers while the coefficient of annual income and herd size was positive and significant at 1% and 5% level of significance among the female goat farmer. However, the coefficient of household size was negative and significant at 10% level of significance in both male and female goat farmers. The result of harvard analysis shows that 76-100% male farmers were involved more on barn construction, fodder collection, medication and goat marketing while female goat farmers were involved more on feeding water provision as reveled by 76-100% while marketing goat among the female goats farmers constitutes 51-75%. The major constraints of goat production management are the prevalent of pest and disease.The study concluded that goat production were not gender sensitive and recommends pulling of funds by farmers association for access to credit facility by goat farmers.

CHAPTER ONE

1.0 INTRODUCTION

1.1 BACKGROUND OF THE STUDY

Livestock is considered a key asset for rural households worldwide and a primary livelihoodresource for rural communities; about 752 million of the world's poor keep livestock toproduce food, generate cash income, manage risks and build up assets (FAO, 2012). Livestock"widens and sustains three major pathways out of poverty, securing the assets of the poor, improving smallholder and pastoral productivity and increasing market participationby the poor" (ILRI, 2007). Especially in rural areas, the development of small-scale livestockenterprises must be seen as a key element of any efforts to eradicate extreme poverty andhunger (FAO, 2010).Livestock sector is performing a vital role in the economies of many developing countries where it is a source of animal protein (food), income, employment and foreign exchange. For small income producers, it provides draught power and organic fertilizer for crop production; serves as store of wealth and means of transportation as well (Garcia, Mahmood&Hemme, 2003).Livestock sector has an acknowledged importance in the rural economy. Apart from providing income to rural people, livestock provides animal protein of high biological value in the form of milk, meat and eggs which is a base for industrial raw materials like: wool, hides, skins, organic fertilizer for crops, security against crop failures and financial support in hard times of the farmers. In this way, livestock development is the driving force for rural development.

The Nigerian livestock sector has been a source of well-being for many citizens, particularly for the rural dwellers(Umar and Ben, 2014). The sector is the second largest employer of labour,

next only to crop enterprise, contributing about 25% of annual agricultural GDP and over 5% of total national GDP (Mbanasor, 2000). Livestock production in Nigeria is an integrated economic activity which contributes around 5-6 percent of the Gross domestic Products (GDP) and about 20 percent of the Agricultural component ofGDP. Livestock therefore plays a major role in socio-economic development of the nation. Between 70-80 percent of the nation's population are engaged in agriculture and livestock industry as their major occupation and source of livelihood (NAERLS and FDAE, 2013). Nigeria has an estimated livestock population of about 34.5 million goats, 22.1 million sheep and 13.9 million cattle (Lawal-Adebowale, 2012). Specifically, about 90 percent of the country's cattle population and 70 percent of the sheep and goat populations are concentrated in the northern region of the country (Tibi and Aphunu, 2010). The total net amount of livestock product has been estimated at about 1.1 million tones (Oluwafemi, Ilemobade and Laseinde, 2001).

Gender roles between women and men varies according to enterprise, farming system, technology used, culture, wealth status, religion and animal populations which are influenced by sociocultural and socio economic factors (Mulema, Farnworth and Colverson,2017).

Women dominated roles in goat management practices and husbandry were feeding/grazing, cleaning of barns, watering and done in conjunction with other activities (Zahra, Mulema, Converson, Odongo and Rischkowsky, 2014) whereas; men generally involved in barn preparation/construction, feeding, herding, sale/ marketing of animals (Kinati and Mulema, 2016).

1.2 STATEMENT OF THE PROBLEM

An existence of gender differences in resource control, assets ownership, income earning, consumption and expenditure have been identified as important factors in household security (Owotoki, 2005). Women's needs and issues are neglected or receivedlittle recognition (Akosile,2007). Their exclusion in decision making regarding allocation and utilization of processing resources makes women the last to benefit from development efforts, their needs and issues are also neglected or receive little recognition (Akosile, 2007).

Despite improvements in building women's capacities, gender gap in entitlement, the resources which women and men can command through available legal means continues to persist (Akinsanmi& Doppler, 2005). In most countries, research and planning activities in thelivestock sector are largely dominated by men. Official livestock services, extensionprograms, and educational materials are mainly controlled, designed, and extended by andoriented towards men. At present, in many societies, women's access to information andtraining in modern livestock management and dairying continues to be limited and evenindirect.Hence; Gender disparity in extension programs has long been acknowledged (Erbaugh, Donnermeyer, Amujal,&Kyamanywa, 2003). Based on the research that was carried out in developing countries (Jaitner, Sowe, Secka-Njie, &Dempfle, 2001; Lebbie, 2004; Shortall, 2000) women play a major role in small ruminant production. The foremost tasks of women in small ruminant production are milking, cleaning small ruminant barns, cutting and carrying grasses, grazing and mixing fodder. Women contribute a significant percentage of the labour to small ruminant production; however, it is not always recognized because men hold the structural authority. Despite women's significant role, educational or training programs about small ruminant production regarding women in rural areas are far from an acceptable level.Shafiq (2008) in traditional

society'swomen's work is under recorded in national accounts; it becomes difficult to see the real magnitude of their work in different fields(FAO, 2012).Also there are limited documentation and lack of gender specific information that disaggregated by sexes on roles, tasks and access to resources. Thus, there has been little analysis of the various roles in terms of gender study in the study area to show the information related to the gender analysis of goat productionmanagement.However; it is on the basis of these problems that this study was designed to answer the following research questions?

i. What are the effects of socio-economic characteristics on goatmanagement activities based on gender?
ii. What are the different roles played by men and women in goat management practices in the study area?
iii. Who has access and control overgoatproduction management in the study area?
iv. What are the types of Livestock extension services or advisory services received by goat farmers?
v. What are the constraints militating against goat production management activities in the study area?

1.3 OBJECTIVES OF THE STUDY

The broad objective of this study is to analyze gender roles of goat production managementpracticesin Kano state, Nigeria. The specific objectives are to;

i. Describethe effectsof socio-economic characteristicsof the farmers on goat management activities in the study area.
ii. determine the different roles played by menand women in goat management activities in the study area.

iii. find out the access and control over goat management practices based on gender

iv. find out the types of livestock extension services received by goat farmers,

v. describethe constraints militating againstgoat production management based on gender in the study are.

1.4 HYPOTHESIS OF THE STUDY

Ho: There is no significance relationship between socio-economic characteristics of the farmers and gender based role

1.5JUSTIFICATION OF THE STUDY

It is argued that commercialization of livestock production can lead to women losing out, whereby as production commercializes, women work more but they benefit less by controlling less income and such negative outcomes can be avoided by integrating gender in full research cycle and by conducting a gendered analysis that will inform the integration of transformative measures in the livestock developmentBirgit, Waithnanji, Poole and Cadilhon (2015). The importance of gender integration in the research process is more and more acknowledged a good practice in livestock Birgit, Waithnanji, Poole and Cadilhon(2015).

A complete description and analysis of the situation regarding women's and men's nature and extent of engagement in the production management of goat production management can attract development thinkers and thus orientate government and other institutions to organize women-focused programs or projects to train them and build their capacities in better and more profitable livestock farming that can raise family income and ultimately national income (FAO, 2013). It will contribute to achieving some of the development goals relating to Agriculture on gender issues; such as empowering the women especially landless rural women and alleviate poverty,

help in decision and policy making with that of programme and or project developing and implementation.

Therefore; this study is expected to provide concrete and empirical information to goat farmers, researchers, students, policy makers and other stake holders hence, contribute to researcher knowledge and students. Also expect to provide new orientation in gender resource management and gender access to goat productions for improving household's security.

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CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 CONCEPT AND DEFINITIONS OF GENDER

Gender refers to socially assigned roles and behaviour attributable to men and women (Deji, 2011).FAO (1997) defines the term gender not as a biological expression for distinguishing menand women but as a social construct to determine the perceptual and material relationshipsbetween both sexes. Gender is considered a central organizing principle of societies thatoften governs the processes of production and reproduction, consumption and distribution.Gender roles assign men and women their social definitions and vary among different societies, cultures, classes, ages, and in different point of times in the history. Gender rolesare often determined by household structure, access to resources, specific impacts of theglobal economy, and other local factors like ecological conditions.

In the words of IFAD (1999) “Gender analysis defines the socio-economic and evolving rolesand functions of men and women as they relate to and complement each other within aspecific socio-cultural and economic context”. FAO (1997) states that gender analysis seekanswers to fundamental questions such as who does or uses what, how and why. Despite sucha definition, gender is often misunderstood as being the promotion of women only. However,gender issues focus not only on women, but on the relationship between men and women,their roles, access to and control over resources, and division of labour and needs. Genderrelations determine household security, well-being of the family, planning, production andmany other aspects of life (Bravo-Baumann, 2000).In most farming systems, there is a division of labor. This determines the different tasks forwhich men and women are responsible. Generally, women have an important role in theproduction, processing, preservation, preparation and sale of staple crops.

Men tend to focuson market-oriented or cash crop production. Often we find a division in crop and livestockmanagement practices. Weeding is often a women's task, while spraying or fertilizerapplication is mainly carried out by men. Women and children often look after the smallerlivestock species and men are often in charge of cattle (FAO, 2005).

In rural societies, where local culture and traditions are still very vibrant, responsibilities andtasks are often assigned to women and men on the basis of traditional gender roles, definedas those behaviour and responsibilities that a society considers appropriate for men, women,boys and girls. These roles change over time, have different characteristics in every local contextand are shaped by ideological, religious, cultural, ethnic and economic factors. They are a keydeterminant of the distribution of resources and responsibilities between men and women(FAO, 2010).In many cases gender roles are biased and favour certain social constituencies at the expenseof others. Rural women, for instance, face serious obstacles more regularly than men, sincetraditional structures and perceptions tend to prevent them from obtaining the necessary toolsto reach their full potential in the agricultural sector. In fact, despite their major involvementin and contribution to livestock management, women tend to have limited access to resources,extension services and less participation in decision making compared to their male counterparts(FAO, 2011).

Gender analysis examines how the social roles of men and women are determined and how those roles affect the outcomes being studied. Although the term gender analysi*s* is often used to refer to studies that look at women, it is not possible to study women's behavior without considering the broader contexts facing both women and men. Gender analysis examines how the roles, rights, and responsibilities of men and women interact and how that affects outcomes (IFPRI, 2013).

Rural women perform a reproductiverole, encompassing child bearing, child rearing and Housework. At the same time, they also fulfill a productiverole, engaging in paid labour activities outside the house and/or being in charge of a number of tasks related to household farming activities, including livestock management. In some developing countries, they make on average up to 43 percent of the agricultural labour force and contribute substantially to the livestock management (FAO, 2011). Vulnerable households, especially rural women who represent half of smallholder farmers' population (World Bank, 1992), depend on livestock, especially small ruminants, for economic sustenance (Duku, Price, Tobi and Zijpp,2011); International Fund for Agriculture Development (IFAD, 2004). In rural livestock-based economies, rural women comprise two-thirds (approximately 400 million people) of low-income livestock keepers. In particular, activities related to small livestock production (sheep, and goats), milking and processing of milk, are carried out mainly by women and, to some extent, by children (Thornton, 2001; FAO, 2011). Since livestock is mostly raised by women, their participation is closely linked with economic empowerment and social wellbeing of women folk (Hamdani, 2002).Recognizing the different roles that women and men play in the agriculture sector is therefore a key toidentifying the diverse challenges they face and tailoring projects and programmes on theirspecific needs. Understanding and integrating these diverse roles and specific dynamicsinto projects and programmes can significantly improve their outcomes and effectiveness(FAO, IFAD, World Bank, 2007; FAO, 2011).

2.1.1 **Activity Analysis and Gender Division of Labour**

Activity analysis explores who does what type of work, distinguishing between productive, household and community roles

Productive work

Produces goods and services for home consumption and sale. This includes employment and self-employment in both the formal and informal sectors. Both women and men can be involved in productive work but their professions, activities and responsibilities often vary according to the gender division of labourproductiverole, engaging in paid labour activities outside the house and/or being in charge of a number of tasks related to household farming activities, including livestock management. In some developing countries, they make on average up to 43 percent of the agricultural labour force and contribute substantially to the livestock management (FAO, 2011). Active productive activities done by rural women in goat production include care and management of pregnant animals, new born kids and collection of manure, fodder carrying, chopping and taking animals for grazing were actively done by women where men were actively involved in cash generating activities like taking sick animals for medical treatment, caring animal for breeding, marketing of animal , taking the animal for vaccination, deworming the animal and construction of goat shed (Rajkumar and Kavithaa2014).

