

**ANALYSIS OF THE IMPACT OF NOMADIC EDUCATION
PROGRAMME ON CATTLE PRODUCTION OUTPUT AND EMPLOYMENT
OPPORTUNITIES IN NORTH WESTERN ZONE OF NIGERIA**

BY

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**DEPARTMENT OF AGRICULTURAL ECONOMICS AND RURAL
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ZARIA-KADUNA STATE
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NOVEMBER, 2015

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**A THESIS SUBMITTED TO THE SCHOOL OF POSTGRADUATE STUDIES,
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**DEPARTMENT OF AGRICULTURAL ECONOMICS AND RURAL
SOCIOLOGY
FACULTY OF AGRICULTURE
AHMADU BELLO UNIVERSITY
ZARIA, KADUNA STATE
NIGERIA**

NOVEMBER, 2015

DECLARATION

I hereby declare that this thesis titled “**Analysis of the Impact of Nomadic Education Programme on Cattle Production Output and Employment Opportunities in North Western Zone of Nigeria**” has been written by me and it is a record of my research work. No part of this thesis has been presented in any previous application for another degree or diploma in this or any other institution. All borrowed information has been duly acknowledged in the text and a list of references provided.

AbubakarBayero
Student

Date

CERTIFICATION

This thesis titled “**Analysis of the Impact of Nomadic Education Programme on Cattle Production Output and Employment Opportunities in North Western Zone of Nigeria**”, by Abubakar Bayero meets the regulations governing the award of the degree of Doctor of Philosophy in Agricultural Extension and Rural Sociology of the Ahmadu Bello University, Zaria and is approved for its contribution to knowledge and literary presentation.

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DEDICATION

This work is dedicated to my beloved wife, Dr Husaina Adamu Bayero and my children, Shafa'atu, Abdulkadir, Shema'u, Maimuna, Mansura and Nana Aisha Bayero, for their understanding , prayers, moral and financial support in the course of my study. I love you and may Allah bless you all (Amin).

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ABSTRACT

This study was carried out to determine the impact of Nomadic Education Programme on the Nomads Employment Opportunity and Cattle production Output in the North West zone of Nigeria. Primary data were collected in the month of April, 2015 by the use of interview schedule questionnaire administered to 488 nomadic pastoralists consisting of 264 within and 224 outside the grazing reserves nomadic education centers in the study area. 5 respondents each were also sampled for Focus group discussion from each of the villages and nomadic education centers in order to have in-depth knowledge on some of the responses given by the respondents in the filled questionnaires. Logit regression model analysis, z-test and descriptive statistics involving the use of frequency tables and percentages were used to analyze the data collected from the field. The results obtained revealed that nomads socio-economic characteristics like age (.008), educational level(.001) and livestock rearing experience(.004) were significant to nomads participation and adoption of nomadic education package at 1% percent level of probability. Nomadic Education Programme package technological characteristics such as relative advantage (.033), affordability (.020), compatibility (.011) and complexity (.012) were significant to nomads participation and adoption of Nomadic Education package at 5% level of probability in the study area. The results of the z-test statistic analysis on the impact of adoption of Nomadic Education Programme package on the nomads 'employment opportunity revealed that (z-cal-2.67) was higher than (Z=1.96) at 0.05% level of probability, indicating that there is significant difference in rural employment opportunity between the nomads within and outside the grazing reserves nomadic education centers in the North West zone of Nigeria. The major constraints faced by the nomads within the grazing reserves nomadic education centers are poor water retention by the earth dams beyond the month of March (81.81%) and inadequate vocational skills teaching aids (72.72 among others. In order to improve on the nomad's extent of participation and adoption of Nomadic Education Programme package, it is recommended that extension services be intensifying by concerned organizations as well as periodic dredging of the earth dams and roads be rehabilitated by the relevant bodies/organizations in collaboration with National Commission for nomadic Education.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

The concept of nomadic education has been in existence as far back as the colonial period. The schools for the nomadic children then were established in the former Sokoto and Borno province before independence (Tahir, 2005). The education of the nomadic pastoralist became necessary in view of the fact that the nomads constitute a special population group in Nigeria who's economic, socio-cultural and political potentials remain untapped to the optimum. Yet, the nomads produce about 54% of the national dairy products and 90% of the estimated 14 million cattle under the nomadic system of animal husbandry (Tahir,2005). However, even with this significant contribution of the nomads to the Nigerian economy, the participation of the nomads in formal (11%) and non-formal (22%) education is alarmingly very low as at 2006 out of the estimated 11.4 million nomadic pastoralists 'population in Nigeria(NCNE, 2008a).

Since education occupies the centre stage in the Nigerian social and economic transformation, the Nomadic Education Programme was introduced in an effort to improve the nomads' access to education owing that it is an indispensable means of realizing or achieving the goal of development of every nation. Towards this direction, the Federal Government launched the Nomadic Education Programme in 1986 and establish the National Commission for Nomadic Education(NCNE) in 1989 (FME, 2004). This development led to the emergence of nomadic schools across the country with the broad aims of providing the nomads population with basic education to help them improve on their level of productivity in terms of herd size, milk yield and other daily income generating activities in order to improve on their livelihoods (FME, 2004).

Thus, the Nomadic Education Programme is not only aimed at providing access to quality basic education but also to develop the nomads through capacity building in vocational skills, livestock management and para-veterinary services, To meet these target objectives effectively, the Commission formulated policies, devised a series of innovative packages and strategies that will also raise both the productive and income level of the nomads through the provision of basic education and relevant skills that are significant to the occupation of the nomads (NCNE, 1995).

