EFFECTIVENESS OF ADOPTION OF IMPROVED TECHNOLOGIES ON LIVESTOCK PRODUCTION AMONG NOMADIC FARMERS IN NIGER AND KWARA STATES, NIGERIA.

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A THESIS SUBMITTED TO THE SCHOOL OF POSTGRADUATE STUDIES, IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF MASTER OF SCIENCE DEGREE IN AGRICULTURAL EDUCATION OF THE DEPARTMENT OF VOCATIONAL AND TECHNICAL EDUCATION, AHMADU BELLO UNIVERSITY, ZARIA.

MAY, 2015

DECLARATION

I declare that this Thesis has been written by me in the Department of Vocational and Technical Education under the supervision of Dr. D. O. Oni and Dr B. I. Okeh. All consulted works have been duly acknowledged in the text and a list of references provided. No part of this thesis was previously presented for another degree or diploma at any University. It has not been presented in any form for the award of higher degree in any university.

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(M.Sc/EDUC/8992/2009-2010) Date

CERTIFICATION

This thesis titled 'EFFECTIVINESS OF ADOPTION OF IMPROVED TECHNOLOGIES ON LIVESTOCK PRODUCTION AMONG NOMADIC FARMERS IN NIGER AND KWARA STATES, NIGERIA' by Baman ABUBAKAR meets the regulation governing the award of Master of Science in Agricultural Education of Ahmadu Bello University, Zaria and is approved for its contribution to knowledge and literary presentation.

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DEDICATION

This thesis is dedicated to my late Mother Zaynab, my wife Hajara and to my children Mustapha, Zayyan, Abbasadiq and Zaynab.

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I humbly acknowledge Allah (S.W.T) the Most gracious and Most Merciful for giving me this great chance and courage to undertake this research work successfully. May all praises be endowed to Him, the Most High.

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OPERATIONAL DEFINITION OF TERMS

For simple understanding and further elaboration to the study the following unfamiliar words or phrases were defined as they affect the study:

1. Arable Farmers: These are farmers involved in the production of crop products that can grow and be harvested within a year.

2. Economic Status: Nomadic farmers level of income as a result of adopting livestock technologies in livestock production.

3. Fulani: A group of nomadic herders involved in the rearing of livestock in Nigeria.

4. Innovation: The process of change through the introduction of new methods, ideas, or products into existing livestock production.

5. Livestock Technologies: Technologies used by the farmers to improve the production of livestock.

6. Nomad: A group of mobile farmers without permanent settlement moving about with their herds in search of pasture to feed their livestock.

7. Pasturalists: Farmers concerned with the raising of livestock on pasture.

8. Sedentarization: Transition from nomadic system of farming to permanent settlement in a specific place to rear livestock.

9. Standard of Living: Social change of Nomadic farmers as a result of adopting livestock technologies to improved production of livestock.

ABSTRACT

The study was carried out to investigate the effectiveness of adoption of improved technologies on livestock production among nomadic farmers in Niger and Kwara States. Four specific objectives, four research questions and four null hypotheses were formulated. The population for the study was nomadic farmers from two of the six Geo-political zones in Niger and Kwara States. Multistage sampling technique was used to select three hundred and fifty four nomadic farmers. Five hundred and eighty copies of questionnaire were used to collect data from the respondents, a rating scale questionnaire was used for the respondents to indicate their degree of agreement the formulated null hypotheses were tested at 0.05 alpha level of significance. Percentage was used to analyse the bio-data of the respondents, while mean was used to answer the research questions. The resultss from research questions indicate significant adoption of technologies by nomadic farmers. Data collected for the study were subjected to statistical analysis by the use of one sample chi- square test for null hypothesis one, while Pearson product moment correlation was used to test null hypotheses two ,three and four . Only Null Hypothesis I was retained because chi square value of 38.87 was lower than critical value of 40.113 at df 27 with significant p value of 0.6 higher than alpha level of significance, while null hypotheses two, three and four were rejected since their calculated significant (p) values of 0.000,0.002,0.003 were lower than alpha 0.05 level of significance , the finding also revealed that nomadic farmers have been able to use new technologies such as drugs for treatment of sick animals to improve their livestock production system. This has resulted in increased economic status of the farmers and improved standard of living among the nomadic farmers. However their strong belief in traditional values made it difficult to assimilate new systems into existing practice. Based on the findings, it was recommended among others things that government should encourage nomadic farmers to adopt modern farming practices and use improved technologies in livestock

production, also government and nongovernmental organizations should make these technologies available at subsidized rate.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Livestock production is an aspect of agriculture that is vital for the survival of any society as; it is concerned with the production of all types of domestic animals and poultry particularly those that are of economic value to man and the society. It is the major source of protein and industrial raw materials for any community and a source of foreign exchange to some countries (Hemme and Otte, 2010). It also provides employment and income particularly to those involved in livestock production. Livestock production includes the rearing of cattle, sheep, goat, poultry, fish and even horses (Are, Igbokwe, Asadu, and Bawa, 2010). Janhnke (1982) identified the following as categories of domestic livestocks found in tropical Africa, they include:

1) Large ruminants (Cattle and Camel)
2) Small ruminants (Sheep and Goats)
3) Non-ruminants of grazing and non-grazing which include equine, pigs and poultry.

Eroarone (2010) observed that Nigeria is one of the four leading livestock producers in sub – Sahara Africa. Are (2010) also stated that in 2006 the livestocks population comprised about 15.2 million Cattle, 28 million goats, 23 million sheep, 10.5 million Asses, 2.6 million horses and 1.8 million Camels. The increasing demand for livestocks and livestock products due to rising population has led to challenges in Nigerian livestock industries. The traditional system of livestock production which is pastoralist and involves farmers grazing their livestocks on natural vegetation has resulted to conflict between the nomadic livestock farmers and Arable crop farmers. The effects have been lost of lives and property on both farmers. These groups of farmers used to live in harmony with one another, but recent events have led to tension between them (Emmanuel, 1998).

The social and cultural way of life of nomadic farmers have become infused into the system of livestock production. For instance Grigg (1969) observed that nomads' status is determined by the size of their herds and are so conservative when it comes to accepting anything that will alter their production system. Their production system does not allow openness and acceptance of new ideas aimed at improving production. Their closeness to their livestock also makes it difficult for an average nomad to eat and sell stock to improve his economy as well as standard of living.

In the words of Kennedy (2011), adoption is a physical or behavioral characteristic that has developed to allow an organism to better survive in its environment. Adoptions are results of evolution; it is the ability to adjust to new information and experiences through learning in the ever changing environment. Adoption is a transitional tool employed by extension workers, as it allows farmers to fit their production system into the challenges of food production in their community. Adoption of innovation (technology) by farmers involves the process whereby prospective farmers are exposed to, consider and finally practice a particular innovation that will improved their productivity and standard of living (Mosher, 1978).

Innovation according to Hall and Dijkman (2006) is the process of seeking development, adopt, imitate and adopt technologies which are relatively different from previous ones. Effective adoption in agriculture occurs when farmers see the need for change and are adopting that "need" into their production system. The use of improved varieties of crops or breeds of livestocks by farmers is an effective adoption process. The livestock farmers are faced with constant challenges in both social life and method of livestocks production. Government efforts in the provision of nomadic education, establishment of extension services, establishment of veterinary clinic and the establishment of livestock research institutes are all aimed at adopting the traditional livestock producers into the main stream of modern agriculture. However little results have been achieved, as the farmers still believe and practice their age long system of livestock production.

Effective adoption leads to Integration which is an act or instance of combining two or more ideas into an integral whole with the aim of recognizing the need for change. It is made in order to create a new outlook which will result in developing a new direction changing the old setting, with acceptance of new reality so as to make the farmers meet the demand of production (United Nation Conference on Trade and Development, 2010). Effective adoption of livestock and perennial crop according to Sanchez (2010) may also increase production per unit of land in a sustainable manner through utilization of crop products to feed livestocks while livestock droppings are used to improve soil fertility. The government's efforts in providing specific grazing land and permanent homestead to nomadic farmers in the early 1930s in Mambila Plateau was one of the first efforts aimed at adapting the nomad to sedentary livestock farming, (Nuru, 1988).

Livestock technologies refer to those technologies which are developed through scientific research to improve animal production and at the same time reduce or eliminate drudgery associated with traditional system of farming. Technologies for livestock production have greatly improved livestock production and at the same time increased income generation of the livestock farmers (Halls and Dijkman, 2006). These technologies include genetic improvement of breeds of livestocks to make them more prolific, disease resistance breeds and drugs to treat different types of pests and diseases. These are now available for use by the farmers. New species of fodder crops that are highly nutritional and easy to cultivate were made available to farmers. (Minjauw and Romney, 2010).

Nomadic farmers are livestock farmers who practice transhumant system of farming migrating from one place to another, in search of greener pasture to feed their livestocks and have over the years relied on their own methodology to produce livestocks for the Nigerian economy. Government has recognized the immense contribution of livestock production to the growth and development of Nigerian society. Kwara and Niger states governments introduced many

programmes such as sedentarization of Nomadic Fulani, establishment of grazing land, provision of extension services (Niger State Ministry for Livestock and Fishery Production,2007 and Kwara State Ministry for Agriculture and Natural Resources, 2010). Despite all these efforts, livestock production by nomadic farmers in both the states has only increased numerically, as the quality of production still needs improvement. Livestock production is suppose to lead to massive improvement not only in production, but also improvement in the economic fortunes of the adopters, and when these happen the living standard of the farmers will equally improve.

1.2 Statement of the Problem

A number of researches, Ugo ,Luca et al (2011), Kamil and Mohammed (2005), Pico-ciamarra, Ahuja et al(2012) had indicated that there were a number of factors that determine the effectiveness of livestock technologies in livestock production by farmers in Nigeria. Interaction by the researcher with extension workers in Niger and Kwara States have also identified a number of factors that could increase or hinder the effectiveness of adoption of livestock technologies by farmers, even though some of these factors are specific to livestock farmers. Those with particular bearing to Nomadic farmers include conservativism of farmers when it comes to accepting change, socio-cultural belief which is combined with their system of livestock production, illiteracy of the farmers and lack of access tolivestock technologies and their availability, including lack of sufficient practical knowledge on how to use them.

The desire to embark on this research study therefore stemmed from the observed poor adoption of livestock technologies in livestock production by nomadic farmers, from whom eighty percent (80%) of livestock production is derived (Nuru, 1989). The researcher shared the same view with Sanchez (2010) adoption of livestock technologies by nomadic farmers will lead to increase in production per unit of land leading to positive change from old to new method, with improvement in the socio-economic status of the farmers. The situation is different with the

nomadic farmers who are not better off on both management practices of livestock production and standard of living in both states. The increasing population of livestocks kept by the nomad is not the solution to protein and industrial raw material needs of the states, their population will lead to competition for limited available land by arable and nomadic farmers. The effect of adoption is yet to be felt in both states

The researcher observe from the records made available, that Niger state government had established mobile veterinary clinics, and Zonal Livestock Inspectorate Department in all Local Government Areas. Also the Government established grazing reserves and provided access to water for livestocks in Local Government Areas of Mariga, Kontagora, Wushishi, Mashegu, Rijau, and the development of new ones in Lavun, Bida, Paikoro, Lapai Local Government Areas (Niger State Ministry for Livestock and Fishery Development, 2008). The state government also established Nomadic schools across the state to provide western education to the children of the Nomads. (Niger State Agency for Nomadic Education, 2007).

Equally, Kwara State Government has identified Baruten/Kaima axis as location for cattle ranch, the Shonga Project which provided land for White Zimbabwean cattle farmers is aimed at integrating the pastoralist's local breed to improve their stock and at the same time Shonga Dairy was to encourage the pastoralists to sell their milk to the established cooperative farms in the area. (Kwara State Ministry for Agriculture and Natural Resources, 2010) The goal was to gradually change nomadism to ranching through technological adoption for improved livestock production. The State Government also established veterinary clinic recruited extension workers and provided extension workers with refresher training. All these were aimed at effective adoption of livestock technologies by Nomadic Farmers in the State (Kwara State Ministry of Agriculture, 2010). These policies and programmes are supposed to be a 'green light' to the improvement in livestocks production.

It is clear that the Nomadic farmers in both Kwara and Niger States still hold on to their existing practices such as seasonal migration, and use of local breeds, a situation that will not improve the livestock production in the study area. It is based on this background that this research work was carried out, so as to examine the level of Adoption of improved technologies by Nomadic farmers in livestock production in Niger and Kwara States.

1.3 Objectives of the Study

The main objective of the study was to investigate the effectiveness of adoption of livestock technologies in livestock production by nomadic farmers in Niger and Kwara States. The specific objectives were to:

1. identify the socio-cultural practices of nomadic farmers which are perceived as constraints to livestock production;
2. examine the extent to which adoption of livestock technologies has improved livestock production by nomadic farmers in Niger and Kwara States.
3. ascertain the perception of farmers and extension workers on the economic status of nomadic farmers as a result of adopting livestock technologies in Niger and Kwara States; and
4 assess the nomadic farmers' standard of living as a result of adoption of livestock technologies in Niger and Kwara States

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1.4 Research Questions

The study provided answers to the following research questions:

1. What are the socio-cultural practices of nomadic farmers which are perceived as constraints to adoption of new technologies in their system of livestock production in Niger and Kwara States?

2. To what extent do farmers adopt livestock technologies in improving their livestock production in Niger and Kwara States?
3. What are the farmers' economic status as a result of adoption of livestock technologies in livestock production in Niger and Kwara States?
4. To what extent does adoption of livestock technologies affect farmers' standard of living in Niger and Kwara States?

1.5 Research Hypotheses

The four (4) Null Hypotheses were formulated to guide the study and were tested using appropriate statistics.

1. There is no significant relationship between the socio-cultural practices of nomadic farmers and their constraint in the adoption of livestock technologies in their system of livestock production in Niger and Kwara States.
2. There is no significant relationship between the extent of adoption of livestock technologies and the improvement in livestock production .
3. There is no significant relationship between nomadic farmers' economic status and adoption of livestock technologies in Niger and Kwara States.
4. There is no significant relationship between farmers' standard of living and adoption of livestock technologies in livestock production in Niger and Kwara States.

1.6 Basic Assumptions for the Study

The study was based on the following assumptions that;

1. effective understanding of the social and cultural setting of nomadic farmers will facilitate their adoption of new technologies to improve livestock production in Niger and Kwara States.

2. there is conflicting understanding between the needs of Nomadic farmers and Government policies and programmes which are aimed at improving livestock production in Niger and Kwara States.

3. the inability of Nomadic farmers to adopt technologies developed by research institutions is as a result of lack of knowledge of their activities by the farmers in Niger and Kwara States.

4 the trends in climatic change have serious consequences in the availability of natural grazing lands required by the Nomadic farmers for the grazing of their livestocks.

1.7 Significance of the Study

The study will help Niger and Kwara State Governments to further understand the dynamics of Nomadic farmers' cultural setting, so as to draw up policies and programmes that will suit the farmers' socio-cultural practices to effectively adopt livestocks technologies in livestock production in the States. The study will also help to educate nomadic farmers who are resisting change, to see the need for change in their system of livestock production.