Household (reproductive) work

Involves the care and maintenance of the household and its members. Women tend to be most active in reproductive work, such as preparing food, collecting water and fuel, bearing and caring for children, caring for other household members, and maintaining the house. Men may be responsible for constructing the home, household security and decision-making (ILRI, 2007).

Rural women perform a reproductiverole, encompassing child bearing, child rearing and Housework (FAO, 2011).

2.1.2 Gender Access to, and Control of, Resources and Benefits

The distinction between access and control is significant. Access represents the right to use a resource or benefit whilst control represents the right to make decisions about the use of a resource or benefit. Thus a woman may have the right to use family labour to assist with weeding but her husband decides who will help her and when the labour is available(ILRI, 2007).It is only by closing the gender gap that sustainable agriculture and rural development can reach their full potential (FAO, 2011).The owners of and the people who have access to key resources and inputs. The concept of an individual owner who has the entire bundle of rights over the asset may not hold in many rural areas, one individual may have the right to sell the animal whereas another member of the household may have the milking rights (IFPRI, 2013) knowing whether the farmer owns the assets individually or jointly with a spouse or other family member is important. The rights and decisionmaking may vary depending on who owns the land. In addition, asking which names are on the ownership documents allows for gender analysis because it identifies the gender of the legal owner (IFPRI, 2013)

2.2 COMPARISON BETWEEN LARGE AND SMALL RUMINANTS

The importance of emphasizing small ruminant livestock production, (as opposed to large ruminant and non-ruminant production) not only for ensuring food security in rural regions, but also for helping to reduce poverty and increase overall household wellbeing (Devendra, 2001; Devendra and Chantalakhana, 2002; Dossa, Gauly and Wollny, 2007; Peacock, 2005). The emphasis is because sheep (*Ovisaries*) and goat (*Capra hircus*) (Lebbie, 2004) are more efficient in converting non-grain feed into quality meat compared with beef, pork and poultry (; Peacock, 2005). In smallholder agricultural economies, competition for productive inputs is lower for small ruminants than for other livestock (such as pigs, cattle and poultry) (Terril, 1985). Capital investment in housing and materials (such as iron sheets and wood)are lower for sheep and goat

production compared with other livestock (e.g. cattle) (Devendra, 1985). The smaller size of small ruminants also makes them more suitable for home consumption among poor households, thereby helping to improve the nutrition and animal protein requirements and food security situation of rural households (Oluwatayo and Oluwatayo, 2012). In tropical regions, sheep and goat often produce about twice as much meat per animal unit, compared with large ruminants such as cattle (Terril, 1985). About 90% of livestock is owned by smallholder farmers and landless ruralhouseholds. These small holders, especially the landless livestock holders, are extensivelydependent on income from the sale of milk and animals to meet their daily householdexpenses. Even in the mixed farming systems, livestock is the main source of cash income forrural households and a source of productive employment for the poor as well as women(Kakakhel, 2009).

2.3 THEORETICAL FRAMEWORK

Gender is one of the most salient and influential aspects of a person's identity. Gender influences a person's appearance, interests, activities, friendships, interpersonal styles, romantic relationships, and career decisions. Given the ubiquitous influence of gender in a person's life, a number of theories have been developed to explain gender development and differentiation. These theories can be generally divided into three families: biological, social, and cognitive.

Although other approaches exist, this entry highlighted the most influential theories within these domains.

2.3.1. Biological Theory

According to biological approaches, psychological and behavioral gender differences are due to the biological differences between males and females. Within this family of approaches, researchers focused on historical explanations, such as evolutionary processes, and proximal

explanations, such as genes and sex hormones. Evolutionary theorists, such as Buss(2000) and David Geary (1992), emphasize that the survival of the human species is dependent on successful reproduction; genes responsible for the strategies that lead to successful reproduction are more likely to be passed on to our descendants than the strategies that do not lead to reproductive success. This evolutionary process is believed to lead to psychological gender differences because the behaviors needed for successful reproduction require gender differences (Geary 1998; Buss 2000). Women have the physical responsibility of gestating and nourishing their offspring and, therefore, are only able to have a limited number of children. Given that women want their limited number of offspring to have high-level genes and to eventually reproduce, they look for mates who are likely to be good long-term providers. This leads women to be particular about the characteristics that they look for in a mate.

On the other hand, males are faced with the uncertainty of parenthood since they can never be sure that they are the biological father of their children. Evolutionary theorists believe that this leads males to be less choosey in their mates and to prefer to have multiple sexual partners with women who are young and attractive so they have a greater chance of reproducing. Males are also viewed as more aggressive than females because they are required to compete with other males for females who are choosey in selecting their male partners. In addition to explaining gender differences in mate preferences and aggression, evolutionary principles have been used to explain gender differences in jealousy (Buss, Larsen, Westen, and Semmelroth 1992), sex-typed toy preferences (Alexander 2003), and spatial abilities (Eals and Silverman 1992). Males have been hypothesized to have stronger spatial skills than females because they needed these skills to be successful at hunting, whereas spatial abilities were less important for women who stayed home to take care of the children (Eals and Silverman 1992). The differential roles of males and

females have also been used to explain why girls are more likely to prefer feminine toys and boys are more likely to prefer masculine toys (Alexander 2003). Gerianne Alexander proposes that the strategies needed for successful hunting has led the visual system of males to be sensitive to tracking the spatial movements of objects, which explains why boys prefer objects that elicit motion (e.g., cars). In contrast, the skills needed to forage for plant food (e.g., ability to discriminate red wavelengths) and take care of infants (e.g., ability to process facial expressions) has led females to be highly sensitivity to the features of objects, which is consistent with females' preferences for dolls and warm colors (Alexander 2003).

While the evolutionary perspective provides a universal explanation for gender differences, researchers in gender development have critiqued this approach on a few accounts.

Key concerns are that evolutionary explanations do not account for individual variations in gender-typed behavior and that other theories provide more testable hypotheses.

These limitations have led some theorists to focus more on proximal biological explanations of gender development. These approaches have generally focused on the roles of genes and hormones.

Researchers interested in this area have relied on studying nonhuman sex-typed behaviors or individuals who have disorders of sex development. When examining the role of genes in gender development, researchers have studied the effects of differences in the number and type of sex chromosomes. For instance, researchers who have manipulated genes in rodents have found evidence that genes on the Y chromosome affect the brain and behavior (De Vries, et al. 2000) however, there has been no evidence supporting this link in humans. Regarding the influence of the X chromosome, researchers have studied females with Turner syndrome (TS), which is caused by having an X chromosome that is missing or partially missing. Research with females

with TS has revealed that the X chromosome may be partly responsible for gender differences in spatial ability and social skills (Skuse et al. 1997).

Another method for studying proximal biological mechanisms has focused on the role of hormones. This research is based on the viewpoint that sex differentiated exposure to prenatal and/or postnatal hormones are responsible for gender differences in abilities and behaviors. Much of the evidence supporting this view has come from studies examining the role of androgens.

Androgens are a group of hormones that play a role in the development of male traits and reproductive activity. Although androgens are present in both males and females, males have much higher levels than females. Therefore, research has explored whether naturally occurring variations of androgen levels or direct manipulation of these levels are responsible for changes in gender-typed behaviors; increases in androgens are expected to make behavior more male-typical and decreases in androgens are expected to make behavior more female-typical.

Supportive research in this area was conducted by Sheri Berenbaum by studying girls with congenital adrenal hyperplasia (CAH); (Berenbaum 2002). Individuals with CAH have a condition that leads them to be exposed to an excess of androgens during prenatal development. Research has shown that, compared to girls without CAH, girls with CAH display a higher interest in masculine-typed toys, stronger spatial abilities, more aggressive behaviors, and show less of an interest in babies (Berenbaum 2002). These findings suggest that biological factors, such as hormones, are at least partially responsible for some differences that are observed between males and females.

2.3.2 Social Theory

Social approaches to gender development view gender differences as a byproduct of the differential treatment girls and boys receive from the people in their lives and the pervasive gender stereotyped messages that children are exposed to in their environment. This approach emphasizes socialization in the family, schools, and wider culture. Initially, psychologists applied traditional learning principles to the study of gender differences. According to this view, females and males develop gender-typed behaviors because they are reinforced for displaying behaviors that are consistent with gender norms and punished for displaying behaviors that are not consistent with gender norms. For instance, boys show preferences for playing with masculine-typed toys because their parents provide them with positive attention (i.e., reinforcement) when they are playing with toys such as trucks and balls and ignore them or reprimand them (e.g., punishment) when they are playing with toys such as dolls and tea sets. Consequently, the behavior that is rewarded increases (e.g., play with masculine-typed toys) and the behavior that is punished decreases (e.g., play with feminine-typed toys).

This learning process illustrates how females and males are shaped over time to display behaviors that are consistent with gender roles. The principles of traditional learning theory have been supported by research that has found that adults exhibit different expectations for and behaviors towards girls and boys and those children tend to respond to this differential treatment by displaying increased gender-typed behaviors. Beginning in the 1960s, traditional learning theory transitioned into social learning theory as psychologists, such as Albert Bandura, began to recognize the importance of imitation and modeling in the development of social behaviors. Walter Mischel, 1966;Eleanor Maccoby 'The Development of Sex Differences; Social learning theory continued to recognize the importance of traditional learning principles, but also acknowledged the key role that modeling plays in the development of social behaviors. When

applied to gender development, modeling, or observational learning, refers to a person's tendency to learn vicariously by observing other people engage in gender-typed behaviors and witnessing the responses (e.g., rewards or punishments) that these people receive from others. Through this process, children learn what behaviors are characteristic of each gender and the consequences likely to be associated with engaging in same-gender and other-gender behaviors. For instance, Mia, a girl attending preschool, might notice that most of the girls in her class, but none of the boys, play with baby dolls and that others respond positively towards the girls when they are engaging in these behaviors. At the same time, this girl might have witnessed a boy reprimand another girl in the class for playing with a fire truck by stating "That's not for you! Fire trucks are for boys!" Although Mia was not directly involved in these interactions, she learned a great deal from observing them; she learned that dolls are "for girls" and that fire trucks are "for boys" and that since she is a girl, she might be reprimanded if she attempts to play with a fire truck.

In addition to observing real-life models, social learning theory acknowledges that people learn about social behaviors from observing symbolic models, such as people or cartoon characters in movies, television, or storybooks. Considering the pervasive gender-typed messages available in the environment, children and adults learn a lot about gender from observing their world.

During the 1980s, social learning theory was revised again by Albert Bandura to place more emphasis on the cognitive processes that mediate learning. This theory is now known as social cognitive theory and it was formally applied to gender development in 1999 (Bussey and Bandura 1999). Consistent with social learning theory, observational learning is still believed to be one of the most powerful mechanisms by which children learn about gender-typed behaviors and conduct; however, children are also viewed as active participants in their gender

development as they develop regulatory self-standards and beliefs that guide their own behaviors. According to social cognitive theory, gender-typed behavior is promoted by modeling, experiencing the consequences of gender typed behaviors, and by direct teaching of gender roles; through these experiences, children are believed to develop outcome expectancies, self-efficacy beliefs, and self-sanctions that also regulate and guide their gender-typed behaviors. Moreover, social cognitive theory posits a reciprocal model of causation in which personal (e.g. cognitive, affective, biological factors), behavioral (e.g., gender-typed activity patterns), and environmental factors (e.g., social influences) interact to determine gender-typed conduct. While all three factors are viewed as significant, the relative influence of each of them is believed to depend on situational features. For instance, individuals who are situated in an environment where gender roles are rigidly enforced may be more influenced by environmental factors than personal factors. Support for social learning theory and social cognitive theory comes from research that shows that children are more likely to imitate same-gender models than other-gender models, that perceived self-efficacy predicts behavior, and that self-regulatory control related to gender-typed behaviors increases with age.

2.3.3 Cognitive Theory

Cognitive-oriented theorists of gender development view children as active constructors of knowledge who seek, interpret, and act on information in an effort to match their behavior to their knowledge of gender. Although Bandura's social cognitive theory also emphasizes the role of cognitions, a distinguishing feature of cognitive theories is that children are believed to be self-driven in their pursuit to learn about gender and that gendered cognitions play a significant motivating role in this process. Therefore, some researchers have referred to social cognitive

theory as a cognitive environmental approach and the cognitive theories as developmental constructivist approaches.

The cognitive approach to gender development was initially presented by Lawrence Kohlberg when he outlined his cognitive-developmental theory in Eleanor Maccoby's 1966 book The Development of Sex Differences. Kohlberg's theory is heavily influenced by Piagetian concepts in that children's understanding of gender is believed to be directly linked to age-related changes in cognitive development. Kohlberg proposed that as children develop an understanding of gender, they become more motivated to match their behavior to gender norms.