1.2 Problem Statement

The nomads are majorly constituted by pastoral Fulanis. These nomads are the primary livestock herders in the country and they produce more than ninety per cent of the animals and animal by-products consumed in the country. The nomads therefore, play important role in the economy and nutrition of Nigeria. Their transhumance methods of livestock production have over the years led to clashes with crop farmers. These clashes most times led to loss of lives and properties (Nzeh, 2015). There is the need therefore to reorient the nomads on improved methods of livestock production. This reorientation could prove difficult without the nomads being educated.

Despite the above enormous contribution of nomads to national building however, their participation in formal education is abysmally very low with literacy rate ranging between 8% and 11% (Mohammed and Ardo, 2010). This low level of formal education is expected to have an inverse relationship with the quality and quantity of livestock and dairy milk produce in the country. According to Shagari *et al.* (2013), education is a worthwhile venture as it is recognized worldwide as the most important engine that

propels technological development in modern societies and has been a major instrument of change and development.

In order to meet the educational needs of nomads, the Federal Government of Nigeria thus set up the National Commission for Nomadic Education (NCNE) in 1989. The commission was primarily charged with the responsibility of implementing the Nomadic Education Programme whose main objectives are to educate the nomads and improve upon their survival skills that will enable them raise their productivity and level of income that is expected to bring about improvement in their standards of living. Nomadic education agents were thus posted to various nomadic communities to educate and enlighten pastoral nomads on the acquisition of relevant skills for the improvement of livestock production, provides practical lessons on animal health and husbandry, provide training for nomadic adult in numeracy on livestock number, ability to read labels and direction on drugs, encourage nomads to engage in self-help projects, form co-operative societies and assist pastoralist to acquire appropriate skills, abilities and competence to contribute to national development (Ardo, 2000).

Since the establishment of the National Commission for Nomadic Education in 1989, A lot of researches have also been conducted on Nomadic Education Programme over the last two decades of its operation, but most of the researches were skewed mainly towards assessing infrastructural development in nomadic schools, students enrolment figures, problems of nomadic education, staff development and challenges facing Nomadic Education Programme in Nigeria. There is therefore, dearth of information on the impact of the Nomadic Education Programme on cattle production output and dairy milk yield of the nomads in the country. This research therefore, tries to determine the

impact of Nomadic Education Programme on the nomads' herd size, dairy products and employment opportunity in the North West zone of Nigeria. Towards this direction, the research seeks to address the following research questions:

- i. What are the factors influencing nomads' participation in Nomadic Education Programme in the North West zone of Nigeria.?
- ii. What is the impact of Nomadic Education Programme on the nomads employment opportunities in the North West zone of Nigeria.?
- iii. What is the impact of Nomadic Education Programme on the nomads herd size in the North West zone of Nigeria.?
- iv. What is the impact of the Nomadic Education Programme on nomads' milk yield in the North West zone of Nigeria.?
- v. What are the constraints facing the Nomadic Education Programme in the North West zone of Nigeria?

1.3 Objectives of the Study

The main objective of the study is to analyse the impact of Nomadic Education Programme on the Nomads Cattle Production Output and employment opportunities in the North West zone of Nigeria. The specific objectives of the study are to:

- i. determine the factors influencing nomads participation in Nomadic Education Programmes in the North West zone of Nigeria;

- ii.* analyse the impact of the Nomadic Education Programme on nomads' employment opportunities in the North West zone of Nigeria;
- iii.* analyse the impact of Nomadic Education Programme on the nomads herd size in the North West zone of Nigeria ;
- iv.* analyse the impact of the Nomadic Education Programme on the nomads milk yield in the North West zone of Nigeria; and,
- v.* identify the constraints facing Nomadic Education Programme in the North West zone of Nigeria.

1.4 Justification for the Study

The nomadic system of education was established by the decree No.41 of 1989 as the only system of education that will fit into the nomadic pastoralist groups of the Nigeria population because of their migratory lifestyles. Thus, educating this sector of the Nigeria populace who control the national herd of livestock under the nomadic system of animal husbandry practices, which does not fit into the present reality is paramount. Therefore, educating the nomadic pastoralists group will not only help in integrating them into the mainstream of Nigerians socially and economically but will also help in eradicating ignorance among the nomads in order to facilitate nomads participation and adoption of improved cattle production packages for income battering. A bold step towards this direction will also help in providing rural employment opportunities in vocational and livestock related business activities in order to improve the livelihood of the nomads in the study area.

Since the nomadic education policy was also aim at increasing cattle and dairy milk production in the country so as to reduce the high dependency on the importation of beef and dairy products from overseas as well as to facilitate self-reliance among the pastoralist group in Nigeria. It is also expected that the research will be important to the Nigerian government in the area of policy formulation in respect to the impact of Nomadic Education Programme package on the nomads' livestock productivity as well as the nomads' well- being in the country. This will also go a long way in unveiling the problems of the nomads in the nomadic education centers for diagnoses.