In addition, the study will also assist and educate Extension workers in Niger and Kwara States to have a proper understanding of who nomadic farmers are, and develop new approach towards dissemination of information for the improvement of livestock production by the Nomadic farmers in both States.

The study will also provide better understanding for curriculum planners and educators in Agriculture education studies to design and include the study of nomadic livestock production in the teaching and learning of livestock production in Nigerian farming system.

1.8 Delimitation of the Study

The study was delimited to the Effectiveness of Adoption of Improved Technologies on Livestock Production among nomadic Farmers in Niger and Kwara States; because the researcher was interested on the effects the adoption of livestock technologies will have on livestock production in the two States. The study was delimited to the Nomadic farmers involved in livestock production in Niger and Kwara States, the Nomadic farmers in the two States serve as the main producers and suppliers of livestocks. Equally, . Niger and Kwara States were chosen because the States have similar climatic and vegetative conditions conducive for the rearing of ruminant livestocks and also they share a common boundary that allowed the movement of nomad within the States.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

In this chapter the researcher reviewed the related literatures under the following Sub- headings:

2.1 Theoretical Framework

2.2 Definition of Nomadic Pastoralism

2.3 Cultural Practice of Nomadic Farming

2.4 Need for Livestock Improvement in Nigeria

2.5 Role of Government in Nomadic Livestock Improvement

2.6 Need for Change in Nomadic Farming

2.7 Livestock Technology in Livestock Production

2.8 The Concept of Adoption Process in Agriculture Production

2.9 Constraints to Effective Adoption Process

2.10 Adoption of Improved Livestock technologies by nomadic Farmers

2.11 Effects of Technology on Livestock production

2.12 Empirical studies

2.13 Summary of Literature Reviewed.

2.1 Theoretical Framework

The theoretical background for this study is based on theories of social change which stipulate that societies exhibit two kinds of forces: those which seek to promote change and those that strive to maintain the status quo. These forces in the view of Foster (1962) are locked in perpetual combat, the former trying to throw the latter off balance to gain ascendancy, and the latter trying to prevent this from happening. However Strauss (1959) in Mohammed (2011) adds that the essence of human life is change, development and growth. However, the process of change involves interaction with forces which are elements of change. The process of integrating these ideas will provide a sort of road maps towards adaptation of new ideas, which will provide solution to present challenges and prevent obstacle to the realization of objective.

Social change is either planned or unplanned; change is considered social when it is wide spread affecting societal pattern of daily life or structure of its institutions. Rogers and Shoemaker (1971) are of the view that imminent/or internal social change occurs when members of social system with little or no external influence create and develop a new idea which then spreads within the system, while on the other hand contact change occurs according to Rogers, when sources external to the social system introduce a new idea. It may be either selective or directed. Selective contact results when members of social system are exposed to external influence and accept or reject a new idea from that source on the basis of their needs. Directed social change, or planned change, is caursed by outsiders who on their own or as representatives of change agencies, intellectually seek to introduce ideas in order to achieve goals they have defined (Roger, 1971).

The theory of social change was used to examine the factors affecting adoption of technologies by nomads. The significance of social change to this study is therefore planned change, an interventionist perspective that seeks to introduce ideas to achieve set goals. Planned change in this study is the infusion of ideas to change the existing practices which are

'unproductive' to some level, and create awareness for adoption of improved technological techniques with the specific objectives of altering the undesirable practices which are not meeting the challenges of modern farming practices and sustainable development (Spore, 2011).

Gefu (1986) in Mohammed (2011) observes that all societies are at a particular developmental stage traditional" and that traditional societies would experience similar changes as it has happened to those societies in developed nations which eventually become "modern". Gefu(1986) further added that some writers who emphasize transformation of cultures believed that ebbed in the traditional society were cultural practices believed to be barriers to development. In order to develop, these cultural barriers have to be removed, most especially those cultural practices that breed conservative ideology.

The concept of social change therefore has pervasive proposition, expressed or implied that the essence of change is the dynamic interaction of two sets of opposing forces perceived cumulatively as incentives for change. The theories and concepts focus on effects the introduction of new technological practices will have on the nomadic farmers and the influence the adoption will have on food production.

The effect of this concept is that, it will focus on how certain factors that affect productivity, as a result of interaction with the existing practices and the effectiveness of change on the socio-economic status of the farmers, since change is required for national development and transformation.

2.2 Nomadic Pastoralism

According to Grigg (1976) nomadic pastoralism is a farming system generating animal products in which both humans and stock entirely migrate over distances which require separate or moveable dwelling in order to exploit seasonal pastures and or avoid areas of seasonal disease risk; while Nuru (1988) views nomadic pastoralism as a traditional livestock management and a

form of resource utilization that enables pastoralists to survive harsh environments. It is both an adaptation to environmental and historical factors prominent among which are seasonal variations in forage and water availability, disease, social interaction and the influence of government policies on the production system.

Salzman (1980) in Mani and Van Kaufmann(1988) defined nomadism as movement of household in the course of the year through resource extraction involving organization, timing, distance, direction, frequency which may have nothing whatsoever to do with cattle or even livestock as in the case of the Gypsies and hunter-gathers who may be considered as nomads. Wikipedia (2011) added that nomadic pastoralism is a branch of agriculture concerned with the raising of livestock. It is animal husbandry, care, tending and use of animals such as camel, goats, sheep, cattle and yaks. It may have a mobile aspect, moving the herds in search of fresh pasture and water. It identifies the following mobility patterns in nomadic Pastoralism:

(1) It is generalized food – producing strategy with its main base relying on the intensive management of herd animals for their primary products of meat and skin, and for their secondary products such as wool or hair, milk, blood, dung, traction, and transport;

(2) Because of the different climates and environments of the areas where nomadic pastoralism are practiced and because of the ecology which affect their herd animals (daily movement and seasonal migration of herd).

Payne (1992) states that it is difficult to define nomadic pastoralism as there is a continuum between pastoral nomadism, in which livestock-owning people practice no settled agriculture and sedentary cultivation in which people practice livestock raising. Payne adds that nomadic pastoralist are essentially opportunist, seeking on a day-to-day basis the best forage and water resources available and also reacting to rapid changes in ecology and climatic condition of the rangeland. Kallah and Kera (1988) conclusively add that pastoralism is a livestock production system that relies mainly on utilization of natural resources from grass land and ecosystem to

derive products for human consumption and or use. This, Pye-smith (2012) adds has supported tens of millions of people who make the best use of harsh environments and provide many economic and social benefits.

2.3 Cultural Practices of Nomadic Farmers

Grigg (1969) classifies nomadic farmers in two main categories in accordance with their cultural practices, namely true nomad who have no permanent dwelling and do not practice agriculture (arable crop cultivation) and semi – nomads involved in seasonal migration, after cultivation of crop during the off season. Grigg adds that they rely on their cattle, sheep, goat and camel for milk to provide food, but rarely eat meat. However, they are often described as living in a symbiotic relationship with cultivators, through their pasturing on arable stubbles of sedentary farmers.

The International Livestock Center for Africa (ILCA) (1979) links nomadic farming with the Fulani ethnic group in Nigeria and describes their social organization as consisting of a household camp. Fulani households have no fixed entitle, but are subject to fission and recombination in response to social factors and seasonal shifts in ecological conditions. Such a household camp normally consists of a cone of related males with their wives and children, but not always based on kinship. These household groups also do not stand in precisely defined relations to others in terms of lineage or clans. Affiliation to larger lineage and clan groups are recognized only in rather general terms. ILCA (1979) adds that household camps combine during the dry season to form transhumant lineage groups with size varying from year to year or even within one season.

ILCA (1979) identifies the constant visitation of market and other gathering places where information is obtained on such vital factors such as pasture conditions, rainfall and the incidence of diseases. This puts the household head who must have his own cattle at a serious disadvantage

in making decisions, as such a man will not leave his father's household until he has a son eight or nine years old who can look after his cattle, even though he may have available herd of his own. He may act as his father's assistant in planning the management of the herds while his own cattle are tended with those of his father by a young unmarried brother.

Muhammad and Ardo (2010) state that pastoral production system is based on grazing animals on natural pasture with frequent movement of families and animals from one place to another according to seasons in the annual cycle, as observed by Grigg(1969),ILCA (1979) and Preston and Leng (1998), the authors added that though transhumance may be occasionally prompted by threats of animal diseases or personal security, the practice is dictated primarily by availability of fodder, crop residue and water for stock needs. Transhumance (nomadism) as a form of livestock management, is becoming increasingly difficult or nearly impossible for lack of access to land in wake of rapid population and agricultural expansion which result in high competitive demands of lands for other uses. The contemporary emerging trends in land use pattern and state of natural resource development and conservation in Nigeria show that pastoral livestock production is at cross-road with uncertain future. Livestock pastoralists are plagued by a number of problems such as diminishing availability of land space for grazing, stock movement, deterioration of existing rangeland with low biomass yield, scarcities of water and poor carrying capacities, endemic diseases and parasites, abysmally low literacy rate, physical isolation, environmental constraints, near absence of extension services, skewed agricultural development policies as well as lack of education and relevant training.

2.4 Need for Livestock Improvement in Nigeria

Emmanuel (1998) observes that the increasing population of livestock cannot meet up with limited land size. Emmanuel further cited the recent decline in nomadic pastoralism as an evidence of the fragility and inevitable replacement of nomadic strategy of livestock production

as a result of increasing pressure on grazing land. Grazed land parches have been put into alternate uses for individual(s), agriculture and urban development projects with decline from 67% of Nigeria's total land in 1951 to an estimated 39% in 1986 (Federal livestock, 1978). Clare (1991) states that a variety of arguments have been put forward as a rationale for intervention and development efforts among pastoral nomads by identifying eight of such developmental efforts which include;

1. raise their standard of living.
2. integrate them into the national society.
3. make them easier to administer.
4. prevent them from posing a military threat to their national government.
5. make them economically self – sufficient.
6. make them contribute to the national economy.
7. make pastoral nomadism a viable form of live hood.
8. promote better diplomatic relations with pastoral nomads.

However, Hemme and Otte (2010)observe that a more competitive smallholder dairy production could be a powerful tool for reducing poverty, raising nutrition levels and improving the livelihoods of rural people. According to Spore (2011), global milk demand is growing by an annual 15 million tones, mostly in developing countries. Production of this increased volume of milk by small-scale dairy farmers would create 3 million jobs per year in primary production alone.

2.5 Roles of Government in Nomadic Livestock Improvement

Nuru (1982) cites the involvement of government in livestock production through the efforts of colonial administrators in Burdon annual report of 1909. It states that livestock in Sokoto Provence when developed would be of a great economic fortune for the province, that is,

Northern Province. Emovon (1988) summarized the effort of government through the establishment of Federal Livestock Department (FLD) and National Livestock Production Department (NLPD).These concerned with policies on reserve management, production and health of livestock through encouraging policies on grazing reserves and disease control including that of nomadic education so that the Fulani and their families can be truly assimilated into political and social structure of the country, (Muhammad, 2011).

Nuru(1988) believes that a comprehensive involvement of government in livestock improvement have started between 1900 and 1960 during which the colonial government initiated disease control programmes in order to raise livestock production and ultimately generate high income through the imposition and collection of cattle tax. They also embarked on the establishment of farm centers between 1921 and 1934 to provide feed supplement minerals and veterinary supplies with advice on how to improve the production of local livestock. This led to the establishment of Shika stock-farm centers in 1927 with a view to use farm centers as models to persuade pastoral producers and in particular nomadic pastoralists to settle permanently.

In 1942 the idea of sedenterization was put to work in Jos area, under which each (pastoral) producing unit or household was allocated four hectares of pasture land in the area with the hope that they would not only settle permanently but would also engage in mixed farming. So also the World Bank between 1949 and 1954 reported to the colonial administration that free range management system used by the pastoralists is counter – productive and wasteful and undesirable. It recommended the establishment of such facilities as man made channels, watering points, veterinary post and most significantly the establishment of grazing reserves in major producing areas of Northern Nigeria.

This led to the establishment of Ruma Tukar – Janganai grazing reserve. Multiplication centers, under livestock improvement and breeding centers (LIBC) were established to have a

variety of sheep, goat and cattle breed that are meant to breed for improved programme. In the years of the second, third and fourth National Development Plan Period 1970 through 1985, similar statements were made concerning pastoral and livestock production. The primary objective of the government had always been to increase livestock production and thereby making more beef and dairy products available to Nigerian population.

The role of extension workers as change agent in livestock improvement through nomadic pastoralism was identified by Yazidu (1988), where special radio programme was introduced directing and advising Fulani on livestock feeding, disease control, and relationship with farmers. Arrangements were made with the Nigeria Produce and Marketing Company to provide cotton seed for Fulani which was collected at zaria or Funtua while Agricultural Extension Research and Liaison Services (AERLS) provided transport to collect the seed and transported it to the nearest motorable points to the camps on agreed control location. There were provision of veterinary services to the Fulani herds, television programmes as well as radio programme, posters and leaflets were also made available to the nomadic farmers. There was organized daily visit to camps, the Fulani were advised on management, feeding, minor ailments treatment while major ones were recommended to veterinary clinics.

2.6 Livestock Technology in Livestock Production

Technologies that are available for all livestock according to Otanu and Dung (2002) have helped to improve nutrition, breeding, housing, health and general management.

Otanu and Dung (2002) also identified technologies which can be used on livestock production as developed by research institutions to include technology for;

- Improvement of straws and grass hay – this technology is used to improve the nutritional quality of the grass so as to provide more nutrients to the livestock without pastoralism.
- browse and agro-Industrial By-Products utilization technology.

- technology on dairying
- reducing pre-weaning mortality
- higher reproductive efficiency.
- Artificial insemination
- Disease control
- Pest control
- Parducking
- Disease control
- Pest control

This will make nomadic farmers become sedentary and improve on their production. Iheanacho and Ogunbameru (1997) are of the opinion that agricultural technology should be able to meet the basic agricultural needs of farmers, irrespective of their socio-cultural and economic status with no gender or cultural restriction, as to who should practise the new technology. The practice should not involve huge capital outlay, be nurtured with the cultural and spiritual integrity of the farming community to which they are to be introduced. Kamil and Mohammed (2005) in their assertion, observe that new technology may change the optimal level of input, but the profitability of adopting new technology depends on how the demand for input is changed and how large the productivity improvement is. Therefore an understanding of the effect of new technologies on productivity is crucial for a better understanding of the potential diffusion of the technology among farmers.

2.7 Concept of Adoption Process in Agriculture production

Adoption is an outcome of a decision to accept a given innovation (Feder and slade, 1984) while Rogers and Shoemaker (1971) define adoption process as a mental process through which an individual acquire knowledge of innovation to make decision to adapt or reject new idea.

Arokoyo (1981) stresses that farmers decision about whether or not to adopt a recommended practice has been recognized to occur in stages rather than instantaneous. Akubuilo, Orjioke and Egwu (2006) are of the view that adoption of innovation is a decision to make full use of a new idea(s) as best course of action available and involves a change in orientation and behavior of the farmer from the time he/she becomes aware of the innovation to its adoption.