Kohlberg emphasized the significant motivating role of gender constancy, which is the developing understanding that gender is a permanent and immutable category. Gender constancy knowledge is believed to develop in three stages: knowledge of whether you are a boy or a girl (i.e., gender identity), knowledge that gender remains the same throughout life (i.e., gender stability) and knowledge that gender doesn't change despite superficial changes in appearance or activities (i.e., gender consistency).

Kohlberg's ideas prompted the development of another cognitive approach to gender development referred to as gender schema theory. Like cognitive-developmental theory, gender schema theory posits that self-driven qualities play an integral role in the development of gender-typed behaviors such that children intentionally pursue and construct information about gender.

In this view, people develop gender schemas, which are organized knowledge structures containing a person's attitudes and knowledge about gender, as they interact and seek out information in their environment; their gender schemas then influence their attention, perceptions, memories, and behaviors.

In one version of gender schema theory, Sandra Bem (1981) emphasized that the development of gender schemas is due to the pervasive gender messages in our society and that gender-typed behavior emerges as children's self-concept and self-esteem gets assimilated in their gender schemas. Carol Martin and Charles Halverson's (1981) gender schema theory focuses on the ways that gender schemas organize, bias, and regulate thinking and behaviors.

According to this perspective, children's inherent need for cognitive consistency and self-definition motivates them to seek out gendered information and adjust their behavior to match their perceptions. Consequently, children are predicted to be more likely to pursue, attend to, and remember same-gender information than other-gender information, which over time explains how girls and boys develop different preferences, abilities, and behaviors. More recently, a third gender schema was proposed by Lynn Liben and Rebecca Bigler, (2002) called the dual-pathway gender schema theory.

This theory extends earlier gender schema theories by highlighting the role of individual differences.

Two pathways are proposed that illustrate the relationship between a person's attitudes and behaviors. Like the processes described in Martin and Halverson's theory, the attitudinal pathway model indicates that gender attitudes predict behaviors. For instance, if a girl believes that dolls are for girls and trucks are for boys, she is more likely to approach the doll and avoid the truck.

The second pathway is a personal pathway model that suggests that interests affect attitudes and behaviors. For instance, if a boy had the opportunity to play with a kitchen set and enjoyed it, he might adjust his gender schema to include the view that kitchen sets are for boys or for both boys and girls. Support for cognitive theories of gender development has come from research that has

shown that children's gender identity knowledge is related to their peer and toy preferences and from experimental studies demonstrating the influence of gender stereotype knowledge on toy preferences, memory, and performance. While each of the theoretical approaches to gender development emphasizes different processes, there is some degree of overlap between them.

Social cognitive theory recognizes the important role of biological factors and evolutionary pressures, biological approaches recognize the role of the environment, and cognitive theories acknowledge the role of biological and environmental factors. Regardless of theoretical preference, most theorists and researchers would agree that biological, social, and cognitive factors all play a role in gender development.

2.4. SMALL RUMINANT PRODUCTION MANAGEMENT SYSTEM

The contribution of small ruminant goat in particular to food security and poverty reduction is under-exploited (Mahama, 2012), Sheep and goat are raised by marginalized and landless smallholders not only for meat but also as an important source of wealth and savings, and as insurance against crop failure (Dossa,Rischkowsky, Bimer and Wollny, 2008).

Goat ownership patterns and flock size depend on smallholder farmer's level of engagement in crop and other agricultural production activities across gender, ethnicity and age-groups in tropical Africa (Adzity, Ayin and Addy 2010; Poku, 2009). Individual household members including men and women or the household as a unit may own such animals (Dossa,Rischkowsky, Bimer and Wollny,2008), which may be housed close to homesteads and herded by younger family members (Asafu-Adjei&Dankwatah, 2001).

A common characteristic of this livestock production system includes the integration of livestock into crop production, thereby helping to replenish soil fertility from animal manure. Crop residue

is used to feed animals and to improve on environmental sustainability (Karbo and Agyare, 1997) and in which they identifies major types of small ruminant production systems.

The four production systems lie in a continuum, moving from the traditional system to more intensive systems of raising sheep and goat (Oppong-Anane, 2011). Moving along the continuum, the amount of grazing land reduces while intensity of zero-grazing tends to increase. The livestock systems are integrated with the main farming systems of tree or arable crop farming. For the traditional, extensive and semi-intensive systems, small ruminants are allowed to graze on farmlands after harvest, fed with crop by-products and tethered around the farmlands during cropping seasons. In return, manure from the animals is left to fertilize farmlands when the animals are grazing or during tethering. Under the intensive system, the animals are mostly fed through harvesting of crop by-products or grasses while manure is sometimes returned to farmlands

Beside this symbiotic relationship, smallholder farmers under the integrated livestock-crop system usually invest money from harvesting crops in small ruminant livestock at the end of the cropping season. The animals are kept until the beginning of the new cropping season where they (animals) are sold to purchase inputs for crop farming.

2.4.1. Traditional or Landless and Extensive Production Systems

Animal holdings per individual or household tends to be low, ranging from 1 to 10 heads (ADF, 2001) and goat tend to dominate sheep numbers (FAO, 2012). Farmers who raise small ruminants under free range systems are typically resource-poor. As a result, use of feed supplements, veterinary care, good housing or quality breeds tend to be limited (ADF, 2001). Farmers' investment in livestock is through purchase, inheritance or as gifts to replenish the farm stock (Suleman, 2006). Animals commonly scavenge for food and water around villages or

homesteads without a stock herder (Upton, 1984). The animals roam freely as a unit within the village, with high inter-breeding. Mortality rate is high mainly due to poor housing, overcrowding, inadequate nutrition and poor ventilation, resulting in diseases such as pneumonia and diarrhoea, especially during the rainy periods (Turkson,Antiri and Baffour-Awuah, 2004). Labour costs are low because scavenging animals receive little attention (Panin and Mahabile, 1997) and mortality from highway accidents is high (Alenyorege,Akansake and Gustav, 2010).

2.4.2.Semi-intensive System

Unlike the extensive system, grazing is limited in the semi-intensive system, and stall-feeding depends on family labour, time and feed availability (Devendra, 1985). Grazing is normally done during late mornings or evenings, usually for about 4-6 hours. Simple stockades are commonly constructed from locally available materials such as timber, bamboo, tree branches and mud and roofed with leaves, split bamboo or metal sheets (Oppong-Anane, 2011). Cut-and-carry forage, household food waste, crop residues and crop by-products are common sources of feed under this system (Duku, Vanderzijpp and Howard, 2010).

Due to limited grazing on natural pasture under the semi-intensive system, sheep and goat tend to be deficient in essential minerals. Karbo, Bruce and Otchere,(1999) reveal that the use of mineral supplements such as saltlick, bone meal and di-calcium phosphate is not a common practice in the semi-intensive systems because the poor smallholder farmers cannot afford the supplements or live in rural areas where they have no access to such mineral supplements. On the other hand, alternative sources of mineral supplements from clay deposits in riverine areas are sometimes used (Karbo, Bruce and Otchere, 1999).

2.4.3 Intensive or Backyard System

In this system, animals held in kraals (enclosure) are not allowed to graze on communal lands. All feeds are provided in the stockades (Oppong-Anane, 2011). The intensive system also depends on zero grazing, the use of crop residue and household waste (Oppong-Anane, 2006). Under this system, sheep and goat are fattened to supply meat for urban markets during religious and other festive occasions. This production system is commonly practiced in urban and peri-urban areas. Access to veterinary service is improving, although some farmers still practice self-medication using various herbal remedies (Oppong-Anane, 2006).

2.5.DETERMINANTS OF THE CHOICE OF SMALL RUMINANT TYPE

Different farming households may have preferences for different types of small ruminant livestock species (sheep alone, goat alone or both). It is therefore relevant to examine the determinants of the type of small ruminant species owned by household. Selected factors that influence preference for different small ruminant species as discussed below.

In rural regions of sub-Sahara Africa, women traditionally undertake household chores such as food processing. Unlike sheep, goat tends to graze near homesteads and is also commonly provided with kitchen scraps and food by-products. Consequently, women are likely to have a higher propensity than men are to raise goat, all things being equal (Sumberg, 2014).

A key motivation for farm households to diversify their livelihood options is linked to risk perceptions and expected benefit of new or potential economic livelihood activities (Ellis, 1998; Reardon, 1997). Sheep and goat have various inherent production risks and benefits (Lebbie, 2004). On the other hand, studies for agricultural systems in developing countries suggest that sheep production tends to be riskier than raising goat (Fakoya&Oluruntoba, 2009). For example, sheep are more susceptible to disease outbreaks and tend to be easily killed by moving vehicles

than goat (Ndamukong, Swell and Asanji, 1989). In addition, free range sheep have the tendency to graze and stray away from homesteads, thereby exposing them to theft or being killed, compared with goat Dossa,Rischkowsky, Bimer and Wollny(2008). By comparison, goats are inherently more aggressive, and in free range grazing systems typically graze near homesteads (Sumberg, 2014). Notwithstanding the higher risk associated with sheep production, especially under traditional extensive systems in African countries, studies indicate that the expected returns from sheep production is higher than for goat Dossa,Rischkowsky, Bimer and Wollny (2008).

2.6. RUMINANTS/GOAT FEEDS

Based on the distinct nature of the ruminant's stomach, however; Lawal-Adebowale (2012) postulates the three major ruminant farm animals feeds heavily depend on;

2.6.1. Forage or Roughages as Major Feeds

The commonly available herbage in the Nigeria's ecological zones for ruminant's consumption include the *Andropogontectorun, Panicummaximum, Imperta cylindrical, Pennisetumpurpureum*Lawal-Adebowale (2012). These grasses, which are fibrous in nature, are rich in cellulose and provide the ruminants a high level carbohydrate and some measures of vitamins and minerals.These grasses grow rapidly during the rainy season and as such become abundant for the ruminant's consumption (Denbela, 2017). Legumes forages has a significant role in improving ruminant nutrition due to legume forages are rapidly degradable in the rumen which is useful to meet the requirements of rumen microorganisms for efficient degradation of low quality roughages thus, the ruminant kept on free rangethus feed freely on the naturally occurring forages (Denbela, 2017).

2.6.2. Supplementary Feed

Feeding of cows significantly improves weights of the calves at birth, although, supplementary feeding did not improve calving intervals, it suggests that it every essential to place the ruminants on supplements for better productivity in term of milk and meat productionLawal-Adebowale (2012). Supplementation of goats with *Lablab purpureus* and pigeon pea leaf as forage meals has been resulted in better improvement in total edible components (Denbela, 2017).

2.6.3. Establishment of fodder bank

This is whereby legumes are established and properly managed in a concentrated unit. In order to optimize the potentials of the fodder bank, combinesowing of series of legumes and grains are manipulated by, for instance, cropping sorghum with *Stylosanthes spp.* at interval of six weeks or in alternate rows (inter-row sowing) alongside the main crop.The fodder bank alternatively benefits selected animals as not all animals are allowed to graze the bank. Fodder banks are designed not to supply forage year-round for an entire herd but rather to be used strategically for limited periods with selected animals, thus only pregnant and lactating animals are allowed to graze the bankLawal-Adebowale (2012).

2.7. CONSTRAINTS TO SMALL RUMINANT PRODUCTION

Among the important constraints report to limit small ruminant production in tropical Africa include diseases and pest attacks, poor nutrition, inadequate water supply, unimproved breeding stock, poor marketing, inadequate capital, lack of credit, natural disaster, policy problems and insufficient veterinary and extension services (Dossa*et al.*, 2007; Fakoya and Oloruntoba, 2009; Oladeji and Oyesola, 2008). According to Ajala, Gefu and Okaiyeto (2003), major constraints

associated with ruminant production include lack of finance, high incidence of pest and disease, high cost of feeding and lack of information on improved small ruminant management practices. (Oppong-Anane, 2006; Turkson&Naandam, 2006) suggest that the major constraints for sheep and goats production are disease, housing, feeding, lack of knowledge on management, high mortality, lack of drugs, and destructive nature of animals. Above all other constraints, parasitic disease infection and feed shortage (Duku,Vanderzijpp& Howard, 2010) have frequently been mentioned as the top two constraints that impede small ruminant production. Sheep and goats' diseases/parasites and feed constraints often lead to high mortality rates and morbidity thereby undermining the overall economic benefits from the animals.

Even though parasitic disease menace and feed shortage have frequently been acknowledged and often described in the extant literature (Dossa*et al.*, 2007; Oladeji&Oyesola, 2008).