The establishment of National Commission for Nomadic Education is one singular giant stride made by the Nigerian government to enable the nomads have access to a suitable system of education in order integrate them into the mainstream of Nigerian society politically, socially and economically (Bello *et al.*, 2011). Towards this direction, assessing the impact of nomads participation and adoption of the Nomadic Education Programme package on the nomads employment opportunity and cattle production output will not only help in assessing the performance of the Nomadic Education Programme over the years, but also to ascertain the extent to which the Programme had affected the nomads literacy level and other socio-economic attributes of the nomadic pastoralists in Nigeria.

In addition, study will help in justifying the huge capital invested by the Federal, State and Local Government Areas as well as NGOs on the Nomadic Education Programme. National Commission for Nomadic Education will also find the information in this research work very useful since the study will help in reflecting the strengths and weakness of the Nomadic Education Programme package for subsequent improvement.

To the academician, the outcome of the study will help in reducing dearth information in respect to the impact of Nomadic Education Programme on cattle and dairy milk production in Nigeria and also add literature to the existing knowledge most especially in the area of nomadic education and livestock production. Lastly, the researchers most especially in the area of agricultural extension will find the information contain in this study very useful in project/programmes evaluation studies.

1.5 Hypotheses

- i.* There is no significant relationship between socioeconomic characteristics and the nomads' participation in Nomadic Education Programme.
- ii.* There is no significant relationship between nomads' participation in Nomadic Education Programme and their employment opportunities
- iii.* There is no significant relationship between nomads' participation in Nomadic Education Programme and their herd sizes
- iv.* There is no significant relationship between nomads' participation in Nomadic Education Programme and their cattle milk yield in the North West zone of Nigeria.

CHAPTER TWO

LITERATURE REVIEW

2.1 Nomadic Education Programme in Nigeria: A Historical Perspective

African educationist initially blames the content of European literacy style for the lack of interest in the education of the nomadic pastoralist. On the other hand, many scholars attributed the widespread failure of education among nomadic pastoralist in Nigeria to the pedagogy of education system that is unsuitable to the needs and circumstance of the nomadic Fulani's in the past (Ezeomah, 1987).

In re-affirming article 26 of the 1985, United Nations global declaration on "Human right to basic education." the Nigerian government committed itself fully to the literacy enhancement of the nomadic people living in the Northern parts of Nigeria. Towards this direction, the 1986 National Policy on Education emphasized that, education is the birth right of every child and education should be brought close to the environment of the child. The policy also stressed that whenever possible, special arrangement should be made for such children to assist their parent in the morning and go to school in the evening. A step towards this direction also requires that special and adequate inducement will be provided to teachers' in the rural areas to make them stay on the job (FME, 1986).

According to Federal Ministry of Education (FME,1986), the idea of the Nomadic Education Programme for the nomads fully came on board during 1976 meeting of the National Council on Education held in Lagos about the same time when Universal Primary Education became a Federal government policy. Nothing tangible was done until November 1986 when General Babangida administration came with a bold policy

on nomadic education, after the Yola national workshop on nomadic education. During the workshop, it was resolved that the nomads needed a fair deal through the provision of education and other social amenities to reciprocate their contribution to national building (Aminu, 1986). The sudden action of the government towards nomadic education was attributed by various reasons which include:

- i. The economic situation in the country which affects animal production.
- ii. Emergence of cattle diseases, especially around 1986/87 when many livestock were lost.
- iii. Importation of cattle from neighbouring Niger and Chad Republics became very difficult and more expensive; and
- iv. The ever migrating nature of the cattle Fulani and the need to get them settled and educated.

In line with the above reasons, the Federal Ministry of Education published a blue print on nomadic education in December 1987 after the Federal government had formally launched the programme in Yola, former Gongola State. This was followed by the mass distribution of the blue print to all State Ministries of Education including Local Government department of education nationwide. In the blue print, the aims and objective of the Nomadic Education Programme was stated as follows:

- i. The inculcation of the national consciousness and national unity,
- ii. the inculcation of the right type of values and attributes for the survival of the individual and the Nigeria society,
- iii. the training of the mind in the understanding of the world around us (i.e. training in scientific and critical thinking); and
- iv. the acquisition of appropriate skills, abilities, and competence, both mental, social and physical, as equipment for the individual to live in his society and to contribute to its development(FME,1989)

Thus, because of the distinctiveness of the nomad's lifestyle, the blue print further breaks the above objectives into two namely: Short and long term objectives. The short term objectives includes those aims and objectives of the programme which are achievable within a short period of time while the long terms are those objectives which could only be achieved over a relatively longer period of time.

By January 1991, the National Commission for Nomadic Education was able to produce textbooks in the four curricula areas and the first prototype of the collapsible mobile classroom manufactured by the Federal Science Equipment Manufacturing centre, Enugu was tested in April, 23, 1991. The mobile schools that use collapsible classrooms can be assembled or disassembled within thirty minutes and can be carried conveniently by pack bulls. In this case, a whole classroom and its furniture may be hauled by only four pack bulls' animals (Ardo, 2000).

According to Tahir (2004), for a successful implementation of the Nomadic Education Programme, the National Commission for Nomadic Education adopted the multiple approach school system in the Nomadic Education Programme nationwide. Among the adopted school systems of the Nomadic Education Programme includes:

- i.* **The regular school system:** This school system was adopted for settled pastoralist groups. Under this system, helping teachers may be used to assist nomadic children whose performance falls below expectation as a result of unfamiliar curricular contents and teaching methods.
- ii.* **On site schools:** This school system is used for the semi sedentary groups. Such schools are sited along pastoralist's movement routes or transhumance corridors at fixed points.
- iii.* **Mobile school system:** This school system is used for mobile pastoralist families depending on their number within a clan cluster. The Koranic Mallam model could be incorporated with the mobile school system. Under this school system, the Mallam move with the nomads.
- iv.* **Mutt education programme:** This method is used for the adult nomadic men and woman. In this model, classes are organized for parents, and teachers are provided to teach them how to read and write so that they can also teach their children reading, writing and simple numerical calculation at home.