Akubuilo, Orjioke and Egwu (2006) also added that the level of adoption of an innovation by an individual is influenced by personal, socio-cultural, economic and communication factors existing at that time, Barnett (1951) concludes that facility and extent of communication influence the accumulation of ideas, with well-developed channels of communication there goes a greater possibility of building up intellectual resources, (leading to adaption of innovation), Hailu (2011) supports the views of Akubuilo et al (2006) on communication as the key to all successful adoption of technology, the best of which focuses on the value of farmers passing on information and practices to one another. The farmer-group approach plays a valuable role in realizing economy of scale, and enables farmers to support each others as they learn to adopt new methods. Sanchez (2010) observes that adoption will lead to integration which has become a fusion process as a result of rising demand for more agricultural products and the inability of traditional system to meet these challenges. Pejata (2011) identifies these challenges as inability to meet the food need of the growing population and quest for sustainable development, as the major factors behind adoption in agriculture. David (1991) states that adoption is important as it ensure that individual technologies are well suited to local condition. However in many cases technologies may already be in a form that can be rolled out nationally without modification. Other technologies may require a careful evaluation phase to assess their compatibility and safety with respect to local conditions.

2.8 Constraints to Adoption Process

Tanko (2002) observes that it has been difficult to adopt methodologies employed to crops for livestock due to the peculiarities of livestock and the mode of production adopted by the producers. He then identifies the following farmers' related problems on the adoption of technology to include:

- Lack of trust
- Conflict of interest
- Traditional values and practices.
- Resources available and
- Individual Differences in management skills and practices.

Ani, Ogunbameru and Undiandeye (2008) are of the view that certain factors could influence the adoption process depending on the socio-cultural characteristics of the farmers as well as the nature and type of technology in question. Benbridge (1991),Van clay (1992) and Ogunbameru (2001) in Ani et al (2008) note some factors that can affect adoption of technology to include; cost, visibility, complexity, divisibility, utility and group action.

Alao (1973) therefore called for a modern method of production which requires high and superior management ability with economic production for the market. In their own assessment the Institute for Livestock Research Internationally (ILRI). (1995) observes that animal production is often and usually wrongly seen as harmful to the environment. ILRI. (1995) identified poverty and illiteracy as the main reasons for farmers using practices that may result in natural resource depletion. Increased farm income from cash generating activities can lead nomadic farmers not to adopt new practices. Neither people nor policy makers in poor countries will feel much concerned for the environment or biological diversity until basic needs are fulfilled and economic systems develop capacity to respond to rapidly increasing demand for food.

2.9 Adoption of Improved Livestock Technology by Nomadic Farmers

Adoption of improved technology is defined as the degree of use of new technology or the total application of the technology package when the farmer has full information about the technology and its potentials (Aniedu,2007) while Bene,Obinne and Akpehe (1994) added that adoption process can be seen as a mental process that a person passes through starting from first hearing a new idea to the complete and overall acceptance of the thought into his behavioral system. Also innovation adoption stage is arrived at when the farmer makes complete and maximum use of the practice and incorporates it as something worthwhile. It involves continuous learning, the opportunities in learning but depends on the degree and category of interaction among the different enterprises, organization and related sectors, as well as institutional behaviors. These determine the extent and rate at which information and knowledge are produced, transformed and utilized (Mytelka, 2000).

The World Bank (2004) in Mohammed (2011)stated that innovation is not only the product of organized research and developmental activities undertaken within the universities and Agricultural research and development institutes, but include the enabling environment that encourage continuous learning, creativity and knowledge flow which facilitate innovation for socio-economic development. Innovation is the process of seeking for development, through imitation and adoption of technologies which are relatively different from previous ones (Hall and Dijkman, 2006).

A successful transfer of technology is only possible when the proposed innovation meets the priorities of the people involved. These ways often be contradictory, ambiguous, short-sighted. ‘Appropriate’ technology wants to offer an alternative, it is a technology that not only work in technical sense, but also in the sense that people involved have mastered it at their own level (Brusten, 1988.), and FAO (2010) stated that the determinant of technology adoption encompasses characteristics of technology, feature of farming system, market and policy

environment as well as socio-economic characteristics of the decision making unit. Communication is the key to all successful adoption of technology, the best of which focus on the value of farmers passing on information and practices to each other. The farmer-group approach plays a valuable role in realizing economics of scale, and enables farmers to support each other as they learn and adopt new methods (Hailu, 2011).

Gefu (1986) identifies that nomadic farmers are only ready to accept change most especially when those factors of adaptation can be easily integrated with results felt within the herds, since the nomads see the animals as their soul and the reason for their survival.

Daramola (2007), observes that nomads have greatly been influenced by the on-going development around them especially the activities of extension workers, nomadic education policy of the federal government, and intractable communal clashes with the host agrarian communities, and identifies that the nomads are willing to adopt sedentariness which is necessitated by loss of cattle or insufficient quantity to necessitate mobile herding, and due to the scarcity of adequate pasture for the animals.

2.10 Effects of Technology on Livestocks Production

The colonial administration was the first to recognize the significance of nomadic pastoralism, according ILCA (1982) when they came out with the policy of sedentarization which called for at least partial settlement of the traditional livestock producers. The essence was to improve farming system through provision of veterinary services, provision of good drinking water and western education for their children. The effect was increased productivity of livestock on the Mambila plateau and reduction of clashes among them and arable farmers. Vinod (2010) was able to identify the benefits of integrating private service providers to smallholders of livestock in India. The results shows that farmers are willing to pay for their services as services

such as artificial insemination, veterinary services greatly improve their productivity particularly meat and milk production.

Michael (2011) observes that farmers in Mauritania were responding positively to the use of Artificial insemination to improve livestocks due to results of the trial carried out in small group of nomads. Clare (1991) noticed the use of potassium, salt, and the willingness of some nomadic Fulani to grow and feed their livestock with sorghum and invitation of veterinary workers for treatment and vaccination of their herds as indication of their willingness to integrate these technologies into their farming system.

Kamil and Mohammed (2005) observe that widespread adoption of new production technology is expected to have important market-level effects. This means that widespread adoption of a new technology is likely to have economic implication beyond the production system. Thus an integrated economic model incorporating both production and marketing system is required to assess accurately its impacts. The statement adds that farm-level models are necessary to establish the output and revenue changes from the technology.

United Nations Conference on Trade and Development (UNCTD, 2010) reports that for technology to have impact on nomadic farming, there is need for more efforts towards training, education and revamping the extension services, farmers participatory agricultural extension will allow for greater responsiveness to farmers' need and facilitate learning on how they can increase their own productivity, raise their incomes, collaborate effectively, involve with major stakeholders in determining the process and directions of technology generation and adoption.

The report also noted that technology effect is limited only by cost and effort as these may be substantial, but that there is risk involved in absorbing the technology given that an investment is required while the return on investment may not be known and the user may prove unable to successfully absorb the technology.

2.11 Empirical Studies

Ahmed (1984) carried out a study titled socio-economic factors affecting the adaptation behavior of settled pastoralist Fulani in Kachia Local Government Area in Kaduna State. The study aimed at finding out factors which either facilitated or inhibited farmers' adoption of packages; and to study the nature of innovation and how it affected the adoption behavior of pastoralists, the socio-economic characteristics of the pastoralist which may influence the adoption of innovation. The study provided suggestions on how the adoption process can be accelerated to increase the number of adopters, leading to improvement in livestocks production. The data for the study were collected from a households consisting of 40 herds of cattle in villages within the study area where the pastoralists existed, with methodology on how the population for the study was arrived at, and what factors necessitated the use of 40 households. The study also use questionnaire as instrument for data collection which were administered to the house holds, five null hypotheses were formulated for the study and tested at 0.1 level of significance for acceptance or rejection of null hypothesis. The study indicated that information was lacken between the change agents and the pastoralists, also pastoralist were ready to settle instead of transhumant provided the environment will meet the needs of their livestock.

The present study was similar to the previous study as it will find out the effect of adoption of livestock technologies in livestock production. The present study will also make use of questionnaire to collect data. However, the present study differs from the past study in the following ways; the present study will be carried out in Niger and Kwara States; while the past study was carried out in Kachia Local Government Area in Kaduna State. The present study consisted of 3961 Nomadic herds' men, while the past study consisted of 40 households. The present study was delimited to nomadic pastoralist; however, past study was delimited to socio-economic factors affecting the adoption at the same time concerned with the settled pastoralists.

Gefu (1986) carried out a research work titled The pastoral paradox: Livestock development policy and nomadic pastoralist in Nigeria. The study was to find out the nature and changing form of livestock production system the history of livestock policy from colonial to the present period; the stand of government regarding the existing production system and the policies that have been adopted; the rationale for government policies and the role of research institution. Data used were collected from secondary sources. Descriptive survey was use for study Content analyses was based on formally published researches on livestock production since independence to date. The study showed that government over the years formulated numerous policies aimed at integrating the pastoralists into the mainstream of agricultural production; however, most of the policies were on paper, where implementation took place as in the case of North Eastern and North Western states, they were never followed to conclusion. The pastoralists were not involved in formulation of policies that affect their live hood.

This present study has similarities with the past study, in that it studies the effectiveness of adoption of improved technology to better and boost livestock production by nomadic pastoralist in Nigeria. The present study differed from the past study, because it looked at nomadic pastoralists in Nigeria, while the present study was delimited to Niger and Kwara State. The past study did not employ the use of questionnaire, while the present study used questionnaire to collect data .The past study did not state any null hypotheses, while the present study stated four null hypotheses. The present study looked into how livestock technology adoption is changing the life pattern and productivity of Nomadic farmers in both Niger and Kwara States. However, the results of the study were relevant in supporting the argument of the present study.

Mani and Van Kaufmann (1988) carried out a research titled Research for pastoral development in Nigeria: ILCA-sub humid programmed experience under the sponsorship of International Livestock Center for Africa, which aimed at assisting national efforts of changing production and marketing systems, to increase livestock yield and output of livestock products, so

as to improve the quality of life of the pastoral nomad. The population consist of 40 herdsmen as sample size for the study which was used for data analysis.

The findings showed that the productivity of nomadic Fulani can be improved using better techniques and application of improved technologies which were developed by the research institutions; providing education to the nomads will assist them to have proper understanding of the need for change and have the willingness to adopt these techniques and technologies to improve livestock production.

The present study has similarities with the previous study as it considered the effects of acceptability of livestock technologies by nomadic famers in livestock production. However, the present study differed from the past study in the following ways, the previous study was carried out in Kaduna state, and while the present study was carried out in Niger and Kwara States .The past study did not mention the instrument used or how forty respondents served as their target population. The past research used multistage sample technique, while the present study used stratified random sampling using a population of 4061 nomadic farmers. In the present study four null hypotheses were formulated, Pearson product moment correlation (PPMC) and chi-square tests were used to test the null hypotheses, while in the past study no null hypothesis was stated. The present study considered the extent to which these livestock technologies were been used towards improving livestock production and at the same time the socio-economic status of the Nomadic farmers in Niger and Kwara States. Therefore, findings of Mani and Van Kaufmann study were considered in discussing the present study.

Shehu and Alhassan (1988) carried out a study titled Settlement of Pastoralist: the Bauchi state Experience. The objectives of the study was to find out; Improvement of socio-economic life of the nomadic pastoralists through the establishment of basic social amenities, Provision of extension services to the pastoralist in order to assist them to start a modern and profitable farming and livestock enterprise, provision of improved grazing area and water for their stock as

well as for domestic use, Ensuring proper control range grazing resources in order to avoid overgrazing and sustain continuous production of forage.

The study revealed that the nomads settled in established areas and adapted to new pattern of life, different from their nomadic system. The easy access and direct benefit which the nomads derived from these facilities were identified as major contributing factors,, the elimination of clashes between the nomads and arable farmers was a welcome relief, the study concluded. However, it identified the existence of certain problems in the resettlement such as non availability of standard market and marketing network for the sale of their produce. Also there is the need for the settlement scheme to be reviewed.

The present study was similar with the previous study as it identified the effectiveness of adoption of technologies by the nomadic farmers. However there were differences in location, as the past study was carried out in Bauchi state and the present study was conducted in Niger and Kwara States. The previous study did not specify the size of their population, while present study involved the use of forty thousand and sixty one respondents. There was no statement of null hypothesis while the present study involved the use of four null hypotheses. The present study was not only to discover the effectiveness of livestock technologies adoption by Nomadic farmers in Niger and Kwara States but also to identify whether there was any improvement in the living standard of the Nomadic farmers including livestock production. The results of Shehu and Alhassan were also relevant in discussing some of the findings of the present study.

Rezvanfar and Arabi (2009) carried out a study titled Analyzing the farmer-specific and socio-personal factors influencing adoption pasture conservation technologies amongst livestock farmers in the Tehran province of Iran. The study involved the use of livestock Farmers within Tehran province as the target population. Questionnaire was used to collect data from the farmers and Content validity was used as instrument to determine the validity of the questionnaire for data collection.

The objectives of the study were to;

-determine the levels of adoption of the various recommended pasture conservation technologies.

-study differences in mean values of adoption of pasture conservation technologies.

-study the factors associated with adoption of pasture conservation technologies among livestock farmers.

The statistical population included all farmers in Eastern Tehran province; classified proportional random sampling was used to get one hundred and ten farmers as sample for the study.

The results of the study indicated that farmers in Tehran were exposed to conservation technologies of pasture. However, age, family size, availability of communication channels, land size and educational level including rate of income were some of the factors identified as affecting the rate of adoption of technologies for conservation of pasture by the farmers in Tehran Provence.

The present study was similar with the past study as they both study the effectiveness of adopting livestock technologies by livestock farmers. The present study has similarities with the past study as the study involved the use of random sampling to collect data for the target population. Even though the past study was specific on one type of technology, the present study involved studying all the available technologies for livestock farming. The present study differed from the past study, as the past study looked at farmers specific and socio-personal factors influencing adoption of pasture technologies, while the present study looked into the effectiveness of the adoption of livestock technologies by nomadic farmers. The target population for the present study was the Nomadic farmers of Niger and Kwara State of Nigeria, while the past study was on livestock farmers in Tehran Provence of Iran. The present study was on socio-cultural factors and mainly focuses on Nomadic farmers of Niger and Kwara States. The result of Rezvanfar and Arabi in Tehran province was useful in discussing the present study.