2.8 EMPIRICAL STUDIES ON GENDER ROLE OF GOAT FARMING ACTIVITIES

A review of studies related to role of gender in goat/small ruminant activities in developing countries like Nigeria was conducted. A brief discussion of these studies is provided in this section.

Mohanasundarraj and Tripathi (2010) conducted a research study on a role performance in goat farming activities in southern zone of India. They found that involvements of males was found to be higher in most of the fodder cultivation, harvesting and preservation of fodder (32.5%) while higher involvement of women in the concentrates feeds, feeding and watering (62.5%) of their animals. Chaffing of fodder was an actively men and women (55.0%). Male members were involved independently in most of the health care management activities where women participation lesser than the men. Construction and management of pen (80.0%) was found to be men dominated task while involvement of women was higher (67.5%) in the cleaning of pens.

Marketing of goat is traditionally men dominated activity. However, no female was found to be performing this activity independently.

Toppo, Trivedinand and Ashok (2004) conducted a research study on participation of farm women in dairy occupation in Gujarat, India. and found out that that fodder cutting, carrying and taking animal for grazing were actively performed men while feeding and watering were actively performed by women

Similarly Vimal and Kavithaa (2014) conducted a study on work contribution of rural women, farm women in goat rearing practices in Erode district of Tamilnadu. Where they found out that fodder cutting, carrying and taking animal for grazing were actively performed by men.

Garlie and Kantor (2014) conducted a study from gender analysis of transforming gender norms: using pathways to enhance gender equity and food security in Tanzania. And they identified the decision-making about revenues were mostly rests in men.

Keba (2010) conducted a study in the role of women in sheep and goats productions in Sub-Saharan Africa including Nigeria where he identified Nigeria goats and sheep farming system as intensive livestock farming and identified herding, feeding, watering, hygiene as the roles played by both male and female tasks, breeding and marketing as male tasks. Also cuts and carry pasture is mostly done by female.

Ayoade, Ibrahim and Ibrahim (2009) conducted a study on analysis of women involvement in livestock production in Lafia area of Nasarawa State, Nigeria. They found that women rarely participated in activities such as tethering (mean = 2.36), culling/ isolation of sick animals (mean = 2.20), vaccination (mean = 2.20), constructions/ fencing of pen (mean = 2.28), marketing (mean = 2.11) and record keeping (mean = 2.30)

2.9 EMPIRICAL STUDIES ON SOCIO-ECONOMICS FACTORS OF LIVESTOCK GOAT FARMERS

A review of studies related to socio-economic factors of livestock (Goat) Production farmers in Africa and specifically Nigeria was conducted in this section below.

Similarly Sumberg (2014) presented a study on small ruminant feed production in a farming system Africa and found out that sheep and goat are present in rural households and majority of the animals are kept in free-roaming flocks, identified average flock size ranges from 2 to 5 animals per owner with goats being common in owned than sheep.

Baruwa (2013) conducted a study on empirical analysis of cost and returns to goat production under tropical conditions, Nigeria. Where he found out that majority of goat farmers 90% were married and the mean household size of goat farmers were 8 and more than half of the farmers had family size ranging between 6 and 10 also mean experience of 16.3 years.

Ummuna, Olafadehan and Arowana (2014) conducted a study on small ruminant production and management system in urban area of Southern Guinea Savanna Nigeria identified that majority of small ruminant farmer falls within the age range of 40 to 49 years.

Likewise Oluwatayo and Oluwatayo (2012) conducted a study on small ruminants as a source of financial security in South West of Nigeria. They found out that three quarter of goat farmer belong to one association or another.

Mohammed and Ayoola (2017) conducted a study on socio economic factors influencing small ruminant production in Adamawa State, Nigeria. Where they found out that majority of farmers operates extensive system of goat management.

2.10 EMPIRICAL STUDIES ON CONSTRAINT TO LIVESTOCK EXTENSION

A review of studies related to constraint to livestock extension services received in other countries and Nigeria was conducted.

Dickson, Ekpe and Egbe (2014) conducted a study on women gender equality in Nigeria: A critical analysis of socio-economic and political where they identified that men also face barrier in livestock extension service but women are more prone to neglect and over looked by extension service providers.

IFPRI (2013) conducted a study on Data needs for gender analysis in agriculture, environment and production technology in Ghana. And found out that women typically had less access to extension service.

Shafiq (2008) conducted a study on analysis of role of women in livestock production in Balochistan, Pakistan, where he found out that women are targeted nominally or marginally by transferring technological innovations.

CHAPTER THREE

3.0METHODOLOGY

3.1STUDY AREA

This study was conducted in Kano State. Kano State was created on May 27th, 1967 when Nigeria had only twelve States structure. Being the most populous state, on August 27th 1991, Jigawa was excised from it. The state is bordered to the west and north-west by Katsina State, to the east and North-east by Jigawa State, to the South by Bauchi state and South-west by Kaduna state (KNSG, 2004).Kano State is situated in Sudan Savannah agro-ecological zone of Nigeria within latitude 10º3ˈ to 12º 4ˈ North and longitude 7º4ˈto 9º 3ˈ East. There are two seasons in the state: wet and dry season. The wet season is from (May toSeptember) with average rainfall of 787mm-960mm annually. The dry season is (October- April).The mean temperature ranges from 15.85ºC-33ºC (KNSG, 2013) It may low at harmattan to as 10ºC.

Kano State has a population of approximately 9.4 million (4,947,952 male and 4,453,336 female) based on the NPC, 2006 census, with annual growth rate of 3.3 percent per annum, the projected population by the year 2017 was 12,789,960 people. The state has 44 Local Government Areas with land mass of 42,582.8km square out of which agricultural land is 30,684.8km square, while forest and grazing land has 11,898km square (KNSG,2013). The key sectors of the economy for growth are Agriculture, Commerce and Manufacturing.

The 44 Local Government areas areclassified into three (3) Agricultural Development Programme(ADP) zones namely: Zone I, Zone II and ZoneIII by Kano State Agricultural and Rural Development Authority(KNARDA). Farming is the main occupation of the people who are predominantly Hausa/Fulani, they are mostly engaged in the production of crops like millet,

sorghum, maize, rice, cowpea,groundnut, pepper, onion, and rearing of animals such as Cattle, Sheep, Goat and Poultry (KNSG,2013).

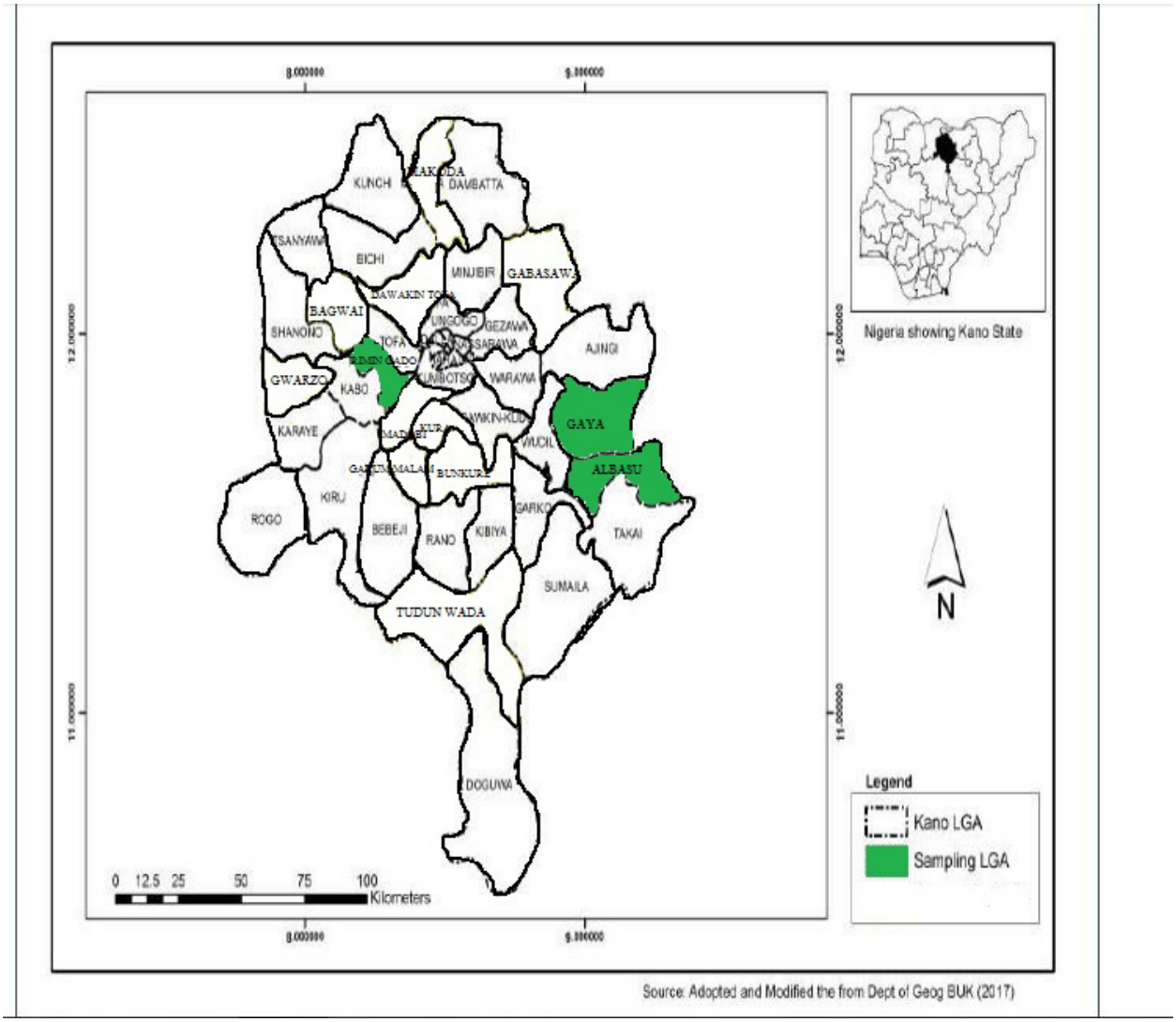

Figure 3.1:Showing Map of Kano State andindicating the Study area.

3.2 SAMPLING PROCEDURE AND SAMPLE SIZE

The sampling method for this study was multi stage sampling techniques as shown in table1. First stage involves purposive selection of Gaya, RiminGado and Albasu Local Government Areas (LGAs) based on the high intensity and concentration of goat farmers.

The second stage involved random selection of three communities from each Local Government selected. And lastly, the third stage involvedrandom selection of 20 percent proportionately ofboth estimated total male and female goat farmers from extension agents survey list in each selected communities. A total of one hundred and forty three (143) goat farmers were selected seventy seven (77) male and sixty six (66) female from both totalpopulations of male and female goatfarmers.

Table 1: Summary of Sample frame and size for each Local Govt./ communities of goat farmers in the study area.

LGAS	Communities	Farming Population (Male)	20% farming Population (Male)	Farmers Population (Female)	20% farming Pop. (Female)	20% of TOTAL goat farmers
Albasu	Faragai	35	7	30	6	13
	Gwagwarandan	38	8	28	6	14
	Saya-saya	38	8	25	5	13
Rimingado	Akalawa	56	11	41	8	19
	Dokadawa	43	9	38	8	17
	Juji	58	12	42	8	20
Gaya	Kademi	40	8	70	14	22
	Wudilawa	35	7	25	5	12
	Kamfasi	33	7	28	6	13
Total		**376**	**77**	**327**	**66**	**143**

3.3 DATA COLLECTION

Data for this study was collected throughprimary and secondary sources. The Primary data was collected with thestructured questionnaire which was administered to the selected goat farmers. The data was collected by trained enumerators with the guiding support and supervise by the

researcher. The data for the study was collected based on the objectives of the study and whichwas sectionalized as A-E in the data collection instrument. The data was collected on the socio-economic characteristics of the household head such as gender, age, level of education, marital status, household size, years of keeping animals, flock number, access to extension service, roles played by men, women and children in goat management,gender access and control in goat management, as well as types of livestock extension services received by goatfarmers and constraints militating against goat production management in the study area.

3.4 ANALYTICAL TECHNIQUES

Inferential statistics such as logit regressionmodel was used to achieve part of objective 1, Harvard Analytical Framework was used for objective 2 and 3 while descriptive statistics such as percentage, mean, and minimum and maximum was also used to achieve part of objectives 1, 4 and was used toachieve objective 5.

Model Specification

Logit regression modelwas used to achieve part of objective 1.This regression analysis is a statistical technique in which the probability of a categorical variable (dichotomous outcome) is related to a set of independent variables that are hypothesized to influence the outcome. The logit model is specifically, or is mathematically written as follows;

$$Y = B_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + \text{----------} + b_{10}X_{10} + e_i$$

Where;

Y = represent gender role index.