- v. **Radio and distance education programme:** These are used to aid all the education system adopted for the nomads at different level. Under this system, radio programmers whose style, plot and content reflect the nomadic cultural heritage through radio commercial, spot announcement and radio discussions by highly experienced Fulani would go a long way to enrich the content of the formal education of the nomads. This system was adopted on the fact that the nomads always carry their radio sets along and listened to them as they trek or during cattle grazing activities.

Thus, the above named school systems were adopted in one place or the other depending on the nomad's level of sedenterization. According to Mourine (2007), as part of the efforts made in developing the Nomadic Education Programme in order to provide functional education to the nomadic pastoralists' communities, the Commission also identified a number of projects, which were articulated and developed in its 1996--2000 action plan that has now been rolled over and then reviewed for the 2005--2015 action plan.

In an attempt to achieve laid objectives, the Commission adopted the Anand Province Model of India which essentially involves the setting up of institutional infrastructure at village level, district and the state level that are owned and operated by the Indian nomads themselves. Towards this end, the whole operation is managed participatory where the individual producers have the freedom to decide their own policies. The adoption of modern production and marketing techniques helped in providing either services that small producers individually can either afford or manage (Sing and Pundir, 2004).

The Anand Province Model of India had succeeded largely because it involved people in their own development which was safe in their own hands. This has progressively eliminated the activities of middlemen by bringing the producers in direct contact with consumers. Hence the system enabled them to obtain the efficiency and economy of a large scale business (Sing and Pundir, 2004).

2.2 Collaboration and Partnership Activities with National Commission for Nomadic Education in Nigeria

In order to achieve the broad objective of the Nomadic Education Programme nationwide, the National Commission for Nomadic Education collaborated and worked hand in hand with the following agencies/organizations;

- i.* National Primary Health Care Development Agency: establishment of primary health care centres for polio eradication and strengthening child immunization against other killer diseases among nomadic pastoralist in the North West agro-ecological zone of Nigeria.
- ii.* World Health Organization: mapping of nomadic settlements and polio eradication among pastoralist nation-wide.
- iii.* Federal Ministry of Health: support primary health care centres, embark on Guinea worm eradication programme and other neglected tropical diseases.
- iv.* Confederation of Traditional Livestock Breeders Organization in Africa: High level advocacy, mobilization and sensitization of pastoralist on development policies and programmes in Economic Community of West African States (ECOWAS) member countries.

- v. Miyetti Allah Cattle Breeder Association of Nigeria (MACBAN): Mobilization and sensitization of pastoralist, development of grazing reserves and stock routes.
- vi. The Pastoral Resolve (PARE): High level advocacy, mobilization and sensitization of pastoralist education empowerment, livestock development, Grazing reserves development and stock routes, capacity building, HIV and AIDs awareness, Early Childhood Development and poverty reduction initiatives.
- vii. Fulbe Development Association of Nigeria (FULDAN): Mobilization and sensitization of pastoralist education and training of nomads, conflicts resolution and development of grazing reserve and stock routes.
- viii. Mobgal Fulbe Development Association (MOFDA): Mobilization and sensitization of pastoralist, education and training of pastoralist and conflict resolution.
- ix. ADB (African Development Bank): Skills development in vocational education in the nomadic education model centres.
- x. Japan International Corporation Agency (JICA): Japanese Grant assistance for grass root human security projects, construction of classrooms, provision of furniture and sinking of boreholes in nomadic schools.

- xi.* Federal Ministry of Agriculture and Rural Development: Capacity building of pastoralist on Agricultural transformation Agenda-Dairy and beef value chain
- xii.* National Livestock Development Programme: Development of grazing reserves and cattle route, capacity building of pastoralist on Agricultural transformation Agenda - dairy and beef value chains.
- xiii.* Rural Empowerment Initiative in West Africa (REIWA): E-Learning in nomadic schools for training nomadic school students and teachers.
- xiv.* World Bank (WB): Radio education and capacity building.

All these agencies are working together with NCNE to ensure the success of the Nomadic Education Programme in the country (NCNE,2005).

2.3 Challenges in the Implementation of Nomadic Education Programme in Nigeria

Greater commitment to the universalization of access to basic education heightened interest in the provision of quality basic education to the nomads and other educationally disadvantaged group in Nigeria. These segments of the population have serious limitations to equitable access to basic education through the conventional education system as a result of certain occupational and socio-cultural peculiarities (Tahir, 1999).In Nigeria, the major constrains of the nomads to participate in the conventional basic education programmes were found to be as a result of:

- i) their constant migration/movements in search of water and pasture;

- ii) the critical role of children in their production system which makes parents and guardians reluctant to release children to participate in the formal school system;
- iii) the irrelevance of the formal school curriculum which is tailored to meet the needs of the mainstream sedentary groups and ignores the special educational needs of nomads;
- iv) physical isolation, as they live and operate in mostly inaccessible terrains; and
- v) Land tenure system that makes it difficult for the nomads to acquire land and have permanent settlements.