2.12 Summary of Related Literature Reviewed

The review of literature generally signified that nomadic pastoralism as a system of farming practiced by the Fulani tribes' men involved the farmers in a continuous movement with their livestock and family in search of pastures and water for their animals. The system have for centuries supported the production of livestock and livestock products. They are responsible for the production of over 80% animal protein need of the country. The rising population, coupled with increasing demand for arable land and also the need for the provision of basic social amenities has reduced the available land meant for Nomadic pastoralism. The government has over the years recognized the important role played by these farmers in meeting the protein needs of the country. It is in realization of these factors that has made the government to formulate policies and programmes aimed at improving the system of farming and at the same time their living standard. There was review of nomadic farmers' characteristic which may help provide a link to some of the factors that are affecting the effective adaptation of livestock technologies by the nomadic farmers. The review of the empirical studies indicated that most studies were not conducted on the effectiveness of adoption of livestock technologies on livestock production by nomadic farmers in Kwara and Niger States, however their studies indicated specific studies on certain areas that have effect on adoption of livestock technologies by the livestock farmers to improve livestock production. The study also intend to identify socio-cultural constraints which affect the adoption of livestock technologies by nomadic farmers, and determine the extent to which economic and living standard of the farmers have changed through the adoption of improved livestock technologies in both Kwara and Niger States. The present study was based on the resulting effectiveness of livestock technologies adoption by nomadic farmers in all aspect of livestock production including their standard of living, the study also set to find out the perception of farmers on socio-cultural practices and acceptability of change to improve livestock production in Niger and Kwara States, These were not studied by the past researchers.

CHAPTER THREE

RESEARCH METHODOLOGY

This chapter presented the methodology for conducting the study under the following sub-headings:

3.1 Research Design

3.2 Population for the Study

3.3 Sample Size

3.4.1 Validation of the Instrument

3.4.2 Pilot Study

3.4.3 Reliability of the Instrument

3.5 Data Collection

3.6 Data Analysis

3.1 Research Design

Descriptive survey research design was used for this study.

3.2 Population of the Study

The population for this study comprised all nomadic farmers in both Kwara and Niger States. Kwara State has 1203 Nomadic Farmers, while Niger State has 2758 nomadic famers. These data were based on information collected from Niger State Agricultural Mechanization Development Agency (NAMDA), Niger State Ministry for Livestock and Fishery Development, Kwara State Agricultural Development Projects (KWSADP) and Ministry of Agriculture and Natural Resources. The total population comprised 4061 Nomadic Farmers in the two States, as shown in the Table 3.1.

Table 3.1 Population of the Study

Zones in Niger and Kwara States	Population of Nomadic Farmers
Niger State Zones	
Zone A	972
Zone B	526
Zone C	1260
Total	**2758**
Kwara State Zones	
Kwara North	474
Kwara Central	423
Kwara South	206
Total	1203
GRAND TOTAL	**4061 (2758+1203)**

Source: Niger State Ministry for Livestock and Fishery development, Kwara State Ministry of Agriculture and Natural Resources, Niger State Agricultural Mechanization Development Agency and Kwara State Agricultural Development Projects. (2012)

3.3 Sample Size

Multi-stage sampling technique was employed for this study. Which involves a purposive selection of two Agricultural Development Zones, one from each state and purpose selection of 10 extension blocks from the selected ADP zones making a total of 20 blocks. With a selection of towns/villages in each of extension block, the final selection involve a proportionate random selection of 350 contact nomadic farmers from the 20 extension blocks with reference to Krejcie and Morgan (1970) sample size determination for a research study. These constituted the sample for the study. A 'Hat drawn' technique was used in selecting the individual sample. The breakdown of the sample size for the study is shown in Table 3.2

Table 3.2 Sample Size for the Study

AGRICULTURAL DEVELOPMENT ZONE	EXTENSION BLOCK	POPULATION	SAMPLE SIZE
Niger Zone A	Mokwa	148	37
Niger Zone A	Kutigi	73	18
Niger Zone A	Agaie	138	35
Niger Zone A	Lapai	119	30
Niger Zone A	Lemu	73	18
Niger Zone A	Katcha	103	26
Niger Zone A	Enagi	76	19
Niger Zone A	Doko	58	15
Niger Zone A	Muye	143	36
Niger Zone A	Baddegi	48	12
Kwara North	Lafiyagi	75	18
Kwara North	Patigi	49	12
Kwara North	Jabba	56	14
Kwara North	Kayama	50	12
Kwara North	Shonga	28	7
Kwara North	Bodetsadu	54	13
Kwara North	Bele	56	14
Kwara North	Bachita	33	8
Kwara North	Babaloma	42	10
Kwara North	Tsaragi	31	7
	TOTAL	1446	362

3.4 Instrument for Data Collection

Data collection involved the use of a structured questionnaire. The questionnaire was in five sections A, B, C, D and E. The questions in each section were designed to provide data that was used to answer research question I, II, III, and IV. The questions were based on the objectives, research questions and null hypotheses of the study to solicit for responses. Section A consisted of questions to collect demographic (personal) data. Section B consisted of nine questions to provide data to answer research question one, section C consisted of eleven questions to provide data to answer research question two, section D consisted of ten questions to provide data to answer research question three, section E consisted of ten questions to provide data to answer four research questions.

In all the sections, the respondents were required to tick the best answers of their choice from the options that follow each question. Sections B,C,D,E were designed in form of point Likert type rating scale such as Strongly Agree (SA), Agree (A), Disagree (D) , Strongly Disagree (SD). With points allocated to each as follows:

Strongly Agree 4 points

Agree 3 points

Disagree 2 points

Strongly Disagree 1 point

Also items 30-39 of the questionnaire were designed in four-scale rating as: Very Often (4 point), Often (3 point), Randomly (2 point), Not at all (1 point), this rating scale is designed to measure the level of usage of the technologies listed.

Section 'B' consisted of four sections, items 10-19 centered on socio-cultural practices of nomadic farmers which focused on constraints in livestock production in Niger and Kwara States. Items 20-30 were on the extent to which adoption of livestock technologies has improved livestock production in Niger and Kwara States. Items 31-40 focused on the economic status of

farmers as a result of adoption of livestock technologies in livestock production in Niger and Kwara States. Items 41-50 helped to find out the extent to which adoption of livestock technologies affects farmers' standards of living. These were used in answering the research questions in order to collect the data that will be used to test null hypotheses formulated for the study.

3.4.1 Validity of the Instrument

In order to validate the instrument, the researcher gave the questionnaire items to experts in the Department of Vocational and Technical Education for vetting and for comments, suggestions and possible amendments. Their comments and suggestions were added into final draft of the questionnaire.

3.4.2 Pilot Study

In order to establish the reliability of the instrument, a pilot study was carried out in Birnin Gwari Local Government Area in Kaduna State. Ten (10) copies of the questionnaire were administered to nomadic farmers. All copies of questionnaires were filled and returned within stipulated period of one week with the help of the two research assistants.

3.4.3 Reliability of the Instrument

Data collected from the pilot study were subjected to reliability coefficient and the internal consistency. Cronbach Alpha statistics, which measures the internal consistency of an instrument, was used. The result gave a reliability coefficient of 0.830 for the instrument for Nomadic farmers. These Reliability coefficients were considered adequate for internal consistencies of the measuring instrument. These were in agreement with Spiegal and Stevens (1999), who stated that an instrument is considered reliable, if the reliability coefficient is between zero (0) and one (1) and the closer the calculated reliability coefficient is to one the more reliable is the instrument.

This was also supported by Rama (2007) that the reliability coefficient can range from zero and one, with zero representing an instrument full of error and one (1) representing total absence of error. A 0.87 or higher is considered reliable for reliability coefficient.

3.5 Procedure for Data Collection

The researcher obtained a letter of introduction from the Head of Department of Vocational and Technical Education in the Faculty of Education Ahmadu Bello University Zaria, to Zonal Extension Officer in each of the two zones for permission to administer and collect 362 copies of questionnaire. The researcher with the help of Zonal Extension Officer in each of the two ADP zones employed the services of 20 Village Extension Agents (VEA); One to each of 20 selected Extension Block to serve as trained Research Assistants in the administration of 362 copies of the questionnaire to 362 respondents, that is contact nomadic farmers during visitation in market centers where the nomads meet on market days. Random selection using 'Hat drawn techniques' was used 'YES' and 'NO' were written on a pieces of paper and those that picked YES were given the questionnaires. The research assistant explained the question to the respondent and the respondents filled in the questionnaire, while the research assistant collected back the filled questionnaire immediately after completion. It was completed in six weeks.

During data collection process the following variables were considered:

. Socio-cultural practices which has to do with the respondents' age, educational status, family size and size of cattle herd. Improvement in livestock production, this has to do with the size of the herd before and after adoption, health condition of the livestock. Economic status which has to do with income level of the respondents from the sale of livestock after adoption. Standard of living which has to do with income, health condition, nutritional status and housing condition of nomadic farmers.

3.6 Data Analysis

Descriptive statistics involving frequency distribution and percentages were used for demographic data of the respondents in Section A. The raw data that were collected were subjected to calculation where the equivalent mean of the raw scores were used to answer the five research questions stated in chapter one. 'Strongly agree' and 'Agree' were considered as 'Agree' while 'Disagree' and 'Strongly disagree' were considered as 'Disagree'. The mean rating on the scale was 2.50 that is, 4+3+2+1/4=2.50. All responses that had a mean rating of 2.50 and above were considered as 'Agree', and all responses that had mean rating of less than 2.50 were considered as 'Disagree'. Chi square was used to test the null hypothesis one at 0.05 level of significance. Pearson product moment correlation was used to test null hypotheses two, three and four at 0.05 level of significance. Therefore, where significant (p) was less than 0.05, the relationship is not significant, in other words, if the p value is equal or greater than 0.05, the null hypothesis was retained otherwise it was rejected.

CHAPTER FOUR

DATA PRESENTATION AND ANALYSIS

This chapter presented the results of the statistical analysis of the data under following sub-headings;

4.1 Bio-data of the Respondents

4.2 Answer to Research Questions

4.3 Testing the Null Hypotheses

4.4 Discussion of Major Findings

4.5 Summary of Findings

4.1 Bio-data of the Respondents

This section analysed the bio-data of the respondents with regards to age, educational qualification, types of livestock production, source of income, size of livestock/ herd, and number of years in livestock production as shown in table 4.1

Table 4.1 Bio-data of the Respondents

Variables	Frequency	Percentage (%)
Age(Years)		
Less than 30	84	24.0
30-40	90	25.7
41-50	87	24.9
Above 50	89	25.4
Total	350	100.0
Sex		
Male	338	96.6
Female	12	3.4
Total	350	100.0
Educational Qualification		
No formal education	34	9.7
Adult /Arabic education	192	54.8
Primary/Secondary education	96	27.4
Tertiary education	28	8.0
Total	350	100.0
Types of Livestock Production		
Cattle Production	80	22.9
Sheep/Goat	92	26.3
Mixed Livestock Production	178	50.8
Total	350	100.0
Sources of Income		
Sales of Livestock	171	48.9
Sales of Livestock Products	40	11.4
Sales of Livestocks and their Products	139	38.7
Total	350	100.0
Size of Livestock/Herd		
Small (10-20)	191	54.6
Medium (21-50)	100	28.6
Large (51 and above)	59	16.9
Total	350	100.0
Number of Years in Livestock Production		
1-10	136	38.8
11 and above	214	61.2
Total	350	100.0

Table 4.1 showed bio-data of the respondents. From the table, majority of the nomadic farmers 74% are of working age of between 30-51 years of age, with regards to sex 96.6% of the respondents were male. On educational qualification 90.2% have either Arabic education or formal education.50% of the nomadic farmers practice mixed livestock production. 48.9%

derived their income from the sale of the livestock. Majority of nomadic farmers (54.6%) were small size livestock owners. 61.2% of the nomads have 11 years and above years of experience.

4.2 Answers to Research Questions

Respondents' answers to the four research questions for the study were analyzed in Table 4.2.1 to 4.2.4. During the course of the analysis, opinions of nomadic farmers were categorized into two groups 'agreed' and 'disagreed' for better understanding and clear interpretation of data and their responses were scored using four scales as follows:

Research Question 1: What are the socio-cultural practices of nomadic farmers which are perceived as constraint in adoption of new technologies in their system of livestock production in Niger and kwara States?

Table 4.2.1: Perception of respondents on the socio-cultural practices which are perceived as constraint in adoption of livestock technologies in Niger and Kwara states N=350

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	Items	MEAN	STD	Remarks
1	Farmers understand their nomadic practices more than any other system of livestock Production	2.4886	.9293	Disagreed
2	The farmers believe in the use of family labour than employ labourers for livestock production	2.4800	.6585	Disagreed
3	The farmers believe that not having a permanent farmstead is better for their livestock farming	3.1343	.6303	Agreed
4	The farmers believe that the system allow them to practice and maintain their culture and tradition	2.5086	.9201	Agreed
5	The farmers believe that their livestock are adopted to their methods of livestock production	2.4629	.6621	Disagreed
6	The farmers believe in the use of their children as against hired labour which limit the number of livestock kept by individual farmer	3.1200	.6489	Agreed
7	The farmers' use of their children prevents them from acquiring modern education to improve livestock production	2.5057	.9232	Agreed
8	The farmers believe that their livestock production can only be improved through seasonal migration	2.4829	.6498	Disagreed
9	The conservative attitudes of most farmers limit their believe in accepting new innovations to improve livestock production	3.1514	.5984	Agreed
10	The farmers believe in their traditional grazing areas make it difficult for them to stay in new grazing reserves to improve livestock production	2.5057	.9232	Agreed
	Cumulative mean	**2.6940**		**Agreed**

Decision mean = 2.50

In Table 4.2.1data revealed the Perception of farmers' ron the socio-cultural practices of nomadic farmers which served as constraint in adoption of livestock technologies in their system of livestock production in Niger and Kwara states. It showed that majority of the farmers with cumulative mean 3.1514 were of the believe that the conservative attitudes of most farmers

limited their acceptance of new innovations to improve livestock production. This item attracted the highest mean score of 3.1514 indicating the level of their agreement. Also farmers believed that not having a permanent farmstead was better for their livestock farming, this view attracted mean response of 3.1343 indicating that the respondent still belief in their socio-cultural practices of transhumance. In summary the perception of the respondents on the socio-cultural practices of nomadic farmers which served as constraint in adoption of Livestock technologies in their system of livestock production in Niger and Kwara states, was significant as the calculated cumulative mean response of 2.69 was higher than the 2.50 decision mean .

Research Question 2: To what extent do farmers adopt livestock technologies in improving their livestock production in Niger and Kwara states*?*

Table 4.2.2: Perception of respondents on the extent of adoption of Livestock technologies in improving their livestock production in Niger and Kwara states.
N=350

	Items	MEAN	STD	Remark
1	Range land for grazing of livestock.	2.4714	.6668	Disagreed
2	Visitation by veterinary doctors for treatment of any sick animal.	3.1029	.6819	Agreed
3	Use of drugs for the treatment of sick animals	2.5057	.9232	Agreed
4	Ration formulation using locally available agro industrial by products for optimum production	2.4857	.6455	Disagreed
5	Upgrading of indigenous breed through crossbreeding with exotic breeds	2.9257	.7571	Agreed
6	Management intervention to reduce the age at first conception	2.5486	.8675	Agreed
7	Use of milking machine for the collection of milk from the livestock	2.7257	.7054	Agreed
8	Use of improved pasture species as feed for livestock	2.9257	.5771	Agreed
9	Use of artificial insemination technique for upgrading of your livestock	2.5486	.8675	Agreed
10	Introduction of special breeds of livestock for a particular production purpose	2.6314	.7747	Agreed
11	Feedlot fattening techniques for fattening animals among the livestock	2.5857	.9438	Agreed
	Cumulative mean	***2.6779***		Agreed

Decision mean=2.50

The data in table 4.2.2 revealed the Perception of respondents on the extent of adoption of livestock technologies in improving their livestock production in Niger and Kwara states. It showed that majority of the respondents indicated that there was visitation by Veterinary Doctors for treatment of any sick animal. This item attracted the highest mean response of 3.1029 showing their level of agreement. Also farmers believed that there was upgrading of indigenous breed through crossbreeding with exotic (improved) breeds. This view attracted mean score of 2.9257. In summary the perception of respondents on the extent of adoption of Livestock technologies in improving livestock production in Niger and Kwara states was significant as the calculated cumulative mean response of 2.68 is higher than the decision mean of 2.50

Research question 3: What are the farmers' economic statuses as a result of adoption of technologies in livestock production in Niger and Kwara States?