(Described in the table 2)

B_0 = Constant

B_1 - B_{10} = Coefficient of X variables

X_1 ---- X_{10} = Selected Socio economic variables

X_1 = Age

X_2 =Gender

X_3 = Marital status

X_4 = Household size

X_5 = Annual Income

X_6 = Level of Education

X_7 = Flock number

X_8 =Contact with Extension Agent

X_9 = Cooperative membership

X_{10} = Access to credit

3.4.1. Operationalization of the Study Variables/Measurement of study variables

Table 2: Description of the variables

Variables	Description
Dependent; Gender Role index,	
Housing construction Grazing/Tethering, and fodder collection Feeding Drinking Cleaning and sanitation of barn Medication: (Vaccination, and Deworming) Marketing of Goat	
Independent;	
Age	Would be measure in continuous variable
Gender	Measure as male 1, female 0 for respondent
Marital status	Would be measure as 0 Married, 1 as Divorced and 2 as Widow.
Household size	Measured as continuous variable
Annual Income	Measured in Naira
Level of Education	Continuous variable measured in years of formal Education
Flock number	Measure as continuous variable
Contact with Extension	Binary variable which takes 1 if respondent have contact with extension agent and 0 if otherwise
Cooperative membership	Binary variable which takes value of 1 if respondent is a member of cooperative and 0 if otherwise.
Access to credit	Binary variable which takes value of 1 if respondent had access to credit and 0 if had no access

Keys: In this study, seven management practices were considered. Note the dependent variable was 1 or 0, if the respondent involve in 4-7 activities was scored 1 and if he involved in less down 4 he wasscored 0.

3.4.2 Harvard Analytical Framework

The Harvard analytical Framework is alsoknown as gender Roles framework and it is also called Gender Analysis Framework which was published in 1985. It was one of the first frameworks designed for gender analysis. It was developed by researchers at the Harvard Institute for International Development in the USA, working in collaboration withUSAID. The Harvard Framework was designed to demonstrate that there is an economic case for allocating resources to women as well men. Its aims at helping more efficient projects and to improve overall productivity at community level. It is grid known as matrix by collecting data on men's and women's as well as youth's activities which are identified as either reproductive or productive types and is then considered according to how those activities reflect access to and control over incomeand resources, thereby highlighting the incentives and constraints under which men and women work in order to anticipate how projects will impact their productive and reproductive activities as well as the responsibilities of other household members.

Table 3:Example of Harvard toolthe Activity Profile

Activities	Women/Girls	Men/Boys
Productive activities	Feeding, Drinking	Bran Construction, Tethering
Activity 1e.t.c		
Income generating		
Activity 1 e.t.c		
Employment		
Activity 1 e.t.c		
Reproductive activities		
Water related		
Activity 1		
Fuel related activity		
Food preparation		
Child care		
Health related		
Other		

Overholt, Aderson, Cloud and Austin (1985)

Harvard tool 2: The Access and control Profile-resources and benefits

Overholt, Aderson,Cloud and Austin (1985). The tool enables users to list what resources people use to carry out the tasks identified in the activity profile. It indicates whether women or men have access to resources, who control their uses and who control the benefits of a use of resources. Access simply means that you are able to use a resource; but this says nothing about whether you have control over it.

Table 4: Example of Harvard tool Access and Control Profile

	Access		Control	
	Women	Men	Women	Men
Resources				
Livestock				
Land				
Rakes/Broom				
Feeders and Drinkers				
Labour				
Cash				
Manure or Animal dung				
Education/Training e.t.c				
Benefits				
Outside income Asset ownership				
Basic needs (food, clothing, shelter e.t.c),				
Education				
Political power/prestige				

CHAPTER FOUR

4.0 RESULTS AND DISCUSSION

4.1 SOCIO-ECONOMIC CHARACTERISTICS OF GOAT FARMERS

Socio-economics characteristics of goat producers simply means the factors that could enhance the productivity of the goat producers in the livestock sub sector of Agriculture. These attributes assist in getting a confirmed understanding and clear picture on how their nature could leads to increase in goat production. The result of Socio-economic characteristics that were considered in this study are marital status, Educational Status, major occupation, System of production, Veterinary Service, Extension contact, Credit access, Cooperative membership, Age, household size, Experienced in Goat rearing are shown in the tables 5, 6, 7 and 8

Table 5: Marital Status, Educational Status of Male and Female Goat Farmers.

Variables	**Male (%) n=77**	**Female (%) n = 66**
Marital Status		
Single	7 (9.1)	2 (3.0)
Married	69 (89.6)	53 (80.3)
Divorced	1 (1.3)	4 (6.1)
Widow/Widower	-	7 (10.6)
Educational Status		
Never being to School	3 (3.9)	14 (21.2)
Informal Education (Quranic)	28 (36.4)	35 (53.0)
Primary	17 (22.1)	9 (13. 6)
Secondary	21 (27.3)	6 (9.1)
Tertiary	8 (10.4)	2 (3.0)

Source: Field Survey, 2018

Note: Values in parentheses show the corresponding percentage

4.1.1 Marital Status of the Goat Farmers

Table 5 indicates that majority (89.9%) of male and female(80.3%) Goat farmers were married and respectively. This portrays the facts that married people have responsibility and also need support to carry out their practices in goat production activities. About 9.1% of male and 3.0% of female goat farmers were single, 1.3% of men and 6.1% women were divorced. Also 10.6% of the female were widow. This finding is consistent with (Baruwa, 2013) reported that majority of goat farmers were married which confers some level of emotional stability on the farmers.

4.1.2 Educational Status of Goat Producers

According to Table 5, one third (36.4%) of malehad Quranic education as compared to half (53.0%) of the female who had Quranic Education. This finding indicates the high value and regards given to Quranic education in the study area. About(22.1%), (27.3%) of male had both Primary and Secondary Education respectively compare to their female counterpart who had(13.6%) of primary, (9.1%) secondary education, and only (10.4%) of male and(3.0%) female had tertiary education. This result clearly shows that substantial numbers of male goat farmers were literate which implies that there will be more improvement in there production compared to female gender (21.2%) that never being to school.

Table 6: Major Occupation, System of Production, Veterinary Service, Extension Contact, Credit Access, and Cooperative Membership of Male and Female Goat Farmers.

Variables	Male (%) n=77	Female (%) n=66
Major Occupation		
Farming/Goat rearing	44 (57.1)	37 (56.1)
Trading	21 (27.3)	22 (33.3)
Civil Service	8 (10.4)	2 (3.0)
Others (Arts and craft, artisan)	4 (5.2)	5 (7.6)
System of Production		
Extensive	25 (32.5)	26 (39.4)
Semi-Intensive System	52 (67.5)	40 (60.6)
Veterinary Service Contact		
Yes	71 (92.2)	63 (95.5)
No	6 (7.8)	3 (4.5)
Extension Contact		
Have Contact	43 (55.8)	27 (40.9)
Have no Contact	34 (44.2)	39 (59.1)
Frequency of Contact with Extension Agents		
No Contact	34 (44.2)	39 (59.1)
Quarterly	44 (57.1)	27 (40.9)
Access to Credit		
Have Access	5 (6.5)	2 (3.0)
Have no Access	72 (93.5)	64 (97.0)
Cooperative Membership		
Member	33 (42.9)	36 (54.5)
Non Member	44 (57.1)	30 (45.5)
Special Need People (Disable)	9 (11.7)	7 (10.6)
Able People	68 (88.3)	59 (89.4)

Source: Field Survey, 2018.

Note: Values in parentheses show the corresponding percentage

4.1.3 Major Occupation of the Goat Farmers

Occupation indicates the economic activity of farmers mainly engaged. Table 6 reveals that more than half (57.1%) of male farmers and 56.1% of female farmers were mainly engaged in the farming/ goat rearing, while 27.3% of male and33.3% of female farmers were mostly engaged in trading occupation. The table also indicates that10.4% of male were engaged in civil service occupation compared to only 3.0% of female who were involved in civil service. The findings further indicate that only 5.2% of male were engaged more in arts and crafts, artisan works compared to 7.6% of female who also engages in artisan work like hair plating and tailoring. This could be due to the fact that majority of the people in the study area are predominantly goat farmers and also the communities are mainly rural communities compared to urban areas where majority might be civil servants.

4.1.4. Goat Production System by the Farmers

Result in Table 6 also reveals that majority of goat farmers both male and female were engaged in semi-intensive production system of Goat production management at about 67.5% and 60.6% respectively. This implies that goats were allowed to move freely with little management, little capital inputs such as supplementary feed. And about quarter (32.5% and 39.4%) of goat farmers both male and female were practicing extensive system respectively. This finding agrees with Sumberg (2014) who asserted that sheep and goat are present in rural households and the majority of the animals are kept in free-roaming flocks with little management and capital inputs. Also, the finding disagree with Mohammed and Ayoola (2017) who reported that majority of the farmers operates extensive system of goat management.

4.1.5 Access to Veterinary Service among Goat Farmers

The results in Table 6 reveal that majority 92.2% of male and 95.5% of the female farmers reported having access to veterinary services occasionally based on the medical situation of the flock, this is perhaps, in most cases it is the extension agents thatrendered the veterinary services in their nearby communities. While very few of the male and female farmers did not have access to the veterinary service at about 7.8% and 4.5% of both genderrespectively.This implies more potential in animal health issues and health hazard free.

4.1.6 Contact to Extension Services by the Goat Farmers

Extension agent can also be considered as facilitator, change agent, who brings about change in order to improve lives of the farmers and their families. Table 6 reveals that more than half 55.8% of the male and 40.9% of the female farmers had contact with extension agent and 44.2% of the male and 59.1% of the female had no contact with extension agent respectively. This finding indicates that the farmers obtained the necessary information about goat production from the extension agents.

4.1.7 Frequency of Contact with Extension Services by the Farmers

This means the number of visit to the farmer's field by the extension agent. From the results in Table 6, more than half (55.8%) of male and 40.9% of female farmers reported having contact with extension agent on quarterly basis. These contacts may be associated to number of extension personnel in the study area.

4.1.8 Access to CreditFacility by Goat Farmers

The results from Table 6 clearly indicated that majority both gender of goat farmers 93.5% male and 97.0% female had no access to credit facility. While only 6.5% male and 3.0% female reported having access to credit facility. The majorimplication of credit facility access is hinderer the farmers to invest more on their farms and rearing business.

4.1.9 Cooperative Membership among the Farmers

This refers a group of people who come together for a common goal. Results in Table 6 indicate that 42.9% of the male and more than half of the female (54.5%) goat farmers were members of one association or the other. This could be as a result of the benefits like improved stock and other incentives derived from being a member of association through NGOs like Sasakawa Global and or through the Government agency like Kano State Agricultural and Rural Development Agency (KNARDA) while 57.1% of male and 45.5% of female were not belong to any association. The effect of being a member of the association is that member may acquire benefit that can improve the living standard of the member. This implies that there will be more vital information sharing among the member.This findings agree with Oluwatayo and Oluwatayo (2012) who reported that three quarter of goat farmer belong to one association or another.

4.1.10. Goat Farmers with Special Needs.

Result in Table 6 reveals that majority of the male 88.3% and female 89.4% goat farmers were able people where only few 11.7% male and 10.6% female were people with special need (disable) who engaged in goat production management as to avoid street begging and serve as employment.

Table 7: Age, Household Size, Experienced in Goat Rearing Among Male and Female Goat Farmers.

Variable	Male (%) n = 77	Female (%) n= 66
Age (Years)		
19-29	9 (11.7)	18 (27.3)
30-40	25 (32.5)	25 (37.9)
41-50	18 (23.4)	12 (18.2)
51-60	17 (22.1)	8 (12.1)
61-70	8 (10.4)	3 (4.5)
	Min = 20 Max = 70 Mean = 44.3	Min= 19, Max = 68, Mean = 38.6
Household		
Size(People)	12 (15.6)	11 (16.7)
2-6	32 (41.6)	26 (39.4)
7-11	22 (28.6)	17 (25.8)
12-16	7 (9.1)	12 (18.2)
17-21	4 (5.2)	-
22-26	Min = 2,Max = 25,Mean = 11.	Min = 2,Max = 20,Mean = 11.
Experience in		
GoatRearing (Years)		
2-11	15 (19.5)	29 (43.9)
12-21	23 (29.9)	22 (33.3)
22-31	22 (28.6)	11 (15.2)
32-41	10 (13.0)	5 (7.6)
42-51	7 (9.1)	-
	Min = 2, Max =50, Mean= 22.9	Min=2, Max=40, Mean=18.6

Source: Field Survey, 2018

Note: Values in parentheses show the corresponding percentages

4.1.11 Age Distribution among the Goat Farmers

Age signifies human life; it is usually measured in years from individual birth. The results in Table 7 indicate that more than one third 32.5% male farmers and 37.9% female farmers were both within the age range of 30-40 years respectively and 23.4% male, 18.2% female were within age of 41-50 years. The mean ages of male and female Goat farmers were 44.3 and 38.7 respectively as shown in the figure 2 and 3 below. This indicates that majority of them were in their active productive ages which may perhaps implies increase in productivity. This finding agrees with Umunna, Olafadehan and Arowana (2014) reported that majority of small ruminant farmers in the Southern Guinea Savanna of Nigeria falls within the age ranges of 40 to 49 years.