2.4 The Approaches of National Commission for Nomadic Education in Expanding and Strengthening Access to Basic Education for Nomads

In order to strengthen access to basic education for the Nomadic populace of Nigeria, some innovative approaches and strategies as well as accomplishments in making basic education more accessible and equitable to the nomads were proposed by the National Commission for Nomadic Education in 1995. The key components of the approaches and strategies proposed were in the area of:

- i.* Capacity building for the sustainability of the Nomadic Education Programme through community sensitization, empowerment and mobilization;

- ii.* Infrastructural development and provision to broaden access and reach.
- iii.* Research, curriculum development and teacher training to engender empirical planning, curriculum relevance and functionality as well as effective content delivery;
- iv.* Monitoring and supervision for appropriate feedback and effectual follow-up;
- v.* Distance learning with the Interactive Radio for Schools and for Adult Education Schemes; and
- vi.* Broadening collaboration and partnerships to expand resource base as well as to promote systemic linkages and international cooperation in the implementation of the NEP.

Towards this direction, NCNE (2010) reported that there was an impressive performance in widening access to basic education for nomads through the NEP. For instance school enrolment figures among others rose from 163,361 in 1999 to 229,944 in 2002 while school completion figures increased from 7,632 in 1998 to 60,212 in 2002. In addition, the number of nomadic schools increased from 1,098 in 1997 to 1,350 in 2007 and the gender gap narrowed.

2.4.1 Community sensitization and empowerment initiatives

This includes intervention in the area of community mobilization, sensitization, empowerment and the provision of extension service. The major driving force behind this initiative was the realization that one of the impediments to the effective implementation of the NEP was lack of community participation due to non – appreciation of the value of western education among the nomads. To overcome this impediment, a more aggressive mobilization and sensitization strategy was adopted using extension services approach with a view to empowering nomadic communities attitudinally, socially and economically in order to appreciate and support the NEP. The following strategies were adopted in order to achieve the aims of this initiative:

- i.* Public enlightenment, sensitization and mobilization using radio, face – to – face interaction and meetings with active nomadic community leaders,
- ii.* Provision of functional literacy and numeracy for the adults including men and women,
- iii.* Animal Health and Husbandry,
- iv.* Co-operative organization and management;
- v.* Facilitate women programmes to enhance their daily income generating activities, healthcare, child bearing and simple hygiene.

According to NCNE (1995), the objectives of the community empowerment initiative includes:

- i.* Creating awareness, acceptance and participation in the implementation of the nomadic education programme.
- ii.* Serving as a forum for interaction among stakeholders, exchange of information and sharing of experience on how best to provide quality education to the nomads.
- iii.* Empower the communities socially and economically to support the education of their children.
- iv.* Providing the adult nomads with relevant skills and knowledge required for dealing with the complexities of modern society. These included functional literacy and numeracy, vocational skills and “new” income generating activities, which integrate traditional and modern techniques of animal husbandry, income generating skills for poverty alleviation and the use of ICT to enhance their socio – economic wellbeing as well as encourage active participation and involvement in the democratic process.

However, from 1998, the general focus of the extension programme has been on the total involvement and participation of the nomads in the implementation of the programme as well as the decision making process. The main thrust of this was to build the capacity of the nomads to support the provision of qualitative education, through community participation in the form of providing educational resource inputs like structures, instructional materials, welfare of teachers and funds to support some extra

activities in nomadic schools. According to NCNE (2005), some of the achievements and Outcomes of the Community Empowerment Initiative includes:

- i.* Development of a radio curriculum and installation of an Interactive Radio Instruction (IRI) for adult nomads in the year 2000 in Kaduna State using Kaduna State Media Corporation (KSMC) and in 2003 for Shuwa Arabs and Kanuri in Borno and Yobe states using Yobe Broadcasting Corporation,
- ii.* The formation of 198 nomadic radio listening groups in order to increase listenership of the Commission's sponsored Hausa/Fulfulde Radio Programme "*Don Makiyaya a Ruga*", which means "*for the nomadic pastoralists in the homesteads*" and also to raise a large audience for the multi-media distance learning scheme for Adults and IRI for children of nomads,
- iii.* Developed and produced an integrated adult literacy primer in Fulfulde language titled '*DeftereJande de Maube*'. The primer has elements of literacy and numeracy as well as social action skills. The content being numeracy, functional literacy and social action skills,
- iv.* The establishment and management of 141 adult literacy centres in different parts of the country with 4,532 learners out of which 1,243 are women while 2,289 are men. The extension agents serve as literacy instructors. The centres have been provided with instructional materials and primers,

- v. Formation of 172 nomadic cooperative societies with 17 benefiting from the defunct Family Economic Advancement Programme loan scheme worth ₦3,795,000.00,
- vi. The nomadic communities have shown greater enthusiasm for the NEP and have so far established over 200 community schools in which they provide structures, instructional materials and welfare services in these schools. These schools are better-funded and managed than government owned schools. To engender support for the community participation in management and funding, the NCNE provides assistance to such communities that have initiated self – help projects in the area of; classroom construction, furniture, digging of cement wells and building of clinics and other welfare facilities,
- vii. The training of 1,118 nomadic women in collaboration with UNICEF on maternal health care, nutrition, personal hygiene, exclusive breastfeeding, complementary feeding, importance of immunization and home treatment of diarrhoea and prevention of vitamin “A” deficiency and,
- viii. Training of nomadic women in collaboration with NGOs on daily income generating activities, cooperative formation and management, finance handling and banking operations.