Table 4.2.3: Perception of respondents on economic status as a result of adoption of technologies in livestock production in Niger and Kwara state.

N=350

S/No	ITEMS	Mean	Std.dev	Remark
1	There is an increase in the size of the herds kept by farmers	2.5971	.7225	Agreed
2	There is an improvement on the price of livestock sold by the farmers	2.6186	.7523	Agreed
3	The farmers are able to buy and pay for drugs for the treatment of their livestock	2.5857	.9438	Agreed
4	Farmers are now buying new equipment and machines to ease their activities	2.5971	.7225	Agreed
5	Farmers are involved with the use of new systems of livestock grazing to boost livestock production	3.1086	.6725	Agreed
6	Farmers are able to send their children to schools as a result of adopting livestock technologies	3.1086	.6725	Agreed
7	There is an increase expenditure on the mode of dressing and even feeding habit as a result of adoption of livestock production	2.5970	.7220	Agreed
8	Farmers are now able to invest on other sectors of agricultural production for sustainable development	2.5857	.9438	Agreed
9	There is now strong improvement in socio economic activities of nomadic farmers and arable farmers	2.5857	.9438	Agreed
10	Nomadic farmers are now acquiring more land for permanent settlement	2.5861	.7330	Agreed
	Cumulative mean	**3.008**		

Decision mean=2.50

The data in Table 4.2.3 showed the perception of respondents' economic status as a result of adoption of technologies in livestock production in Niger and Kwara states. The respondents were

of the view that adoption of improved technologies enables the farmers to invest on other sectors of agricultural production for sustainable development. Detail of the respondents showed that this attracted their highest mean response of 3.1837. Respondents also indicated that they are involved in the use of new systems of livestock rearing to boost their production as the mean of 3.1086 indicated. Respondents also stressed that they are able to send their children to schools as a result of adopting livestock technologies,this was clear looking at the mean responses of 3.1086 by the respondents. In summary the cumulative mean of 3.008 was higher than decision mean of 2.50.

Research question 4: To what extent does adoption of livestock technologies affect farmers standard of living in Niger and Kwara states?

Table 4.2.4: Perception of nomadic farmers on the extent to which the adoption of livestock technologies affect farmers' standard of living in Niger and Kwara states.

S/No	ITEMS	Mean	Std.dev	Remarks
1	Adoption of livestock technologies has reduced the seasonal migration of nomadic farmers	3.1086	.6725	Agreed
2	adoption of livestock technologies made it possible for the nomads to send their children to schools	2.5857	.9438	Agreed
3	adoption of livestock technologies has made it possible for nomadic farmers to have access to good health facilities	2.5971	.7225	Agreed
4	adoption of livestock technologies has increased nomadic farmers ability to purchase and use articles such as radio, mobile homes, television ,car,motorcycles etc	2.9229	.7587	Agreed
5	adoption of livestock technologies reduces risk associated with livestock farming	2.5086	.8754	Agreed
6	adoption of livestock technologies improved the quality of products produced by nomadic farmers	2.7000	.7368	Agreed
7	adoption of livestock technologies has increased nomadic farmers income	2.9086	.7702	Agreed
8	adoption of livestock technologies has reduced the cost of livestock production	2.5114	.8754	Agreed
9	adoption of livestock technologies has made it possible to employ the services of technical staffs for consultancy services	2.7143	.7170	Agreed
10	adoption of livestock technologies increases the farmers ability to purchase new equipment and technologies	3.6657	.7179	Agreed
	cumulative mean	**2.8223**		

Decision mean =2

An understanding of the data in Table 4.2.4 revealed the Perception of farmers on the extent adoption of livestock technologies affected farmers' standard of living in Niger and Kwara state. The farmers' highest mean response of 3.6657 was that the adoption of livestock technologies

increased the farmers' ability to purchase new equipment and technologies. Also a mean of 2.9229 revealed that farmers were able to purchase articles such as home appliances and vehicles as result of adoption of livestock technologies, there is significant effect on the farmers' standard of living as the cumulative mean of 2.8223 is higher than the decision rule of 2.50.

4.3 Testing of Null Hypotheses

Four Null Hypotheses were postulated to give statistical validation to solutions proffered to the research questions of the study .These Null Hypotheses were tested as follows:

Null Hypothesis One: There is no significant relationship among the respondents on the socio cultural practices of nomadic farmers which are perceived as constraint to livestock production in Niger and Kwara States.

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Justification of statistical technique. The perception of the respondents on all the 10 variables on the socio- cultural practices which are perceived as constraints in the production of livestocks in Kwara and Niger states was based on frequency counts of responses, hence the appropriate test of Chi-square statistics test of independence was used to test the null hypotheses.

Table 4.3.1: Chi- square statistics showing tabulation of perception of respondents on the socio cultural practices of nomadic farmers which are perceived as constraint to livestock production in Niger and Kwara states

VARIABLE	SA	A	D	SD	Total Row	χ^2 cal	df	χ^2 critical	SIG (P)
Total Colum	64	90	153	123	350	38.87	27	40.113	0.6

The result of the chi-square statistics revealed that the calculated chi square value of 38..87 is lower than the critical chi-square value of 40.113 at df 27, while the calculated p value of 0.6 is higher than the 0.05 alpha level of significance, This result indicated that there was no

significant difference among the farmers respondents on the socio cultural practices of nomadic farmers which served as constraint in the system of livestock production in Niger and Kwara states. This implies that the respondents had almost the same level of perception or agreement on the 10 items on the socio cultural practices of nomadic farmers which are perceived as constraints in the adoption of improved technologies in livestock production among nomadic farmers in Niger and Kwara states, therefore, the hypothesis is hereby retained.

Null Hypothesis 2: There is no significant relationship between extents of adoption of livestock technologies and the improvement on livestock production by nomadic farmers in Niger and Kwara states.

Justification of statistical technique. The computed improvement on livestock production (dependent quantitative variable) is correlated against the computed variables of extent of adoption of livestock technologies (independent quantitative variable) hence, the choice of Pearson product Moment Correlation statistics

Table 4.3.2 Pearson Product Moment Correlation (PPMC) statistics on relationship between extent of adoption of livestock technologies and the improvement on livestock production by nomadic farmers in Niger and Kwara states.

Variables	**N**	**Mean**	**S.D**	**Correlation Index R**	**Df**	**SIG (P)**
Improvement in Livestock Production	350	53.7114	8.44260			
				-0.973**	348	0.000
Extent of adoption of Livestock technologies	350	26.8400	4.57821			

**. Correlation is significant at the 0.05 level (2-tailed).

The Table 4.3.2 data on Pearson product moment correlation statistics revealed that there was significant relationship between extent of adoption of livestock technologies and the improvement on livestock production by nomadic farmers in Niger and Kwara states. Reason being that the calculated significant (p) value of 0.000 is less than the 0.05 alpha level of significance at a correlation index r level of 0.973 at df 348. The relationship is positively proportional. This implied that higher adoption of improved livestock technologies by the nomadic farmers will result to better improvement in Livestock production. Hence, the null hypothesis which state that there is no significant relationship between Extent of adoption of livestock technologies and the improvement on livestock production by nomadic farmers in Niger and Kwara states, is hereby rejected.

Null Hypothesis 3: There is no significant relationship between Adoption of livestock technologies and the Nomadic farmers economic status in Niger and Kwara states.

Justification of statistical technique. The computed perception by both farmers and extension workers respondents on Adoption of livestock technologies (dependent quantitative variable) is correlated against the computed variables of farmers economic status (independent quantitative variable) hence, the choice of Pearson product Moment Correlation statistics.

Table 4.3.3 Pearson Product Moment Correlation (PPMC) statistics on relationship between extent of adoption of livestock technologies and the Nomadic farmers' economic status in Niger and Kwara states.

Variables	**N**	**Mean**	**S.D**	**Correlation Index R**	**Df**	**SIG (P)**
Adoption of Livestock Technologies	565	55.4354	8.20730	0.964**	363	0.002
Farmers Economic status	565	27.5451	4.68552			

**. Correlation is significant at the 0.05 level (2-tailed).

The data in Table 4.3.3 revealed that Pearson product moment correlation statistics indicated that there was significant relationship between extent of adoption of livestock technologies and the nomadic farmers economic status in Niger and Kwara states.This is because the calculated significant (p) value of 0.002 is less than the 0.05 alpha level of significance at a correlation index r level of 0.964 at df 363. The relationship is positively proportional. This implied that the higher the adoption of improved livestock technologies by the nomadic farmers, the better their economic status, indicating that farmers' economic status is directly related or influenced by the adoption of livestock technologies. Hence, the null hypothesis which stated that there is no significant relationship between extent of adoption of livestock technologies and the nomadic farmers economic status in Niger and Kwara states, is hereby rejected.

Null Hypothesis 4: There is no significant relationship between Adoption of livestock technologies and the Nomadic farmers standard of living in Niger and Kwara States.

Justification of statistical technique. The computed perception by both farmers and extension workers respondents on Adoption of livestock technologies (dependent quantitative variable) is correlated against the computed variables of farmers standard of living (independent quantitative variable) hence, the choice of Pearson product Moment Correlation statistics.

Table 4.3.4 Pearson Product Moment Correlation (PPMC) statistics on relationship between Adoption of livestock technologies and the Nomadic farmers standard of living in Niger and Kwara states.

VARIABLES	**N**	**Mean**	**S.D**	**Correlation Index R**	**Df**	**SIG (P)**
Adoption of Livestock Technologies	565	55.4354	8.20730	0.948**	363	0.003
Farmers Standard of Living	565	26.8903	4.89289			

*****. Correlation is significant at the 0.05 level (2-tailed).***

The Table 4.3.4 data on Pearson Product Moment Correlation statistics revealed that there was significant relationship between extent of adoption of livestock technologies and nomadic farmers' standard of living in Niger and Kwara states. This is because the calculated significant (p) value of 0.003 is less than the 0.05 alpha level of significance at a correlation index r level of 0.948. at df 363. The relationship is positively proportional. This implied that the higher the adoption of improved technologies by the nomadic farmers the better their standard of living. In other words the farmers' standard of living is directly related or influenced by the adoption of livestock technologies. Hence, the null hypothesis which state that there is no significant relationship between adoption of livestock technologies in livestock production and the nomadic farmers standard of living in Niger and Kwara states, is hereby rejected.

4.4 Summary of Major findings.

The following are the summary of the major findings of the study.

1. Nomadic farmers were of the belief that the conservative attitudes of most farmers limited them from accepting new innovations to improve livestock production; this is in regard to socio-cultural practices of nomadic farmers which is perceived as constraint in adoption of new technologies in their system of livestock production in Niger and Kwara states as the mean response of 3.1514 is higher than decision mean of 2.50.

2. On farmers (respondents) perception on the extent of adoption of livestock technologies in improving their livestock production in Niger and Kwara states, mean response of 3.1029 is higher than decision mean 2.50 which revealed that farmers were visited by Veterinary Doctors for treatment of any sick animals as the cumulative mean of 2.6779 is greater then decision mean.

3. Regarding farmers economic status as a result of adoption of technologies in livestock production in Niger and Kwara states, both farmers and the extension workers believed that the farmers were now able to invest on other sectors of agricultural production for sustainable development. This was the view of the farmers as the cumulative mean of 3.008 that is higher than decision mean of 2.50 indicated.

4. On the extent of adoption of livestock technologies on farmers' standard of living in Niger and Kwara state, cumulative mean of 2.8223 indicated that the adoption of livestock technologies increased their ability to purchase new equipment and technologies.

4.5 Discussion of Finding

The discussion of findings is presented in accordance with the outcome of the research hypotheses and the corresponding research questions.

Null Hypothesis One:

Null hypothesis one showed that there was no significant difference among the farmers (respondents) on the socio-cultural practices of nomadic farmers which is perceived as constraint in their system of livestock production in Niger and Kwara states. This is because the Perception of farmers (respondents) on the 10 items on the socio-cultural practices of nomadic farmers which was perceived as constraint in adoption of new technologies in their system of livestock production in Niger and Kwara states was significant; as the calculated cumulative mean response of 2.69 is higher than the decision mean of 2.50, indicating that the nomadic farmers were of the belief that the conservative attitudes of most farmers limited their belief in accepting new innovation to improve livestock production. Regarding socio-cultural practices of nomadic farmers which is perceived as constraint in adoption of livestock technologies in their system of livestock production in Niger and Kwara states. This was the view of Griggs (1969) that Nomadic farmers are traditionally minded in their socio-cultural beliefs, ILCA (1979) also added that Nomadic farmers strongly bonded by their socio-cultural practices, affected their adoption of livestock technologies.

Null Hypothesis Two:

Result of Null hypothesis revealed significant relationship between extent of adoption of livestock technologies and the improvement on livestock production by nomadic farmers in Niger and Kwara states. The Null hypothesis two was tested based on the responses of the nomadic farmers respondents of the ten items of extent of adoption of livestock technologies. Mean of

3.1029 revealed that nomadic farmers reported that there was visitation by Veterinary Doctors for treatment of sick animals. Also a mean of 2.9257 indicated that there was upgrading of indigenous breeds through crossbreeding with improved breeds. In summary the improvement on the livestock production as a result adoption of technologies, was significant as the calculated cumulative mean response of 2.68 was higher than the decision mean of 2.50. All these agreed with Emmanuel (1998) who stressed the need for the improvement of livestock production through modern technologies as increasing population of livestock cannot meet the limited size of land for livestock production.

Null Hypothesis three

The Null hypothesis three was tested based on the perception of the nomadic farmers extent of adoption and their economic status, this revealed that significant relationship existed between extent of adoption of livestock technologies and the nomadic farmers' economic status in Niger and Kwara states. The results showed that the economic status of the nomadic farmers was influenced as a result of adoption of the livestock technologies. Detail showed that calculated significant (p) value of 0.002 is less than decision mean of 0.05 at correlation index r of 0.964 at df 363. This was the viewed expressed by Kamil and Mohammed (2005) that widespread adoption of new production technologies is expected to have important market-level effects leading to economic implication beyond the production system. Both groups of respondents believed that the farmers were able to invest on other sectors of agricultural production for sustainable development.