4.1.12 Household Size Distribution of the Goat Farmers

Household size is the total number of individuals who live, feed together in the same pot. The results in the Table 7 show that more than one third 41.6% of the male goat farmers and 39.4% of the female goat farmers had 7-11 household size. The average household sizes of the male and female Goat Farmers were 11.3 people and 11.2 peopleas shown in the figure 2 and 3 below respectively. This finding show that the farmers considered in the study area had quit number of Household sizes that may serve as a source of labour in Goat Production activities. This finding disagree with Baruwa (2013) who reported that the mean household size of goat farmers were 8 and more than half of the farmers had family size ranging between 6 and 10.

4.1.13. Experience in Goat Production Management.

Experience can be seen to better improved the agricultural productivity as a result of skills, knowledge and practice acquired over the years. Table 7 show that more than quarter 43.9% of female goat farmers had had goat rearing experience of 2-11 years and one third 33.3% had the

experience of 12-21 years while 29.9% of the male goat farmers had 12-21 years and 28.6% had 22-31 year experience. The mean goat farming experience of the male and female goat farmers according to figure 2 and 3 below were 22.9 and 18.6 respectively. This indicates that the goat farmers in the study area had adequate experience in goat farming business. This finding disagree with Baruwa (2013) where he reported a mean experience in goat farming of 16.3 years which shows that most of the farmers were not new in the enterprise.

Table 8: Flock Number, Annual Income, Goat Outputs among the Male and Female Goat Farmers.

Variables	Male (%) n=77	Female (%) n=66
Flock Number/Herd size		
1-5	11 (14.3)	16 (24.2)
6-10	30 (39.0)	33 (50.0)
11-15	15 (19.5)	13 (19.7)
16-20	15 (19.5)	4 (6.1)
21-25	6 (7.8)	-
	Min = 1, Max = 25, Mean= 11.8	Min=1,Max=20, Mean= 10.6
Annual Income from Goat Production		
₦10,000-31,000	21 (27.3)	37 (56.0)
₦32,000-53,000	23 (29.9)	22 (33.3)
₦54,000-75,000	18 (23.4)	7 (10.6)
₦76,000-97,000	15 (19.5)	-
	Min =₦ 10,000 Max =₦ 96,000 Mean= ₦51,506.49	Min=₦10,000, Max= ₦74,000, Mean = ₦33,477.27
Goat Output (Kg)		
9-30.5	21 (27.3)	17 (25.7)
31-52.5	29 (37.7)	25 (37.9)
53-74.5	27 (35.1)	24 (36.4)
	Min= 9Kg, Max=74Kg, Mean= 43.1Kg	Min= 9Kg, Max= 73.5Kg, Mean= 44.7Kg

Source: Field Survey, 2018

Note: Values in Parenthesis show the corresponding percentages

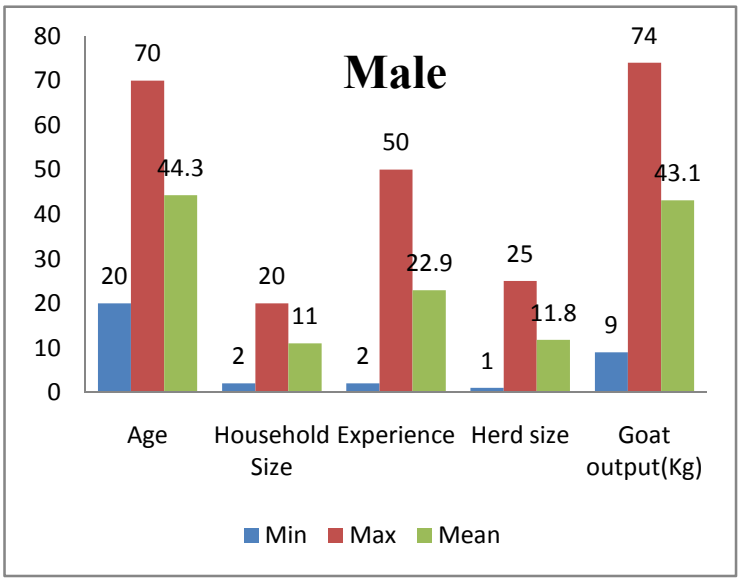

Fig 4.2: Male Goat Farmers

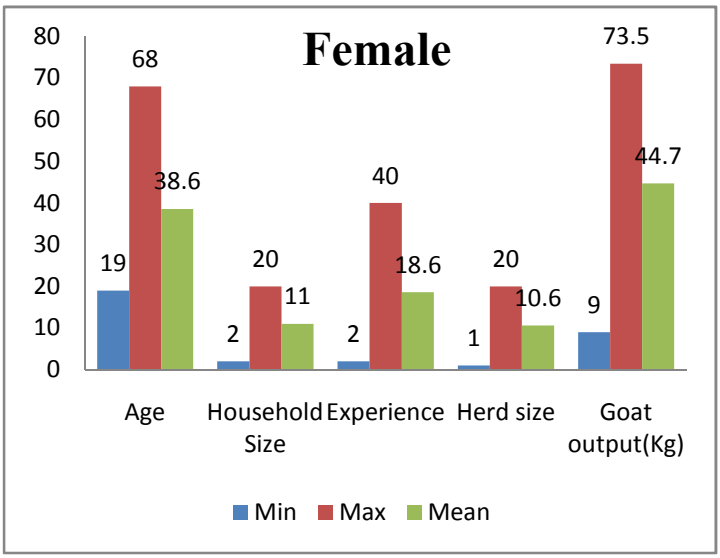

Fig 4.3: Female Goat Farmers

4.1.14Flock size or Herd size

The number of goat rearing per flock is presented in the Table 8, the result shows that more than one third 39.0% of male and half 50.0% of female had a flock size of 6-10 goats. The average male and female flock size as shown in figures 1and 2 above were 11.8 and 10.6 goats respectively. This finding implies that the average flock size of the farmers was 11. This finding is in contrast with Sumberg (2014) reported that the average flock size ranges from 2 to 5 animals per owner with goats being common in owned than sheep

4.1.15. Annual Income of Goat Farmers

Results in Table 8 indicate that 27.3% of male farmers had income range of ₦10,000-₦31,000 against 56.0% of female with same income range. The results further show 29.9% of male, 33.3% of female had income range of ₦32,000-₦53,000. The mean annual income of₦51,506.49 for male goat farmers was greater than that of female goat farmers with ₦33,477.27. This means that the male goat farmers generated more income from their goat Production compare to their female counterpart. The low income distribution among the farmers may be as a result of small scale in goat rearing.

4.1.16Goat Output among the Farmers

Table 8 shows that more than quarters (37.7%) of the male and (37.9%) of the female goat farmers had goat output ranging between 31 – 52.5Kg. The mean goat output of male goat farmer was 43.1Kg while that of female goat farmers was 44.7Kg.

4.1.17Factors Influencing Goat Production Management Activities among Male on Goat Farmers

Table 9: Logit Regression Analysis of the Socio-economic Influencing Goat Production Management among Male Goat Farmers.

Variable	**Coefficient**	**SE**	**Exp.(B)**	**Sig (P-value**
Age (Yrs)	-0.042	0.068	0.959	0.544
Household size	-0.130*	0.075	0.878	0.082
Annual Income	0.000***	0.000	1.000	0.009
Flock/Herd size	0.247**	0.110	1.280	0.026
Goat Production Experience(Yrs)	0.020	0.069	1.021	0.769
Marital Status	-0.512	1.446	0.599	0.723
Educational Qualification	0.097	0.186	1.102	0.603
Major Occupation	-0.149	0.448	0.862	0.740
Extension Contact	1.856***	1.073	6.400	0.084
Access to Credit	1.087	1.541	2.964	0.481
Cooperative Membership	-1.505	1.059	0.222	0.155
Constant	6.253**	2.602	519.754	0.016

Source: Field Survey, 2018

Note: ***= 1%, **= 5%, *=10%,= SL (Significant level)

This was actualized to determine the effect of some selected socio-economic characteristics against seven goat production management activities index.

The result of regression in Table 9 reveals that the coefficients of household size was negative and significant at 10% level of significance which implies that the less the household size of the goat farmers the more they engage in goat management activities.

The coefficient of Annual income, Extension contact were positive and significant at 1% level of significance whereas the coefficient of herd size was also positive but significant at 5% level of significance. The positivity of these variables implies that any increase or the more these variables, the more the corresponding engagement in goat production management activities.

4.1.18Factors Influencing Goat Production Management Activities among Female Goat Farmers

Table 10: Logit Regression Analysis of the Socio-economic Factors Influencing Goat Production Management Activities among Female Goat Farmers.

Variable	**Coefficient**	**SE**	**Exp.(B)**	**Sig (P-value)**
Age (Yrs)	-0.053	0.077	0.948	0.493
Household size	-0.118*	0.092	0.889	0.200
Annual Income	0.000***	0.000	1.000	0.012
Flock/Herd size	0.280**	0.128	1.323	0.029
Goat Production Experience(Yrs)	0.014	0.070	1.014	0.842
Marital Status	0.188	1.691	1.206	0.912
Educational Qualification	0.034	0.211	1.034	0.874
Major Occupation	0.019	0.546	1.019	0.972
Extension Contact	-0.062	1.080	0.940	0.954
Access to Credit	-0.187	1.503	0.830	0.901
Cooperative Membership	0.376	0.973	0.699	1.456
Constant	6.197**	2.760	491.423	0.025

Source: Field Survey, 2018

Note: ***= 1%, **= 5%, *=10%, ns = not significant = SL (Significant level)

The result of regression in Table 10 reveals that the coefficients of household size was negative and significant at 10% level of significance which implies that the less the household size of the goat farmers the more they engage in goat management activities.

The table further reveals that the coefficient of Annual income was positive and significant at 1% level of significance whereas the coefficient of Herd size was also positive but significant at 5% level of significance. The positivity of these variables implies that any increase or the more these variables, the more the corresponding engagement in goat production management activities.

4.2. ROLES PLAYED IN GOAT PRODUCTION MANAGEMENT AMONG GOAT FARMERS

Harvard Analytical tool was used to identify some considerable productive and reproductive task which answers the question of who does what? The Production management activities of goat farmers are presented in Table 10

4.2.1. Goat Production Management Activities Carried Out by the Goat Farmers

The goat management activities among goat farmers were achieved using Harvard analytical framework. The presence of x on the tables indicates the involvement of adult male, male child, adult female and female child

Table 11: Goat Production Management Activities among the Farmers

Activities	Adult Male	Male Child	Adult Female	Female Child
Barn Construction	xxxx	xx	-	-
Grazing/Tethering, fodder collection	xxxx	xxx	x	x
Feeding/Fodder serving	xxx	xxx	xxxx	xxx
Watering	xx	xxx	xxxx	xxx
Barn cleaning & sanitation	xxxx	x	xxxx	x
Medication(deticking, vaccination & deworming)	xxxx	x	xx	x
Goat Marketing	xxxx	-	xxx	-

Source: Field survey, 2018

Note: x = 1- 25%, xx = 26 – 50%, xxx = 51 – 75%, xxxx = 76 -100%

The goat farmers studied engaged in the production management activities by both male (adult and child), female (adult and child).

First and foremost barn construction/housing as a production activity, the result shows that 76 - 100% of adult male and 1-25% of male children engaged in the barn construction activity. This may be due to the technicality nature involved in this activity that hinder female to engage in this activity. This activity is mostly done at the vicinity of the compound or at the backyard of the goat farmer.

Fodder cutting, Tittering and grazing production activity which involve cutting of grasses and bring to the goat to feed and tittering tiding of goat to the grasses area for grazing, this was found

to be done actively by male adultto about 76-100% and male child had 51-75% where female adult engaged between 1-25%. This result agree withMohanasundarraj and Tripathi (2010)and contradict contradicts that ofVimal and Kavithaa (2014) also Toppo, Trivedinand and Ashok (2004), who reported thatsaid fodder cutting, carrying and taking animal for grazing were actively performed by men.