2.4.2 Pedagogical renewal and teacher development initiatives

According to NCNE (2005), this initiative includes the activities and projects aimed at producing adequate and well-trained teachers for the NEP and to improve the quality of

instruction. Prior to these initiatives, there were not enough teachers in nomadic schools to the extent that teacher: pupil ratio was as high as 1:80 in certain cases. The available teachers were mostly unqualified, poorly trained and inexperienced in dealing with the nomads. They had the background and training for teaching in the conventional school system suitable for the sedentary mainstream population since the teachers knew nothing about the nomadic groups and could not put their special needs and circumstances into proper focus. They used inappropriate and ineffective teaching methods and materials resulting in poor classroom interaction and low learning achievement of pupils (NCNE, 2005).

The pedagogical teacher development initiatives for improving Nomadic Education Programme were geared towards achieving the following objectives:

- i.* Produce and retain the critical mass of teachers needed to attain the goals of the NEP,
- ii.* Train new teachers with nomadic backgrounds,
- iii.* Re-train serving teachers to understand and appreciate the peculiar needs and circumstances of the nomads,
- iv.* Acquaint teachers, supervisors and coordinators with the rationale, policy, objectives and strategies of the NEP,
- v.* Enhance knowledge, skills and competences of nomadic teachers through the use of innovative teaching methods and,

- vi.* Improve lesson delivery; improve classroom interaction and learning achievement.

According to NCNE (2005), the achievement strategies for realizing these objectives include collaboration and partnership with local communities, NGOs and international donor agencies (World Bank, DFID) to train and recruit new teachers from among the nomads themselves and to retrain serving teachers and the entire workforce in the NEP to improve knowledge and competencies. Within this framework the following were carried out:

- i.* In-service train in gprogrammes for teachers, supervisors and coordinators of nomadic schools.
- ii.* National Teachers orientation workshops to familiarize teachers with the contents, objectives, special features and expectations of the developed curriculum for the NEP.
- iii.* Pre-service teacher training for young people selected from the nomadic communities.
- iv.* Provision of incentives to encourage teacher retention in the nomadic school system.

The NCNE (2005) reports on the achievement and outcomes of the pedagogical renewal and teacher development Initiatives includes:

- i.* To date trained 2,575 out of a total of 4,218 teachers in the existing 1,350 nomadic schools across the country have been trained in innovative methods of delivering the new NEP Curriculum.
- ii.* 75 head teachers, 15 supervisors and 75 state coordinators to acquaint them with the rationale, policy and objectives of the NEP.
- iii.* 64 new teachers from among the nomads while 34 others are still undergoing training.
- iv.* Teachers, supervisors and coordinators have received training in the use of developed NEP teacher's guides, pupil's texts and accurate record keeping.
- v.* Improved quality of curriculum content delivery.
- vi.* Enhanced teacher's communication, classroom interaction and greater feedback from pupils. Teachers now have self confidence in handling the newly developed curriculum; adopt child-centred teaching strategies that promote active pupils participation in the classroom, for example group method, achievement method, drama, discussion; tailor their lessons to exploit the curiosity and love for activities in children, such as in modelling, making crafts, weaving, dyeing and matting and improvise using relevant local equipment and materials for teaching, example using calabash for weighing and stick for measurement.

- vii.* Establishment of a stimulating atmosphere for effective teaching and learning.

- viii.* Good and adequate record keeping in schools.

- ix.* Overall improvement in the learning achievement of nomadic school children.

- x.* Improvement both in the quality and quantity of teachers for instance, the number of number nomadic education teachers rose steadily except for a slight drop in 1996 from a mere 886 at inception in 1990 to 4,150 in 2002. Similarly, the number of those qualified also increased steadily across these years from 486 (54.8%) in 1990 to 3,139 (76%) in 2002. These increases in the number and qualification of teachers became more rapid from 1995 to date.

2.4.3 Design and development of instructional materials initiatives

The quality drive of NEP was also approached from the perspective of relevance. The premise on which this perceptive was based is the belief that the quality of any educational programme could be measured from its demonstrable relevance to the lives of its target populations since the essence of education, put simply, is to better the lives of its recipients. Previous efforts to provide nomads with education prior to the inception of NEP in 1989 did not make any special arrangement regarding the type of curriculum and instructional materials to be used. Instead, the existing national curriculum and textbooks designed for conventional schools were adopted without any regard to the particular needs and circumstances of the nomads. Earlier studies,

Ezeomah *et al.* (2003) and Saverio (2003) cited this neglect as illustrative of why the previous attempts failed and why relevant curriculum is an important complement to high-quality educational provision for the nomads. Driven by this quest for relevance, NCNE in collaboration with its Nomadic Education Centre for Curriculum Development at Usman Danfodiyo University, Sokoto set out to develop relevant curricula, pupils' texts and teachers' guides which address the educational needs, aspirations and peculiar circumstances of the nomadic populations.

The main goal of the design and development of instructional materials initiatives intervention was to produce relevant and qualitative educational materials that reflect the nomads' socio-cultural lifestyles and, which draw concrete examples from their backgrounds and economic activities for use in the nomadic schools. The objectives are to:

- i.* Adapt the existing curriculum in core-primary subjects of English, Mathematics, Science and social studies to reflect the needs and socio-cultural lifestyles of nomads.
- ii.* Design and develop relevant and qualitative curricula, pupils texts and teachers' guides that give due consideration to nomads and draw concrete illustrations and examples from their backgrounds and economic activities.
- iii.* Give prominence to local culture and language in the teaching learning process for effectiveness.