Null Hypothesis Four:

The result of the tested Null hypothesis four showed that significant relationship existed between extent of adoption of livestock technologies and the Nomadic farmers' standard of living in Niger and Kwara states. This implied that the higher the adoption of modern livestock

technology, the higher the standard of living of the nomadic farmers and vice versa. Result of their perception in this regard was that the farmers believed that through the adoption of livestock technologies they were able to purchase new farming equipment and other modern farming technologies.This is in support of Hemme and Otte (2010) who both opined that the improvement of livestock production such as diary production could be a powerful tool for reducing poverty, raising nutrition and improving the standard of living of the nomadic farmers.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

This chapter focused on the summary of the research study, the conclusion drawned and the recommendations for the study based on the research findings, under the following sub-heading.

5.1 Summary

5.2 Conclusion

5.3 Recommendations

5.4 Limitation of the study

5.5 Suggestions for further Study

5.1 Summary

The study was conducted to determine the effectiveness of Adoption of Livestock Technologies on Livestock Production by Nomadic farmers in Niger and Kwara States. Four specific objectives were stated to determine the effects of adoption of livestock technologies on livestock production by the Nomadic farmers. Four research questions and four Null hypotheses were formulated for the study. The population comprising 1446 nomadic farmers from two ADP zones made up of 20 extension blocks in both states. Multistage sampling method involving the use of 'hat drawn' technique was used to drawn the sample population for the study. The study comprises a sample size of 350 respondents drawn from Nomadic farmers that was used as population for the study.

Descriptive survey research design was used for the study and questionnaire was used as the instrument for data collection. Means, frequency, and percentage were used in analyzing the bio data. The four Null hypotheses stated were tested as chi-square was used to test Null Hypothesis one, Pearson Product Moment Correlation (PPMC) was used to test Null Hypotheses

two, three and four at 0.05 alpha level of significance. The result of tested Null hypothesis 1 showed that there was no significant difference among the farmers on the socio-cultural practices of Nomadic farmers which were perceived as constraint in the adoption of livestock technologies in their system of livestock production in Niger and Kwara States. Null hypothesis 2 revealed that there was significant relationship between extent of adoption of livestock technologies and the improvement on livestock production by Nomadic farmers. Null hypothesis 3 showed that significant relationship existed between extent of adoption of livestock technologies and the Nomadic farmers' economic status. In addition, Null hypothesis 4 result showed that there was significant relationship between extent of adoption of livestock technologies and the Nomadic farmers standard of living in Niger and Kwara States. Therefore the Null hypothesis I was accepted, while Null hypotheses 2, 3 and 4 were rejected.

The finding showed that the adoption of livestock technologies by Nomadic farmers have improved livestock production, improved their economic status and general standard of living. The conservative attitudes of most farmers limited their belief in accepting new innovation to improve their system of livestock production. Even though the result also indicated that Nomadic farmers now introduced modern livestock technologies, this helped them to invest in other sectors of livestock production for sustainable development.

5.2 Conclusion

Based on the findings of the study the following conclusions were made:That Adoption of livestock technologies by Nomadic farmers improved livestock production. Nomadic farmers have strong belief on their socio-cultural practices such as seasonal migration, despite adoption of livestock technologies in livestock production in Niger and Kwara States.

There is a general acceptability that adoption of livestock technologies in livestocks production has significantly improved the economic status of nomadic farmers in Niger and

Kwara States. Likewise the nomadic farmers' standard of living have improved when livestock technologies were adopted

5.3 Recommendations

Based on the finding of the study, the following recommendations were made:

1. Governments should continue to encourage nomadic farmers to adopt modern farming practices in livestock production because the results of the study indicate improvement in both livestocks production and economic status as well as standard of living. Extension services still provide the best avenue for change.
2. The availability of livestock technologies is vital for adoption to have more impact on the economic and social living of these farmers, to this end government and nongovernmental organizations should not only make them available but at subsidized rate to the nomadic farmers.

5.4 Limitation of the Study

The limitation of the study was that the researcher had to collect data from the respondents the researcher met at the contact points and have no access to their herds, their mobility made it difficult to track their movement to observe their condition and that of their herds. .

5.5 Suggestions for Further Study

The following areas are suggested for further study :

1. A similar study on the effectiveness of adoption of improved technologies on livestock production among Nomadic farmers in other states of country should be carried out

2. Effectiveness of Adoption of improved technologies on livestock production by sedentary livestock farmers.

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APPENDIX A

DEPARTMENT OF VOCATIONAL & TECHNICAL EDUCATION
AHMADU BELLO UNIVERSITY, ZARIA NIGERIA
FACULTY OF EDUCATION

Telephone: 069-51755, 50692
Vice Chancellor: Professor. Abdullahi Mustapha B.Sc. (Hons) Pharm(ABU), Ph.D (London) FPSN
Head of Department : Professor A.A Udoh B.Ed. (Hons) Nsukka M.Ed. & Ph.D Bus Edu. (ABU)

Your Ref: _____ 14th August, 2014

Our Ref: M.SC/EDUC/8992/2009-2010 *Date:* _____

Letter of Introduction

BAMAN ABUBAKAR- M.SC/EDUC/8992/2009-2010

This is to certify that the above mentioned name is a Postgraduate student (M.Sc Agric Education) in the Department of Vocational and Technical Education, Ahmadu Bello University, Zaria, carrying out a research topic: **Effects of Adoption of Livestock Technologies in Livestock Production by Nomadic Farmers in Niger and Kwara States.**

Please, kindly give him every assistance he may require

DEPT. OF VOC. & TECH. EDUCATION HEAD DEPT. A.B.U. ZARIA

Professor A.A. Udoh
HEAD OF DEPARTMENT

APPENDIX B

Letter to the Respondents

Department of Vocational and
Technical Education,
Faculty of Education,
Ahmadu Bello University, Zaria.

Dear Respondent,

Request to Fill Questionnaire

I am a student of the above named institution presently undergoing a research on 'Effects of adoption of livestock technologies on livestock production by Nomadic farmers in Niger and Kwara States'

Kindly, respond to the attached questionnaire as objective as possible. All information given will be treated as confidential and used mainly for academic purpose.

Thanks for your co-operation.

Yours sincerely,

BAMAN, ABUBAKAR

QUESTIONNAIRE FOR FARMERS

Please indicate your answer by ticking (√) the appropriate column.

PERSONAL DATA

SECTION A

1) **Age (in years)**

a) Less than 30	
b) 30-40	
c) 41-50	
d) 51-60	
e) More than 60	

2) **SEX**

a) Male	
b) Female	

3) **Marital status.**

a) Single	
b) Married	
c) Divorced	
d) Widowed	

4) **Highest Educational Qualification**

a) No Formal Education

b) Adult Education

c) Arabic Education

d) Primary Education

e) Secondary Education

f) Tertiary Education

5) **Type of Livestock Farming**

a) Cattle Production

b) Sheep Production

c) Goat Production

d) Poultry Production

e) Mixed livestock production

6) **Sources of income**

a) Sales of livestocks only

b) Sales of livestocks products only

c) Sales of livestocks and their products

7) **Size of livestock herd**

a) Small (10-20)

b) Medium (21-50)

c) Large (51 and above)

8) **Number of years of experience in livestock farming.**

a) Less than 5

b) 5-10

c) 11-15

d) 16 and above

9) **Sources of livestocks**

a) Inheritance

b) Purchased

c) Gift

d) Hired

SECTION B

NOTE: The abbreviations in the columns are: SA=Strongly Agree, A= Agree, D=Disagree, SD=Strongly Disagree.

B	**Socio-cultural practices of nomadic farmers which serve as constraint in livestocks production.**	**SA**	**A**	**D**	**SD**
10	Farmers understand their nomadic practices more than any other system of livestock production.				
11	The farmers believe in the use of family labour than employ laborers for livestocks production.				
12	The farmers believe that not having a permanent farmstead is better for their livestocks farming.				
13	The farmers believe that the system allowed them to practice and maintain their culture and tradition.				
14	The farmers believe that their Livestock are adapted to their methods of livestocks production.				
15	The farmers believe in the use of their children as hired labour limit the number of livestocks kept by individual farmer.				
16	The farmers' use of their children prevents them from acquiring modern education to improve livestocks production.				
17	The farmers believe that their livestocks production can only be improved through seasonal migration.				
18	The conservative attitudes of most farmers' limit their believe in accepting new innovation to improve livestocks production.				
19	The farmers believe in their traditional grazing areas make it difficult for them to stay in new grazing reserve to improve livestocks production.				

C Please indicate the rate at which you use improved technologies on livestock production		Very often	often	randomly	Not at all
20	Range land for grazing of livestock				
21	Visitation by veterinary Doctors for treatment of any sick animal				
22	Use of drugs for the treatment of sick animals.				
23	Ration formulation using locally available agro-industrial by-products for optimum production.				
24	Upgrading of indigenous breed through crossbreeding with exotic breeds.				
25	Management intervention to reduce the age at first conception.				

		Very often	often	randomly	Not at all
26	Use of milking machine for the collection of milk from the livestocks.				
27	Use of improved pasture species as feed for livestock				
28	Use of artificial insemination technique for upgrading of your livestocks.				
29	Introduction of special breeds of livestock for a particular production purpose.				
30	Feedlot fattening techniques for fattening animals among the livestocks				

D	**Farmers economic status as a result of Adoption of livestock technologies in livestock production**	**SA**	**A**	**D**	**SD**
31	There is an increase in the size of the herds kept by the farmers.				
32	There is an improvement on the price of livestock sold by the farmers.				
33	The farmers are able to buy and pay for drugs for the treatment of their livestocks				
34	The farmers are now buying new equipments and machines to ease their activities.				
35	The farmers are now involved with the use of new systems of livestock grazing to boost livestock production.				
36	The farmers are able to send their children to schools as a result of adopting livestock technologies.				
37	There is an improvement in the mode of dressing and even the feeding habit as a result of adoption of livestock technologies in livestock production.				
38	The farmers are now able to invest on other sectors of Agriculture production for sustainable development.				
39	There is now improvement in socio-economic activities of Nomadic farmers and Arable farmers.				
40	Nomadic farmer are now acquiring land for permanent settlement.				

E	**Extent to which Adoption of livestock technologies affected farmers' standard of living.**	SA	A	D	SD
41	Adoptions of livestock technologies have reduced the seasonal migration of Nomadic farmers.				
42	Adoption of livestock technologies made it possible to send their children to schools.				
43	Adoption of livestock technologies has made it possible for Nomadic farmers to have access to good health facilities.				
44	Adoption of livestock technologies has increased Nomadic farmers' ability to purchase and use articles such as radio, mobile phone, television, car, motorcycle etc.				
45	Adoption of livestock technologies reduces risk associated with livestock farming.				
46	Adoption of livestock technologies improved the quality of products produced by Nomadic farmers.				
47	Adoption of livestock technologies has increase Nomadic farmers' income.				
48	Adoption of livestock technologies has reduced the cost of livestock production.				
49	Adoption of livestock technologies has made it possible to employ the services of technical staff for consultancy services.				
50	Adoption of livestock technologies increases the farmers' ability to purchase new equipments and technologies.				

Appendix C

Row analysis of data

Frequencies

Frequency Table

Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	less than 30 yrs.	84	24.0	24.0	24.0
	30-40 yrs.	90	25.7	25.7	49.7
	41-50 yrs	87	24.9	24.9	74.6
	51-60 yrs	75	21.4	21.4	96.0
	more than 60 yrs	14	4.0	4.0	100.0
	Total	350	100.0	100.0	

Sex

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	male	338	96.6	96.6	96.6
	female	12	3.4	3.4	100.0
	Total	350	100.0	100.0	

marital status

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	single	53	15.1	15.1	15.1
	married	267	76.3	76.3	91.4
	divorced	26	7.4	7.4	98.9
	widowed	4	1.1	1.1	100.0

	Total	350	100.0	100.0	

highest educatinal qualification

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no formal educ	34	9.7	9.7	9.7
	Adult educ	90	25.7	25.7	35.4
	Arabic education	28	8.0	8.0	43.4
	Primary educ	46	13.1	13.1	56.6
	secondary educ	50	14.3	14.3	70.9
	tertiary educ	102	29.1	29.1	100.0
	Total	350	100.0	100.0	

tye of livestock farming

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	cattle production	60	17.1	17.1	17.1
	sheep production	42	12.0	12.0	29.1
	goat production	30	8.6	8.6	37.7
	poultry production	66	18.9	18.9	56.6
	mixed livestock production	152	43.4	43.4	100.0
	Total	350	100.0	100.0	

sources of income

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	sales of livestock only	171	48.9	48.9	48.9
	sales of livestock product only	40	11.4	11.4	60.3

	sales of livestock and their products	139	39.7	39.7	100.0
	Total	350	100.0	100.0	

size of livestock herd

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	small (10-20)	191	54.6	54.6	54.6
	medium (21-20)	100	28.6	28.6	83.1
	large (51 and above)	59	16.9	16.9	100.0
	Total	350	100.0	100.0	

number of years of exerience in livestock farming

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	less than 5 yrs.	155	44.3	44.3	44.3
	5-10 yrs	125	35.7	35.7	80.0
	11-15 yrs	59	16.9	16.9	96.9
	16 yrs and above	11	3.1	3.1	100.0
	Total	350	100.0	100.0	

sources of livestocks

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	inheritance	80	22.9	22.9	22.9
	purchased	96	27.4	27.4	50.3
	gift	48	13.7	13.7	64.0

	hired	126	36.0	36.0	100.0
	Total	350	100.0	100.0	

FARMERS 1

Frequencies

Statistics

		farmers understand their nomadic practices more tham any other system of livestock Productio n	the farmer s believe in the use of family labour than emplo y labour ers for livesto ck produc tion	the farmers believe that not having a permanen t farmstead is better for their livestock farming	the fatmers believe that the system allow them to practice and maintain their culture and tradition	the farmers believe that their livestock are adated to their methods of livestock production	the farmers believe in the use of their children as hired labour limit the number of livestoc k ket by individu al farmer	the farmer s' use of their childre n revent s them from acquiri ng moder n educat ion to imrove livesto ck produc tion	the farmer s believe that their livesto ck produc tion can only be imrove d throug h seaso nal migrati on	the conser vative attitud es f mst farmer s limit their believe in accetin g new innova tions to imrove livesto ck produc tion	the farmer s believ e in their traditio nal grazin g areas make it difficult for them to stay in new grazin g reserv es to imrove livesto ck produc tion
N	Valid	350	350	350	350	350	350	350	350	350	350
	Missing	0	0	0	0	0	0	0	0	0	0
Mean		2.4886	2.4800	3.1343	2.5086	2.4629	3.1200	2.5057	2.4829	3.1514	2.5057
Std. Deviation		.92939	.65856	.63039	.92013	.66215	.64891	.92326	.64988	.59841	.92326

Frequency Table

farmers understand their nomadic practices more tham any other system of livestock Production