Fodder serving or feeding was found to be actively engaged by adult female about 76-100%, 51-75% of male and female children with adult male. However, this activity is found to be both gender activities.

Watering activity was actively engaged by the adult female 76-100% engagement, thus; feeding and watering of goat can be said to be considered as female activities according to the result in the table 11 above. The actively engagement of female may be as a result of the fact that the activities will not expose them to the public and also less tedious. This agrees with Vimal and Kavithaa (2014) who said feeding and watering were actively performed by women.

Barn cleaning and sanitation/ packing of animal dung are considered the activity of adult (both male and female) at 76-100% involvement in this activity and 1-25% of children (male and female).

Medication which include deticking, vaccination, deworming was also found to be both gender activity but specifically adult male actively involved 76-100% and 26-50% of adult female where Children (male and female) at 1-25%. This may be as a result of delicate aspect of the activity. This agrees with NathPaudel, Uter, Wollny, Dahal and Gauly (2009) who said Construction of goat shed and Medication were actively done by men.

Goat marketing activity is the sales of goat output base on the need or maturity age of goat and its mostly sales either at market or from home; this was carried out by 76-100% of adult male, 56-75% of adult female. This activity can be carried out by both genders despite the cultural and religious belief of the people within the study area. The marketing of goat can be done by women in their respective houses through buyer while they can both also sells at the nearby market. This finding contradicted the finding of Ayoade, Ibrahim and Ibrahim (2009) that women rarely participated in marketing (mean = 2.11) and agreed with Keba (2010) who reported marketing as major task for men.

4.2.2 Income Generating Activity among Goat Farmers

Table 12: Harvard Analytical Framework of Income Generating Activities among Goat Farmers

Income Activities	Adult Male	Male Child	Adult Female	Female Child
Crop farming	xxxx	x	-	x
Manure collected and sell	xxxx	x	-	x
Casual labour	x	xxx	-	-
Petty trading	x	-	xxx	xxx
Employment	xxxx	X	x	-

Source: Field survey, 2018

Note: x = 1- 25%, xx = 26 – 50%, xxx = 51 – 75%, xxxx = 76 -100%

The different income generating activities of goat farmers was presented in Table 12 above. These activities serve as other resources of income generating activity.It can be observed from the Table that 76-100% of adult male actively were involved in crop farming and 1 -25% of male child, as well as adult female participates in the crop farming. This indicates that crop farming

serves as major income generating activity/ resource in the study area. Farm yard manure/ animal dung collected and sells is another income activity engaged in by the goat farmers where 76 - 100% of adult male were actively involved, 1-25% of male child and female child were engaged in this activity. This may be as a result of active involvement of adult male in cultivating a large area of land for crop farming activity.

Casual labour is also another income generating activity which can be considered as male sex activity as shown in the Table 12 where the female (adult and child) were not involved in casual labour as compared to male child who were more engaged at 51 -75% and 1- 25% by the adult male. The Table also shows that male child does not involve in the petty trading this may be connected to the fact that they were more engaged in crop farming with their parents. The female child engagement of 51-75% could be due to the entrepreneur seal of their mother where adult female were engaged at about 76-100% who sometimes delegate their female children to market or sells their off-farm products and or food processed. Also only 1-25% of adult female child were employed. However; majority of the female reported that the decision-making on income generated were mostly with the men because men are the head of the household. This finding agrees with Galie and Kantor (2014) who found that decision-making about revenuesweremostly rests with men.

The Table further reveals that femalechildren were not employ and male child were just employed at 1-25%. This may be because most of the children were below the working age and the adult male were fully employed and which could be as result of their full responsibility of the household cores.

4.2.3 Household Activities Carried Out by the Goat Farmers

Table 13: Harvard Analytical Framework, Analysis of Household Activity among Goat Farmers

Household Activities	Adult Male	Male Child	Adult Female	Female Child
Water Fetching	xx	xxxx	x	xxxx
Firewood Fetching	xxxx	xx	x	X
Cleaning and repair	xx	xxx	xxxx	xxxx
Treatment of minor health	xxxx	-	xxxx	-
Food preparation/cooking.	-	-	xxxx	xxxx

Source: Field survey, 2018

Note: x = 1- 25%, xx = 26 – 50%, xxx = 51 – 75%, xxxx = 76 -100%

Table 13 shows that male were not involved in food preparation which could be due to the tradition in the study area, children (male and female) were also not involved in the treatment of minor health issue occur. The Table further revealed that few number1-25% of female (adult and child) were involved in firewood fetching and adult female were only involved in water fetching as well. This finding agrees with ILRI, (2007) who reported that women tend to be most active in household reproductive work such as collecting water and fuel, preparing food, care and maintenance of the household and its member, bearing and caring for children and maintaining the house.

4.3. ACCESS TO RESOURES AMONG THE GOAT FARMERS.

Table 14: Harvard Analytical Framework, Analysis of Access to Resources among the Goat farmers

Resources	Adult Male	Male Child	Adult Female	Female Child
Access to Barn	xxxx	x	xxx	xx
Livestock/goat	xxxx	x	xxxx	xx
Water provision	xxxx	xxxx	xxxx	xxxx
Livestock inputs (feeder, drinker, feeds/ and drugs)	xxxx	x	xxxx	xx
Cash	xxxx	x	xxx	x
Farm yard manure	xxxx	xx	xx	-
Education	xxxx	xxxx	xxx	xxxx

Source: Field survey, 2018

Note: x = 1- 25%, xx = 26 – 50%, xxx = 51 – 75%, xxxx = 76 -100%

Harvard Analytical framework result in Table 14 shows that the adult male and female had access to mentioned resources but male had more access than female. The findings further reveal that the male and female child had few accesses to resources and no access to farmyard manure by the female child. This may be connected to the fact that female children are not involved in farming in the study area.

4.3.1 Control over Resources by the Goat Farmer

Table 15: Harvard Analytical Framework, Analysis of Control to Resources among the Goat Farmers.

Resources control	Adult Male	Male Child	Adult Female	Female Child
Barn control	xxxx	-	xx	-
Livestock input control	xxxx	x	xxx	x
Cash control	xxxx	x	xxxx	x
Livestock/Goat breeding stock control	xxxx	x	xxxx	x
Farm yard manure control	xxxx	x	xx	-

Source: Field survey, 2018

Note: x = 1- 25%, xx = 26 – 50%, xxx = 51 – 75%, xxxx = 76 -100%

The result of Harvard Analytical framework analysis in Table 15 shows that children generally had fewer control over all the resources of goat management the barn control, where the children (male and female) had no control over the barn and housing. This could be because they were still under the custody of their parents. Also female children were found having no control over farm yard manure and this may be dueto the fact that female children were not involved in crop farming. Table 15 further shows that 26-50% female goat farmers had control over barn and farm yard manure. This is unconnected to the fact that women were not the household heads in the study area. The Table further shows that male goat farmers had total control over the barn, livestock inputs, cash, goat stock/breeding and farm yard manure while 26-50%, 51- 75%, 76-100%, 76-100%, 51-75% and 26-50% of the female goat farmers had total control of barn,

livestock input, cash, goat breeding stock and farm yard manure respectively. This could be due to the fact that some number of female goat farmers still depends on their husbands in providing these resources to facilitate their production activities.

4.4 TYPES OF LIVESTOCK EXTENSION SERVICES RECEIVED BY GOAT FARMERS

Table 16: Livestock Extension advisory services received among goat farmers

Livestock Extension Services Received	Male (%)	Female (%)
Barn construction	8 (5.4)	8 (4.5)
Barn routine cleaning and sanitation	18 (12.2)	26 (14.7)
Routine deworming of goat against internal parasite	24 (16.2)	29 (16.4)
Formation of livestock cooperative.	-	4 (2.3)
Feed conservation techniques (silage & roughages)	17 (11.5)	22 (12.4)
Selection of breeding goat for improving production	14 (9.5)	14 (7.9)
Buck fattening for increase HH income	14 (9.5)	16 (9.0)
Concentrates feeding	27 (18.2)	30 (16.9)
Veterinary service, technical support & cross breeding	26 (17.6)	28 (15.8)
Improved goat breeding stock	-	12 (6.8)

Source: Field survey, 2018

Results in Table 16 reveal that 35.1% and 45.5% of male and female farmers respectively that received livestock extension services in one way either in group by female goat farmers and mostly individually by male goat farmers. The extension services could have been provided to

the farmer by eitherfriends, wives and extension agent who provide veterinary service to the goat farmers. Table 16also shows that male goat farmers had no livestock advisory services on the importance of formation of livestock cooperatives and also had not received any services on the form of improved goat breeding stock whereas female goat farmers received all these services either through private and orNon-governmental Organization specifically Sasakawa global and public extension officers from Kano Agricultural and Rural Development Agency (KNARDA). This finding disagrees with that of Dickson, Ekpe and Egbe (2014) who asserted that although men also face barrier in livestock extension services but women are more prone to neglect and over looked by extension service providers because they are among the poor and vulnerable. This finding is not in line with IFPRI (2013) reported that women typically had less access to extension services andShafiq (2008), furtherposit that women are targeted nominally or marginally by transferring technological innovations.

4.5 CONSTRAINTS MILITATING AGAINST GOAT PRODUCTION AMONG GOAT FARMERS

Table 17below presented the constraints associated with goat production management in the study area as shown below.

Table 17: Constraints Militating against Goat Production Management among Goat Farmers

Goat Production Constraint	Male (%)	Ranking	Female (%)	Ranking
Prevalent of Pest and Disease	54 (31.4)	1st	45 (27.9)	1st
Feed/Forage shortage	20 (11.6)	3rd	31 (19.3)	2nd
Limited capital	23 (13.4)	2nd	23 (14.3)	3rd
Tediousness/ stressful mgt	7 (4.0)	8th	10 (6.2)	5th
Costly feed	18 (10.5)	4th	21 (13.0)	4th
Housing/ barn constraint	13 (7.6)	7th	10 (6.2)	5th
Accidents	5 (2.9)	9th	4 (2.5)	8th
High cost of medication	17 (9.9)	5th	8 (4.9)	7th
Sudden death and theft	15 (8.7)	6th	9 (5.6)	6th

Source: Field survey, 2018

Table 17 reveals that the most important constraint faced by the goat farmers in the study area was prevalent of pest and disease especially during the heat period. The Table further reveals that (29.9%) of the male goat farmers considered limited capital as the second most important constraint. This is followed by shortage or sometimes scarcity of feeds and forage (26.0) which

was ranked third; costly feed (23.4%) was ranked fourth while high cost of medication (22.1) as a result of long distance of veterinary clinics and sudden death of goat ranked fifth and sixth respectively. In respect to female goat farmers, the second major constraint militating against goat production was shortage or scarcity of feeds and forage which accounted for 47.0% and was ranked second. This was followed by limited capital (34.8%) ranked third, costly feed (31.8%) ranked forth where tediousness in management (15.2%), housing/barn problem were both ranked fifth. Also sudden death of goat (13.6%) was ranked sixth.

The least constraint in goat production management faced by male (6.55%) and female (6.1%) was accident which was ranked 9^{th} among the male and 8^{th} for the female.

CHAPTER FIVE

5.0 SUMMARY, CONCLUSSION AND RECOMMENDATIONS

5.1 SUMMARY

The study focused on role of gender in goat production management practices in some selected Local Government Areas of Kano State. Multi-stage sampling technique was used in the selection of 143 goat farmers (77 male and 66 female) for the study. Primary and Secondary data was used, Descriptive statistics (Percentage, Mean, Minimum and maximum), Logit regression model and Havard analytical framework were used to analyzed the data collected for this study.

The result reveals that majority 89.6% male and 80.3% female were married also farming or goat farming as there major occupation. The result also reveals that majority 92.2% male and 95.5% female had access to veterinary service, most were member of cooperative and majority 93.5% male and 97.0% female did not have access to credit facility for there enterprise. Majority owned goat through purchased by both male and female.

The mean ages of male and female goat farmers were 44 and 39 respectively; the mean flock/herd number of 12 and 11 for male and female respectively mean annual income of ₦51,506.49 and ₦33,477.27 respectively. The result of logit regression among male farmers reveal that the coefficient of household size was negative but significant at 10% level of significance and also annual income, extension contact were positive and both significant at 1% level of significance respectively while herd size was also positive and significant at 5% level of significance. With regard to female goat farmers, the coefficient of household size was also negative and significant at 10% level of significance while the coefficient of annual income and flock/herd size were positive but significant at 1% and 5% level of significance respectively.