2.4.4 Curriculum adaptation and development initiatives

This involved the adaptation of existing core-primary curriculum consisting of English, Mathematics, Science and Social Studies. In carrying out this exercise, experts in the respective subject areas who have considerable understanding of the cultures of the nomads, or whose original backgrounds were nomadic with demonstrable experience in curriculum development were drawn from universities and Colleges of Education and given the task of adapting the core curriculum to suit the educational needs of the nomads(NCNE,2005).

The adaptation exercise involved a number of activities. For each subject, it involved synchronizing the various sections of the curriculum namely objectives, content, teaching method and evaluation methods. This was to ensure a match across board between each Objective related content and Instructional and Evaluation methods. Attempts were also made to make each objective child-centred. In order to examine the objectives, the curriculum content was scrutinized for relevance with respect to the objective in question and to the needs and conditions of the nomads. Towards this, some irrelevant contents were removed and/or substituted with more relevant ones or modified to make them more appropriate.

One area that received considerable attention was the section dealing with teaching methods and classroom activities. Specifically, attempts were also made to draw the teacher's attention to a number of local practice/materials that can make the teaching of the given topic more appealing and relevant to the children. The teacher is also provided with various approaches to teaching given topics so that the teacher can pick, choose and/or adapt depending on the resources at his disposal. Where possible the teacher is

encouraged to use materials and approaches that can help pupils apply the knowledge/skills derivable from the lesson readily in their homes. Evaluation is also child-centred. Questions are not presented as directives to the teacher that is what the teacher could ask the pupils to do/rather as probable direct questions measuring attainment of the topic's objective. Thus, the curriculum Development Initiatives involved the development of educational materials from scratch in subject areas in which there were no existing curricula and instructional materials namely, Fulfulde, Health Education, Islamic Religious Knowledge and Handicraft (NCNE, 2005). The procedure used in developing these new materials involved the following steps:

- i.* **Commissioned Writing:** This involved the identification and commissioning of experts for each subject to produce the required drafts of curriculum, pupils' texts and teachers' guides to serve as working documents for the next step, which is the development workshop.
- ii.* **Development Workshop:** The draft curriculum, pupils' text and teachers' guides are then subjected to critique by experts and practitioners at a National Writers Workshop usually hosted by the centre.
- iii.* Centre for Curriculum Development with the goal of improving the quality of the draft materials before they are submitted to NCNE.
- iv.* **Critique Workshop:** As a final stage before the printing of the newly developed materials, the NCNE also subject the submitted drafts to a further critique by a

different set of experts for each subject in order to ensure the much needed quality and relevance of the developed materials.

- v. The major consideration that ran through both interventions was to design a curriculum which puts the nomadic children together with their sedentary counterparts (NCNE, 2005).

2.4.5 The language question initiative

According to NCNE (2005), One of Nigeria's drive towards the improvement of the quality of education was the introduction of a national policy on the use of mother tongue for the first three levels of primary education. The Nomadic Education Programme started implementing this key initiative by adopting the use of Fulfulde language as a medium of instruction in the first three levels of the nomadic schools.

One of the key objectives of this pedagogy is to facilitate a more natural passage into the use of English, which is the medium of instruction in the last three levels. Three main strategies were employed to implement this methodology: Community Sensitization using radio programme on the need to check language shift, teacher training and the development, production and use of textual materials using learner-centred teaching methods.

NCNE (2005) also reported that the achievements recorded to date entail the development of textual materials in Fulfulde which is the mother tongue of the nomadic pastoralists and the translation of Mathematics, Primary Science and Social Studies texts from English for levels 1 – 3 into Fulfulde. Similarly, a project on the

implementation of an Interactive Radio Instruction (IRI) using broadcast series developed in Fulfulde and Pidgin English for nomadic pastoralists and migrant fisher folk respectively is in the pipeline. The project is World Bank Assisted under the Universal Basic Education Second Primary Education Project (SPEP II).

To date, NCNE has recorded the following achievements in the area of design and development of instructional materials. Adapted, developed and produced 15,000 copies each of the curricula in eight (8) subject areas namely; English Language, Mathematics, Primary science, Social studies, Health Education, Handicraft, Islamic Religious Knowledge and *Fulfulde* Language for the education of NEP nomadic pastoralists. This has also led to:

- a. Adapted, developed and produced 7,000 copies each of curricula in four subject areas namely: English Language, Mathematics, primary science and social studies for the education of migrant fishing communities.
- b. Developed and produced 24,000 copies each of pupil's textbooks in English language, social studies and primary science.
- c. Developed and produced 6,000 copies each of teachers' guides in English language, Mathematics, Social studies and primary science for the NEP.
- d. Developed and produced 27,000 copies each of pupil's textbooks in Health Education and Handicraft for the NEP.

- e. Production of Fulfulde and Islamic Religious Knowledge textbooks in progress.
- f. Translation of Mathematics, Primary science and Social studies pupil's textbooks, 1 from primary 1 to 3 in Fulfulde the mother tongue of the pastoral nomads.
- g. Availability of relevant and appropriate curricula for the effective implementation of the NEP.
- h. Use of the mother tongue, *Fulfulde*, as the medium of instruction in the first three years/levels of primary education for pastoral nomads in Nigeria.
- i. Availability of suitable pupil's texts and teachers guides for the NEP.
- j. High school completion rates enhanced pupils' school performance and learning achievement.
- k. Greater community appreciation and support for the NEP.