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	44	12.6	12.6	12.6
	D	154	44.0	44.0	56.6
	A	89	25.4	25.4	82.0
	SA	63	18.0	18.0	100.0
	Total	350	100.0	100.0	

the farmers believe in the use of family labour than employ labourers for livestock production

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	7	2.0	2.0	2.0
	D	193	55.1	55.1	57.1
	A	125	35.7	35.7	92.9
	SA	25	7.1	7.1	100.0
	Total	350	100.0	100.0	

the farmers believe that not having a permanent farmstead is better for their livestock farming

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	6	1.7	1.7	1.7
	D	31	8.9	8.9	10.6

	A	223	63.7	63.7	74.3
	SA	90	25.7	25.7	100.0
	Total	350	100.0	100.0	

the fatmers believe that the system allow them to practice and maintain their culture and tradition

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	40	11.4	11.4	11.4
	D	156	44.6	44.6	56.0
	A	90	25.7	25.7	81.7
	SA	64	18.3	18.3	100.0
	Total	350	100.0	100.0	

the farmers believe that their livestock are adated to their methods of livestock production

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	9	2.6	2.6	2.6
	D	194	55.4	55.4	58.0
	A	123	35.1	35.1	93.1
	SA	24	6.9	6.9	100.0
	Total	350	100.0	100.0	

the farmers believe in the use of their children as hired labour limit the number of livestock ket by individual farmer

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	8	2.3	2.3	2.3
	D	31	8.9	8.9	11.1

	A	222	63.4	63.4	74.6
	SA	89	25.4	25.4	100.0
	Total	350	100.0	100.0	

the farmers' use of their children revents them from acquiring modern education to imrove livestock production

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	41	11.7	11.7	11.7
	D	155	44.3	44.3	56.0
	A	90	25.7	25.7	81.7
	SA	64	18.3	18.3	100.0
	Total	350	100.0	100.0	

the farmers believe that their livestock production can only be imroved through seasonal migration

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	5	1.4	1.4	1.4
	D	196	56.0	56.0	57.4
	A	124	35.4	35.4	92.9
	SA	25	7.1	7.1	100.0
	Total	350	100.0	100.0	

the conservative attitudes f mst farmers limit their believe in acceting new innovations to imrove livestock production

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	3	.9	.9	.9
	D	31	8.9	8.9	9.7

	A	226	64.6	64.6	74.3
	SA	90	25.7	25.7	100.0
	Total	350	100.0	100.0	

the farmers believe in their traditional grazing areas make it difficult for them to stay in new grazing reserves to imrove livestock production

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	41	11.7	11.7	11.7
	D	155	44.3	44.3	56.0
	A	90	25.7	25.7	81.7
	SA	64	18.3	18.3	100.0
	Total	350	100.0	100.0	

2

Frequencies

Statistics

		range land for grazing of livestock	visitation by veterinary doctors for treatment of any sick animal	use of drugs for the treatment of sick animals	ration formulation using locally available agro industrial by products for utimum production	ugrading of indigenous breed through cross breeding with exotic breeds	management intervention to reduce the age at first concepti on	use of milking machine for the cllection of milk from the livestock	use of improved asture secies as feed for livestock	use of artificial insemination technique for upgrading of your livestock	introduction of secial breeds of livestock for a articular roduction purose	feedlot fattening techniques for fattening animals among the livestock
N	Valid	350	350	350	350	350	350	350	350	350	350	350
	Missing	0	0	0	0	0	0	0	0	0	0	0
Mean		2.4714	3.1029	2.5057	2.4857	2.9257	2.5486	2.7257	2.9257	2.5486	2.6314	2.5857

Std. Deviation	.66689	.68193	.92326	.64552	.75714	.86755	.70542	.75714	.86755	.77470	.94388

Frequency Table

range land for grazing of livestock

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	9	2.6	2.6	2.6
	D	192	54.9	54.9	57.4
	A	124	35.4	35.4	92.9
	SA	25	7.1	7.1	100.0
	Total	350	100.0	100.0	

visitation by veterinary doctors for treatment of any sick animal

Ss		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	11	3.1	3.1	3.1
	D	32	9.1	9.1	12.3
	A	217	62.0	62.0	74.3
	SA	90	25.7	25.7	100.0
	Total	350	100.0	100.0	

use of drugs for the treatment of sick animals

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	41	11.7	11.7	11.7
	D	155	44.3	44.3	56.0
	A	90	25.7	25.7	81.7

	SA	64	18.3	18.3	100.0
	Total	350	100.0	100.0	

ration formulation using locally available agro industrial by products for utimum production

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	4	1.1	1.1	1.1
	D	197	56.3	56.3	57.4
	A	124	35.4	35.4	92.9
	SA	25	7.1	7.1	100.0
	Total	350	100.0	100.0	

ugrading of indigenous breed through crossbreeding with exotic breeds

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	13	3.7	3.7	3.7
	D	75	21.4	21.4	25.1
	A	187	53.4	53.4	78.6
	SA	75	21.4	21.4	100.0
	Total	350	100.0	100.0	

management intervention to reduce the age at first conception

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	29	8.3	8.3	8.3
	D	159	45.4	45.4	53.7

	A	103	29.4	29.4	83.1
	SA	59	16.9	16.9	100.0
	Total	350	100.0	100.0	

use of milking machine for the cllection of milk from the livestock

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	3	.9	.9	.9
	D	139	39.7	39.7	40.6
	A	159	45.4	45.4	86.0
	SA	49	14.0	14.0	100.0
	Total	350	100.0	100.0	

use of improved asture secies as feed for livestock

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	13	3.7	3.7	3.7
	D	75	21.4	21.4	25.1
	A	187	53.4	53.4	78.6
	SA	75	21.4	21.4	100.0
	Total	350	100.0	100.0	

use of artificial insemination technique for upgrading of your livestock

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	29	8.3	8.3	8.3

	D	159	45.4	45.4	53.7
	A	103	29.4	29.4	83.1
	SA	59	16.9	16.9	100.0
	Total	350	100.0	100.0	

introduction of secial breeds of livestock for a articular roduction purose

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	18	5.1	5.1	5.1
	D	139	39.7	39.7	44.9
	A	147	42.0	42.0	86.9
	SA	46	13.1	13.1	100.0
	Total	350	100.0	100.0	

feedlot fattening techniques for fattening animals among the livestock

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	37	10.6	10.6	10.6
	D	147	42.0	42.0	52.6
	A	90	25.7	25.7	78.3
	SA	76	21.7	21.7	100.0
	Total	350	100.0	100.0	

3 famers

Frequencies

Statistics

		there is an increase in the size of the herds kept by the farmers	there is an improvement on the rice of livestock sold by the farmers	the farmers are able to buy and pay for drugs for the treatment of their livestock	the farmers are now buying new equipments and machines to ease their activities	the farmers are now involved with the use of new systems of livestock grazing to boost livestock production	the farmers are able to send their children to schools as a result of adoptin g livestock technol ogies	there is an improvement in the mode of dressin g and even the feeding habits as a result of adotion f livestock technol ogies in livestoc k roductio n	the farmers are now able to invest on other sectors of agricult ure producti on for sustain able develop ment	there is now improvement in socio econom ic activitie s of nomadi c farmers and arable farmers	nomad ic farmer s are now acquiri ng land for perma nent settle ment
N	Valid	350	350	350	350	350	350	350	350	350	350
	Missing	0	0	0	0	0	0	0	0	0	0
Mean		2.5971	3.1086	2.5857	2.5971	3.1086	2.5857	2.5971	3.1086	2.5857	2.5971
Std. Deviation		.72253	.67258	.94388	.72253	.67258	.94388	.72253	.67258	.94388	.72253

Frequency Table

there is an increase in the size of the herds kept by the farmers

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	3	.9	.9	.9
	D	181	51.7	51.7	52.6
	A	120	34.3	34.3	86.9
	SA	46	13.1	13.1	100.0
	Total	350	100.0	100.0	

there is an improvement on the rice of livestock sold by the farmers

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	10	2.9	2.9	2.9
	D	32	9.1	9.1	12.0
	A	218	62.3	62.3	74.3
	SA	90	25.7	25.7	100.0
	Total	350	100.0	100.0	

the farmers are able to buy and pay for drugs for the treatment of their livestock

	Frequency	Percent	Valid Percent	Cumulative Percent

Valid	SD	37	10.6	10.6	10.6
	D	147	42.0	42.0	52.6
	A	90	25.7	25.7	78.3
	SA	76	21.7	21.7	100.0
	Total	350	100.0	100.0	

the farmers are now buying new equipments and machines to ease their activities

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	3	.9	.9	.9
	D	181	51.7	51.7	52.6
	A	120	34.3	34.3	86.9
	SA	46	13.1	13.1	100.0
	Total	350	100.0	100.0	

the farmers are now involved with the use of new systems of livestock grazing to boost livestock production

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	10	2.9	2.9	2.9
	D	32	9.1	9.1	12.0
	A	218	62.3	62.3	74.3
	SA	90	25.7	25.7	100.0
	Total	350	100.0	100.0	

the farmers are able to send their children to schools as a result of adopting livestock technologies

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	37	10.6	10.6	10.6
	D	147	42.0	42.0	52.6
	A	90	25.7	25.7	78.3
	SA	76	21.7	21.7	100.0
	Total	350	100.0	100.0	

there is an improvement in the mode of dressing and even the feeding habits as a result of adotion f livestock technologies in livestock roduction

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	3	.9	.9	.9
	D	181	51.7	51.7	52.6
	A	120	34.3	34.3	86.9
	SA	46	13.1	13.1	100.0
	Total	350	100.0	100.0	

the farmers are now able to invest on other sectors of agriculture production for sustainable development

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	10	2.9	2.9	2.9
	D	32	9.1	9.1	12.0
	A	218	62.3	62.3	74.3
	SA	90	25.7	25.7	100.0
	Total	350	100.0	100.0	

there is now improvement in socio economic activities of nomadic farmers and arable farmers

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	37	10.6	10.6	10.6
	D	147	42.0	42.0	52.6
	A	90	25.7	25.7	78.3
	SA	76	21.7	21.7	100.0
	Total	350	100.0	100.0	

nomadic farmers are now acquiring land for permanent settlement

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	3	.9	.9	.9
	D	181	51.7	51.7	52.6
	A	120	34.3	34.3	86.9
	SA	46	13.1	13.1	100.0
	Total	350	100.0	100.0	

4farmersFrequencies

Statistics

		adoption of livestock technologies has reduced the seasonal migration of nomadic farmers	adoption of livestock technologies made it possible to send their children to schools	adoption of livestock technologies has made it possible for nomadic farmers to have access to good health facilities	adoption of livestock technologies has increased nomadic farmers ability to purchase and use articles such as radio,mobile hones,television,car,motorcycle etc	adoption of livestock technologies reduces risk assciated with livestock farming	adoption of livestock technologies improved the quality of products produced by nomadic farmers	adoption of livestock technologies has increased nomadic farmers income	adoption of livestck technologies has reduced the cost of livestock production	adoption of livestock technologies has made it possible to employ the services of technical staff for consultancy services	adoption of livestock technologies increase the farmers' abiity to purchase new equipments and technologies
N	Valid	350	350	350	350	350	350	350	350	350	350
	Missing	0	0	0	0	0	0	0	0	0	0
Mean		3.1086	2.5857	2.5971	2.9229	2.5086	2.7000	2.9086	2.5114	2.7143	3.6657
Std. Deviation		.67258	.94388	.72253	.75874	.87544	.73687	.77028	.87541	.71702	.71794

Frequency Table

adoption of livestock technologies has reduced the seasonal migration of nomadic farmers

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	10	2.9	2.9	2.9
	D	32	9.1	9.1	12.0
	A	218	62.3	62.3	74.3
	SA	90	25.7	25.7	100.0
	Total	350	100.0	100.0	

adoption of livestock technologies made it possible to send their children to schools

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	37	10.6	10.6	10.6
	D	147	42.0	42.0	52.6
	A	90	25.7	25.7	78.3
	SA	76	21.7	21.7	100.0
	Total	350	100.0	100.0	

adoption of livestock technologies has made it possible for nomadic farmers to have access to good health facilities

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	3	.9	.9	.9
	D	181	51.7	51.7	52.6
	A	120	34.3	34.3	86.9
	SA	46	13.1	13.1	100.0
	Total	350	100.0	100.0	

adoption of livestock technologies has increased nomadic farmers ability to purchase and use articles such as radio,mobile hones,television,car,motorcycle etc

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	12	3.4	3.4	3.4
	D	79	22.6	22.6	26.0
	A	183	52.3	52.3	78.3
	SA	76	21.7	21.7	100.0
	Total	350	100.0	100.0	

adoption of livestock technologies reduces risk assciated with livestock farming

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	32	9.1	9.1	9.1
	D	166	47.4	47.4	56.6
	A	94	26.9	26.9	83.4
	SA	58	16.6	16.6	100.0
	Total	350	100.0	100.0	

adoption of livestock technologies improved the quality of products produced by nomadic farmers

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	9	2.6	2.6	2.6
	D	136	38.9	38.9	41.4
	A	156	44.6	44.6	86.0
	SA	49	14.0	14.0	100.0
	Total	350	100.0	100.0	

adoption of livestock technologies has increased nomadic farmers income

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	14	4.0	4.0	4.0
	D	79	22.6	22.6	26.6
	A	182	52.0	52.0	78.6
	SA	75	21.4	21.4	100.0
	Total	350	100.0	100.0	

adoption of livestck technologies has reduced the cost of livestock production

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	32	9.1	9.1	9.1
	D	165	47.1	47.1	56.3
	A	95	27.1	27.1	83.4
	SA	58	16.6	16.6	100.0
	Total	350	100.0	100.0	

adoption of livestock technologies has made it possible to employ the services of technical staff for consultancy services

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	5	1.4	1.4	1.4
	D	139	39.7	39.7	41.1
	A	157	44.9	44.9	86.0
	SA	49	14.0	14.0	100.0
	Total	350	100.0	100.0	

adoption of livestock technologies increase the farmers' abiity to purchase new equipments and technologies

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	9	2.6	2.6	2.6
	D	24	6.9	6.9	9.4
	A	42	12.0	12.0	21.4
	SA	275	78.6	78.6	100.0
	Total	350	100.0	100.0	

Frequencies

Statistics

		adoption of livestock technolgies has reduced the seasonal migration of nomadic farmers	adoption of livestock technologies made it possible to send their childre n to school s	adoption of livestock technologies has made it possible for nomadic farmers to have access to good health facilities	adoption of livestock technologies has increased nomadic farmers ability to purchase and use articles such as radio,mobile hones,television,car,motorcycles etc	adoption of livestock technologies reduces risk associated with livestock farming	adoption of livestock technoligies imroved the quality of products produced by nomadic farmers	adoption of livestock technologies has increased nomadic farmers income	adoption of livestock technologies has reduced the cost of livestock production	adoption of livestock technologies has made it possible to emloy the services of technical staffs for consultancy services	adoption of livestock technologies increases the farmers ability to purchase new equipments and technologies
N	Valid	215	215	215	215	215	215	215	215	215	215
	Missing	0	0	0	0	0	0	0	0	0	0
Mean		2.6465	3.0837	2.6186	2.6465	2.8512	2.5209	2.8047	2.8512	2.5209	2.8047
Std. Deviation		.75236	.69205	.94899	.75236	.79495	.81360	.68970	.79495	.81360	.68970