Harvard Analytical Frame work results shows that barn construction is exclusive activity carried out only by male goat farmer while watering and feeding of goat is majorly by female. Male had more access to and control over goat farming resources compare with their female counterpart who have access to resources but less control over certain resources (Barn control, livestock inputs. The most 35.1% and 45.5% of male and female goat farmers received Livestock extension service through group method by female and mostly through individuals by male goat farmers. The reason may be due to the influence of NGO who wished to empower the female gender.Prevalent of pests and disease which was ranked as major constraint militating against goat production management.

5.2 CONCLUSION

The study was focused on gender roles in goat production management and concluded that both male and female were involved in similar and different roles in goat production. Construction of barn was majorly carried out by male, feeding and watering was majorly associated with the female, the male goat farmers had more access to and control over goat production/farming resources than the female goat farmers who had more access to resources but less control over certain resources like Barn control, livestock inputs (feeds, rake), and farm yard manure. The flock or herd size is low in both male and female, likewise their earned income. The female received livestock extension service more than their male counterpart. Therefore, it can be concluded that goat production in the study area was not gender sensitive for the fact that male performed substantial role, had more access and controls in goat production management but were not much involved in livestock extension services .

5.3 RECOMMENDATIONS

Based on the findings of this study; the following recommendations deemnecessary.

1. Goat farmers association or cooperative should be encourage to pull out there resources together to enable them have access to credit facility to improved their productivity.
2. Extension services still need to be more gender sensitive in extending services and or information about goat production in such that men goat farmers can also be participant to livestock extension service to improve goat production management .
3. There is need for goat farmers to be aware of causes of pest and disease for prevention against the disease.
4. Female goat farmers should be made to have equal control over resources like their male counterparts.
5. There is need for goat farmers to be practicing intensive system of production to prevent goat exposure to environmental challenges like accidents and thieves
6. People with special need should be more encouraged to involves in goat production so as to prevent them from street begging and to be financially self-reliance.

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APPENDICES

QUESTIONNAIRE

DEPARTMENT OF AGRICULTURAL ECONOMICS AND EXTENSION

BAYERO UNIVERSITY, KANO

QUESTIONNAIRE FOR GOAT FARMERS

Dear respondent,

Good morning /afternoon/ evening

I am a postgraduate student of the above named Department. I am conducting a study onGender Analysis of Goat Production Management in Some Selected Local Government Area in Kano State, Nigeria. I need to ask you some question to assist me in my research work. Please, answer the questions below with honesty and patience. All information will be used for academic purpose only and will be held in utmost confidentiality.

Thank you.

Yours faithfully,

Sabitu NurudeenOlayinka

(SPS/15/MEX/00018)

1. Name of the respondent (Optional)
2. Phone number of the respondent (Optional)…….
3. L.G.A…….
4. Name of the village/ Community……
5. Date of Interview……..

SOCIO-ECONOMICS CHARACTERISTICS

6. Age (years)……..
7. Gender: Male ( ) Female ( )
8. Marital Status: Single ( ) Married ( ) Divorced ( )Widow/Widower ( )

9. Household size……..
10. Annual income from farming …….
11. Annual income from goat production……..
12. Educational qualification; Never being to school ( ) Non-formal education ( ) Primary education ( ) Secondary education ( ) Tertiary education ( )
13. Herd size……
14. Major occupation; Farming/Goat rearing ( ) Trading ( ) Civil servant ( ) Others specify……..
15. Farming experience (years)…….
16. For how long have you been into rearing of goat (years)……..
17. Number of goat sold in 2017 (Please fill the table where applicable)

S/N	Size	Number	Price per Unit size
1	Large		
2	Medium		
3	Small		

18. Do you have contact with Extension Agent? Yes( ), No ( )
19. If yes, how often do you have such contact? Daily ( ) Weekly ( ) Fortnightly ( ) Monthly ( ) Quarterly ( ) Yearly ( )
20. Do you have access to veterinary services Yes ( ) No ( )
21. If yes, how
22. Do you have access to credit? Yes( ) No( )
23. If yes where did you get it from?.....
24. What do you use the credit for?.....
25. Are you member of any cooperative association? Yes( ) No ( )
26. If yes what are the activities of the cooperatives association?.....
……..... .
27. What benefits do you derived from being a member of the cooperative association? (Tick All those mentioned. Do not read choices)

S/N	Benefits received from cooperative association	Tick
1	Agricultural productivity training	
2	Access to credit/ loans	
3	Leadership/ group dynamics training	
4	Negotiated Product services	
5	Access to inputs at subsidized rates	
6	Social belonging	
7	Buy back services	
8	Other (specify)	

28. What production system are you using? Intensive system ( ) Semi intensive ( ) and or Extensive system ( )
29. Special Need Person (Disable) Yes ( ), No ( )

ROLES PLAYED BY MALE AND FEMALE IN GOAT PRODUCTION MANAGEMENT PRACTICES

30. Who does the following farm activities? Please Tick as appropriate from the table below.

S/N	Goat management Activities	Women	Men	Girls	Boys
1	Construction of barn or Housing				
2	Cutting fodder/ Tittering				
3	Feeding or serving fodder				
4	Serving Water/ Watering				
5	Cleaning and sanitation of barn				
6	Medication/ Vaccination/Deworming				
7	Marketing of goat				

31. Who decides on the use of income generated from goat products? Women ( ) Men ( ) Girls ( ) Boys ( )

32. Who does the following income generating activities? Please Tick as appropriate.

S/N	**Income Generated Activities**	**Women**	**Men**	**Girls**	**Boys**
1	Crop farming				
2	Casual labour				
3	Petty trading				
4	Employment				

33. Who does the following reproductive activities? Please tick as appropriate.

S/N	Reproductive Activities	Women	Men	Girls	Boys
1	Child bearing				
2	Child caring				

34. Who does the following household activities

S/N	Household Activity	Women	Men	Girls	Boys
1	Fetching water				
2	Fetching of fire wood				
3	Cleaning and Repairs				
4	Treatment of minor health issue				
5	Cooking or Food Preparation				

GENDER ACCESS AND CONTROL IN GOAT MANAGEMENT PRODUCTION

35. Who has access to the following resources? Please Tick as appropriate.

S/N	Resources	Women	Men	Girls	Boys
1	Barn				
2	Livestock equipment				
3	Cash				
4	Livestock				
5	Education				
6	Dung or manure collected				

36. Who has control over the following resources? Please Tick

S/N	Resources	Women	Men	Girls	Boys
1	Land				
2	Livestock equipment				
3	Cash				
4	Livestock stock				
5	Education				
6	Dung or manure collected				

37. How did you get the land you are using now? Inherited ( ) Purchased ( ) Leased ( ) Family land ( ) Allocated by the village ( ) Rent ( )
38. Under whose name is the land? Male member of the family ( ) Female member of the family ( ) Both ( )
39. How did you get the flock or animals? Inherited ( ) Purchased ( ) Gift ( ) Others (specify) ……
40. Under whose name is the flock? Male member of the family ( ) Female member of the family ( ) Both ( )

41. Which of these opportunities do you have in livestock production and who has them? Please Tick as appropriate (Tick all those mentioned. Do not read the choices)

S/N	Opportunities	Women	Men	Girls	Boys
1	Training in Livestock Production management				
2	Membership of livestock or farmer cooperative society				
3	Government support for women involvement in food production				
4	Source of food				
5	Source of income				
6	Source of Asset				

LIVESTOCK AGRICULTURAL EXTENSION SERVICES.

42. Did you receivedLivestock extension services? Yes ( ) No ( )
43. How do you perceive the effectiveness of extension services received? Very low ( ) Low ( ) Moderate ( ) High ( ) very high ( )
44. Which type or types of extension method do you use to receive livestock information?

S/N	Extension Method	TICK
1	Individual	
2	Group	
3	Mass	

45. What type of extension services do you receive from extension agents? Please Tick as appropriate from the table below.

S/N	Construction of barn for goat production	TICK
1	Routine Cleaning and Sanitation of barn	
2	Routine deworming of Goat against internal parasite	
3	Importance and formation of L/stock Cooperative	
4	Fodder bank using legumes	

5	Feed Conservation techniques (Silage and Roughages)	
6	Selection of Breeding Goat for improving Production	
7	Buck Fattening for increase HH income	
8	Agro-Pastoral system of Production	
9	Feeding of Concentrates	
10	Technical Support and Cross breeding	

46. Do you have challenges in receiving agricultural livestock information from extension agents? Yes ( ) No ( )
47. If yes, please list challenges in the table below.

S/N	**Challenges in receiving extension services from extension agent**	**Rank**
1		
2		
3		
4		

CONSTRAINTS IN GOAT PRODUCTION MANAGEMENT PRACTICES

Please tick as appropriate the constraints you do face in goat production management from the table below.(Tick all mentioned. Not read the choices)

S/N	**Production management problem in goat production**	**Tick**	**Rank**
1	Prevalent of Pest and Disease		
2	Scarcity of feed/forage		
3	Limited capital		
4	Tediousness in Management		
5	Costly feed		
6	Inadequate space and or barn problem		

7	Accidents		
8	Sudden Death of goat		
9	High Cost of Medications		
10	Poor Marketing System		
	Others (Specify)		

48. How do you think the problems can be solved? .....

……

……..

49. In what ways do you think goat production could be improved?

……

……

……

……

Thank you.

LOGIT REGRESSION MODEL RESULTS FOR MALE AND FEMALE GOAT FARMER

Result of Male Goat Farmer

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	44.201[a]	.218	.390

a. Estimation terminated at iteration number 7 because parameter estimates changed by less than .001.

Classification Table[a]

	Observed		Predicted		
			Dependent variable Mgt Practice Index		Percentage Correct
			less than 4	4-7	
Step 1	Dependent variable Mgt Practice Index	less than 4	4	7	36.4
		4-7	1	65	98.5
	Overall Percentage				89.6

a. The cut value is .500

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	Age_male	-.042	.068	.368	1	.544	.959
	HHsize_Male	-.130	.075	3.033	1	.082	.878
	Herd_Size	.247	.110	4.988	1	.026	1.280
	Ann_Incom_goat	.000	.000	6.902	1	.009	1.000
	Exp_Goat	.020	.069	.086	1	.769	1.021
	Mar_status	-.512	1.446	.125	1	.723	.599
	Edu_Qualification	.097	.186	.270	1	.603	1.102
	Mjor_Occupation	-.149	.448	.110	1	.740	.862
	Contact_with_Ext_Agent	1.856	1.073	2.990	1	.084	6.400
	Access_Credit	1.087	1.541	.497	1	.481	2.964
	Cooperative_Membership	-1.505	1.059	2.019	1	.155	.222
	Constant	6.253	2.602	5.774	1	.016	519.754

a. Variable(s) entered on step 1: Age_male, HHsize_Male, Herd_Size, Ann_Incom_goat, Exp_Goat, Mar_status, Edu_Qualification, Mjor_Occupation, Contact_with_Ext_Agent, Access_Credit, Cooperative_Membership.

Result of Female Goat Farmer

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	40.079[a]	.216	.377

a. Estimation terminated at iteration number 7 because parameter estimates changed by less than .001.

Classification Table[a]

Observed			Predicted		
			Dependent variable Mgt Practice Index		Percentage Correct
			less than 4	4-7	
Step 1	Dependent variable Mgt Practice Index	less than 4	4	6	40.0
		4-7	1	55	98.2
	Overall Percentage				89.4

a. The cut value is .500

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	Age_Femaleii	-.053	.077	.470	1	.493	.948
	HHsize_Femaleii	-.118	.092	1.641	1	.200	.889
	Ann_income_femaleii	.000	.000	6.314	1	.012	1.000
	Herd_size_ii	.280	.128	4.773	1	.029	1.323
	Exp_Goat_Female2	.014	.070	.040	1	.842	1.014
	Mar_status	.188	1.691	.012	1	.912	1.206
	Edu_Qualification	.034	.211	.025	1	.874	1.034
	Mjor_Occupation	.019	.546	.001	1	.972	1.019
	Contact_with_Ext_Agent	-.062	1.080	.003	1	.954	.940
	Access_Credit	-.187	1.503	.015	1	.901	.830
	Cooperative_Membership	.376	.973	.149	1	.699	1.456
	Constant	6.197	2.760	5.043	1	.025	491.423

a. Variable(s) entered on step 1: Age_Femaleii, HHsize_Femaleii, Ann_income_femaleii, Herd_size_ii, Exp_Goat_Female2, Mar_status, Edu_Qualification, Mjor_Occupation, Contact_with_Ext_Agent, Access_Credit, Cooperative_Membership.