Frequency Table

adoption of livestock technolgies has reduced the seasonal migration of nomadic farmers

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	1	.5	.5	.5
	D	109	50.7	50.7	51.2
	A	70	32.6	32.6	83.7
	SA	35	16.3	16.3	100.0
	Total	215	100.0	100.0	

adoption of livestock technologies made it possible to send their children to schools

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	7	3.3	3.3	3.3
	D	22	10.2	10.2	13.5
	A	132	61.4	61.4	74.9
	SA	54	25.1	25.1	100.0
	Total	215	100.0	100.0	

adoption of livestock technologies has made it possible for nomadic farmers to have access to good health facilities

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	21	9.8	9.8	9.8
	D	90	41.9	41.9	51.6
	A	54	25.1	25.1	76.7
	SA	50	23.3	23.3	100.0
	Total	215	100.0	100.0	

adoption of livestock technologies has increased nomadic farmers ability to purchase and use articles such as radio,mobile hones,television,car,motorcycles etc

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	1	.5	.5	.5
	D	109	50.7	50.7	51.2
	A	70	32.6	32.6	83.7
	SA	35	16.3	16.3	100.0
	Total	215	100.0	100.0	

adoption of livestock technologies reduces risk associated with livestock farming

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	9	4.2	4.2	4.2
	D	59	27.4	27.4	31.6
	A	102	47.4	47.4	79.1
	SA	45	20.9	20.9	100.0
	Total	215	100.0	100.0	

adoption of livestock technoligies imroved the quality of products produced by nomadic farmers

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	13	6.0	6.0	6.0
	D	108	50.2	50.2	56.3
	A	63	29.3	29.3	85.6
	SA	31	14.4	14.4	100.0
	Total	215	100.0	100.0	

adoption of livestock technologies has increased nomadic farmers income

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	D	76	35.3	35.3	35.3
	A	105	48.8	48.8	84.2
	SA	34	15.8	15.8	100.0
	Total	215	100.0	100.0	

adoption of livestock technologies has reduced the cost of livestock production

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	9	4.2	4.2	4.2
	D	59	27.4	27.4	31.6
	A	102	47.4	47.4	79.1
	SA	45	20.9	20.9	100.0
	Total	215	100.0	100.0	

adoption of livestock technologies has made it possible to emloy the services of technical staffs for consultancy services

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	13	6.0	6.0	6.0
	D	108	50.2	50.2	56.3
	A	63	29.3	29.3	85.6
	SA	31	14.4	14.4	100.0
	Total	215	100.0	100.0	

adoption of livestock technologies increases the farmers ability to purchase new equipments and technologies

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	D	76	35.3	35.3	35.3
	A	105	48.8	48.8	84.2
	SA	34	15.8	15.8	100.0
	Total	215	100.0	100.0	

All (FARMERS AND EXT WORKERS)

Frequencies

Statistics

		there is an increase in the size oof the herds kept by the farmers	there is an improvement on the rice of livestock sold by the farmers	the farmers are able to buy and pay for drugs for the treatment of their livestock	the farmers are now buying new equiments and machines to ease their activities	the farmers are involved with the use of new systems of livestock grazing to boost livestck production	the farmers are able to send their children to schools as a result of adoptin g livestock technologies	there is an imrovement in the mode of dressing and even feeding habit as a result of adoption of livestock production	the farmers are now able to invest on other sectors of agricultural production for sustainable development	there is now improvement in socio econmic activities of nomadic farmers and arable farmers	the nomadic farmers are nw acquiring more land fr permanent settlemant
N	Valid	565	565	565	565	565	565	565	565	565	565
	Missing	0	0	0	0	0	0	0	0	0	0
Mean		2.6053	2.9327	2.7752	2.6053	2.9327	2.7752	2.6053	2.9327	2.7752	2.6053
Std. Deviation		.81539	.73832	.88971	.81539	.73832	.88971	.81539	.73832	.88971	.81539

Frequency Table

there is an increase in the size oof the herds kept by the farmers

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	24	4.2	4.2	4.2
	D	271	48.0	48.0	52.2
	A	174	30.8	30.8	83.0
	SA	96	17.0	17.0	100.0
	Total	565	100.0	100.0	

there is an improvement on the rice of livestock sold by the farmers

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	11	1.9	1.9	1.9
	D	141	25.0	25.0	26.9
	A	288	51.0	51.0	77.9
	SA	125	22.1	22.1	100.0
	Total	565	100.0	100.0	

the farmers are able to buy and pay for drugs for the treatment of their livestock

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	44	7.8	7.8	7.8
	D	169	29.9	29.9	37.7
	A	222	39.3	39.3	77.0
	SA	130	23.0	23.0	100.0
	Total	565	100.0	100.0	

the farmers are now buying new equiments and machines to ease their activities

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	24	4.2	4.2	4.2
	D	271	48.0	48.0	52.2
	A	174	30.8	30.8	83.0
	SA	96	17.0	17.0	100.0
	Total	565	100.0	100.0	

the farmers are involved with the use of new systems of livestock grazing to boost livestck production

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	11	1.9	1.9	1.9
	D	141	25.0	25.0	26.9
	A	288	51.0	51.0	77.9
	SA	125	22.1	22.1	100.0
	Total	565	100.0	100.0	

the farmers are able to send their children to schools as a result of adopting livestock technologies

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	44	7.8	7.8	7.8
	D	169	29.9	29.9	37.7
	A	222	39.3	39.3	77.0
	SA	130	23.0	23.0	100.0
	Total	565	100.0	100.0	

there is an imrovement in the mode of dressing and even feeding habit as a result of adoption of livestock production

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	24	4.2	4.2	4.2
	D	271	48.0	48.0	52.2
	A	174	30.8	30.8	83.0
	SA	96	17.0	17.0	100.0
	Total	565	100.0	100.0	

the farmers are now able to invest on other sectors of agricultural production for sustainable development

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	11	1.9	1.9	1.9
	D	141	25.0	25.0	26.9
	A	288	51.0	51.0	77.9
	SA	125	22.1	22.1	100.0
	Total	565	100.0	100.0	

there is now improvement in socio econmic activities of nomadic farmers and arable farmers

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	44	7.8	7.8	7.8
	D	169	29.9	29.9	37.7
	A	222	39.3	39.3	77.0
	SA	130	23.0	23.0	100.0
	Total	565	100.0	100.0	

the nomadic farmers are nw acquiring more land fr permanent settlemant

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	24	4.2	4.2	4.2
	D	271	48.0	48.0	52.2
	A	174	30.8	30.8	83.0
	SA	96	17.0	17.0	100.0
	Total	565	100.0	100.0	

Frequencies

Statistics

		adoption of livestock technologies has reduced the seasonal migration of nomadic farmers	adoption of livestock technologies made it possible to send their children to schools	adoption of livestock technologies has made it possible for nomadic farmers to have access to good health facilities	adoption of livestock technologies has increased nomadic farmers ability to purchase and use articles such as radio,mobile hones,television,car,motor cycles etc	adoption of livestock technologies reduces risk associated with livestock farming	adoption of livestock technoligies imroved the quality of products produced by nomadic farmers	adoption of livestock technologies has increased nomadic farmers income	adoption of livestock technologies has reduced the cost of livestock production	adoption of livestock technologies has made it possible to emloy the services of technical staffs for consultancy services	adoption of livestock technologies increases the farmers ability to purchase new equipments and technologies
N	Valid	565	565	565	565	565	565	565	565	565	565
	Missing	0	0	0	0	0	0	0	0	0	0
Mean		2.9327	2.7752	2.6053	2.8177	2.6389	2.6319	2.8690	2.6407	2.6407	3.3381
Std. Deviation		.73832	.88971	.81539	.76749	.86125	.77119	.74175	.86096	.76035	.82129

Frequency Table

adoption of livestock technolgies has reduced the seasonal migration of nomadic farmers

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	11	1.9	1.9	1.9
	D	141	25.0	25.0	26.9
	A	288	51.0	51.0	77.9
	SA	125	22.1	22.1	100.0
	Total	565	100.0	100.0	

adoption of livestock technologies made it possible to send their children to schools

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	44	7.8	7.8	7.8
	D	169	29.9	29.9	37.7
	A	222	39.3	39.3	77.0
	SA	130	23.0	23.0	100.0
	Total	565	100.0	100.0	

adoption of livestock technologies has made it possible for nomadic farmers to have access to good health facilities

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	24	4.2	4.2	4.2
	D	271	48.0	48.0	52.2
	A	174	30.8	30.8	83.0
	SA	96	17.0	17.0	100.0
	Total	565	100.0	100.0	

adoption of livestock technologies has increased nomadic farmers ability to purchase and use articles such as radio,mobile hones,television,car,motorcycles etc

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	13	2.3	2.3	2.3
	D	188	33.3	33.3	35.6
	A	253	44.8	44.8	80.4
	SA	111	19.6	19.6	100.0
	Total	565	100.0	100.0	

adoption of livestock technologies reduces risk associated with livestock farming

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	41	7.3	7.3	7.3
	D	225	39.8	39.8	47.1
	A	196	34.7	34.7	81.8
	SA	103	18.2	18.2	100.0
	Total	565	100.0	100.0	

adoption of livestock technoligies imroved the quality of products produced by nomadic farmers

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	22	3.9	3.9	3.9
	D	244	43.2	43.2	47.1
	A	219	38.8	38.8	85.8
	SA	80	14.2	14.2	100.0
	Total	565	100.0	100.0	

adoption of livestock technologies has increased nomadic farmers income

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	14	2.5	2.5	2.5
	D	155	27.4	27.4	29.9
	A	287	50.8	50.8	80.7
	SA	109	19.3	19.3	100.0
	Total	565	100.0	100.0	

adoption of livestock technologies has reduced the cost of livestock production

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	41	7.3	7.3	7.3
	D	224	39.6	39.6	46.9
	A	197	34.9	34.9	81.8
	SA	103	18.2	18.2	100.0
	Total	565	100.0	100.0	

adoption of livestock technologies has made it possible to emloy the services of technical staffs for consultancy services

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	18	3.2	3.2	3.2
	D	247	43.7	43.7	46.9
	A	220	38.9	38.9	85.8
	SA	80	14.2	14.2	100.0
	Total	565	100.0	100.0	

adoption of livestock technologies increases the farmers ability to purchase new equipments and technologies

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	9	1.6	1.6	1.6
	D	100	17.7	17.7	19.3
	A	147	26.0	26.0	45.3
	SA	309	54.7	54.7	100.0
	Total	565	100.0	100.0	

T-Test

Group Statistics

	statusr of respondent	N	Mean	Std. Deviation	Std. Error Mean
FARMERS_ECONOMIC_STATUS_RESULT_OF_ADOP_OF_LIVE_TECH	ext worker	215	27.6651	4.76253	.32480
	farmers	350	27.4714	4.64290	.24817
EXTENT_ADOPTN_OF_LIVESTOCK_AFFECT_FARMERS_STANDARD	ext worker	215	27.3488	3.73968	.25504
	farmers	350	28.2229	3.95266	.21128

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
FARMERS_ECONOMIC_STATUS_RESULT	Equal variances assumed	1.586	.208	.477	563	.634	.19369	.40628	-.60432	.99170
	Equal variances not assumed			.474	444.014	.636	.19369	.40876	-.60966	.99704
EXTENT_ADOPT	Equal variances assumed	.006	.936	-2.604	563	.009	-.87402	.33560	-1.53321	-.21483
	Equal variances not assumed			-2.639	472.152	.009	-.87402	.33119	-1.52481	-.22323

Correlations

Descriptive Statistics

	Mean	Std. Deviation	N
socio_cultural_practices_as_constraints	26.8400	4.57821	350
IMPROVEMENT_LIVESTOCK_PRODUCTION	53.7114	8.44260	350

Correlations

		socio_cultural_practices_as_constraints	IMPROVEMENT_LIVESTOCK_PRODUCTION
socio_cultural_practices_as_constraints	Pearson Correlation	1	.973**
	Sig. (2-tailed)		.000
	N	350	350
IMPROVEMENT_LIVESTOCK_PRODUCTION	Pearson Correlation	.973**	1
	Sig. (2-tailed)	.000	
	N	350	350

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

Descriptive Statistics

	Mean	Std. Deviation	N
ADOPTION_OF_LIVESTOCK_TECHNOLOGIES	55.4354	8.20730	565
FARMERS_ECONOMIC_STATUS_RESULT_OF_ADOP_OF_LIVE_TECH	27.5451	4.68552	565

Correlations

		ADOPTION_OF_LIVESTOCK_TECHNOLOGIES	FARMERS_ECONOMIC_STATUS_RESULT_OF_ADOP_OF_LIVE_TECH
ADOPTION_OF_LIVESTOCK_TECHNOLOGIES	Pearson Correlation	1	.964**
	Sig. (2-tailed)		.002
	N	565	565
FARMERS_ECONOMIC_STATUS_RESULT_OF_ADOP_OF_LIVE_TECH	Pearson Correlation	.964**	1
	Sig. (2-tailed)	.002	
	N	565	565

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

Descriptive Statistics

	Mean	Std. Deviation	N
ADOPTION_OF_LIVESTOCK_TECHNOLOGIES	55.4354	8.20730	565
EXTENT_ADOPTN_OF_LIVESTOCK_AFFECT_FARMERS_STANDARD	26.8903	4.89289	565

Correlations

		ADOPTION_OF_LIVESTOCK_TECHNOLOGIES	EXTENT_ADOPTN_OF_LIVESTOCK_AFFECT_FARMERS_STANDARD
ADOPTION_OF_LIVESTOCK_TECHNOLOGIES	Pearson Correlation	1	.948**
	Sig. (2-tailed)		.003
	N	565	565
EXTENT_ADOPTN_OF_LIVESTOCK_AFFECT_FARMERS_STANDARD	Pearson Correlation	.948**	1
	Sig. (2-tailed)	.001	
	N	565	565

**. Correlation is significant at the 0.01 level (2-tailed).

Chi square statistics

						X^2	x^2	df	p
	C1	C2	C3	C4	Total	calculated	critical		
1	63	89	54	44	250	**38.87**	**40.113**	**27.6**	
	43.97	103.09	87.94	15.00					
2	25	125	193	7	350				
	61.56	144.32	123.12	21.00					
3	90	223	31	6	350				
	61.56	144.32	123.12	21.00					
4	64	90	156	40	350				
	61.56	144.32	123.12	21.00					
5	24	123	194	9	350				
	61.56	144.32	123.12	21.00					
6	89	222	31	8	350				
	61.56	144.32	123.12	21.00					
7	64	90	155	41	350				
	61.56	144.32	123.12	21.00					
8	25	124	196	5	350				
	61.56	144.32	123.12	21.00					
9	90	226	31	3	350				
	61.56	144.32	123.12	21.00					
10	64	90	155	41	350				
	61.56	144.32	123.12	21.00					