2.4.6 Infrastructural development initiatives

National Commission for Nomadic Education (NCNE, 2005) reported that the provision of appropriate/adequate and conducive environment for teaching and learning is one of the prerequisites for improving the quality of learning in schools. At the take-off, the Nomadic Education Programme faced serious problems regarding infrastructural development which affected its delivery. Learning in most parts was conducted under

tree shades in the case of nomadic pastoralists, or at public places such as churches and town halls in respect of the migrant fisher folk. These adhoc arrangements seriously affected the quality of education offered to these social groups at the initial stage.

Among the Objectives of the infrastructural development initiatives includes:

- i. Provide a conducive environment for the teaching-learning process.
- ii. Make suitable and adequate classroom structures available to stimulate and facilitate learning in nomadic schools.
- iii. Supply adequate furniture for use by pupils and teachers.

However, in an effort to address these problems, government embarked on infrastructural development to cater for the educational needs of the nomadic groups. The provision of infrastructural materials for NEP presented a peculiar problem because of the high level of mobility of the target populations, which rendered the use of conventional infrastructures such as permanent school buildings in respect of some groups inappropriate. The nomadic populations engage in different occupational activities and are at different stages of settlement. To conform to the work rhythm of the children and their migratory patterns, suitable delivery strategies had to be adopted for program implementation. This underscored the need to explore other non-conventional forms of infrastructure that may better serve the nomadic populations. In this regard, the NCNE came up with a number of initiatives which have helped a great deal in taking educational services to the door steps of the nomads. They include:

2.4.6.1 Mobile Collapsible Classrooms

The mobile collapsible classrooms are made up of canvass and light aluminium props. They can be dismantled, carried on animal backs and assembled by the nomads themselves. A mobile collapsible classroom accommodates a maximum of fifteen pupils and 119 mobile collapsible classrooms for pastoral nomads were provided to many nomadic primary schools in the Sahel and savannah zones of the country in 1991(NCNE,1995).

2.4.6.2 Purpose-Built Motorized Boat Schools

The purpose-built boat schools are motorized. Each motorized boat school has three classroom compartments. The boat schools traverse the camps along the coastal and riverine areas of the fishing communities and pick children for learning and return them to their camps when the schools close for the day. The camps' locations are dependent on the fishing seasons and the types of fish being caught. To date there are six motorized boat schools for migrant fishermen in the southern part of the country. These two strategies have helped to ensure an unbroken learning process for the pastoral nomads and migrant fisher folk in the Northern and Southern parts of the country respectively.

2.4.6.3 Permanent Structures

However, permanent structures in the form of blocks of classrooms are also used for the settled and the semi-settled pastoralists. The use of these permanent structures is based on the premise that the ultimate aim of NEP is to settle the nomads and integrate them fully into the mainstream Nigerian society. It is expected that such structures could serve as focal points for settlement.

In this regards, in addition to ₦135, 102,789.00 expended on the provision of infrastructure and furniture to the various nomadic schools across the country, the Commission also spent ₦18, 446,141.00 on rehabilitation of 196 classrooms and construction of 42 cement wells across the 238 communities. The impact of NCNE on the community development projects can be gauged from the details of expenditure and spread of the project. Some of the achievements recorded towards this direction include:

- i.* The capacity building strategies employed have improved the quality of the nomadic education teachers. The training programmes organized have helped to raise the level of nomadic teachers' preparedness and competence in the delivery of NEP.
- ii.* The continuous monitoring exercise indicates that this training has improved the quality of curriculum delivery in several ways: Teachers' communication with pupils has improved, comprehensive school records are kept, appropriate and effective teaching methods are used.
- iii.* To date, 2,575 teachers out of a total of 4,748 teachers across the country have been trained in innovative methods of delivering the new curricula to the nomadic pupils and in reviewing relevant educational materials for them.
- iv.* As a result of improved teacher quality, the transition rate into junior secondary schools increased from 45% in 1992 to 53% in 1998, which is more than the national average of 47%. Similarly, the total number of graduates has tripled from 2077 in 1994 to 7,632 in 1998. The total number of graduates for the year 2002

was 46,824 and 55% of them were admitted into various secondary schools across the country.

- v. The curriculum and instructional materials development initiatives have ensured the availability of a wider range of relevant and qualitative curricula, pupils' texts and teachers' guides for teachers and pupils in the nomadic schools. The establishment of the Nomadic Education Centre for Curriculum Development has, indeed, improved the efficiency of the production and distribution of curriculum and instructional materials the National Commission for Nomadic Education has produced and distributed over 300,000 curricular and instructional materials to the 1,350 nomadic schools in the country(NCNE,2005).

2.4.7 The monitoring initiatives

Monitoring and evaluation are the major tools of assessing the progress of any project. Monitoring exercise was carried out using the conventional school monitoring instruments. These instruments were found to be unsuitable to the demands of nomadic education given its specialized nature. They were inappropriate in assessing teaching and learning process, hence the quality of the programme could not be determined. In view of this, a new monitoring instrument was designed to obtain comprehensive and reliable data for quality assurance, compliance to laid down standards and policies as well as determine the viability of nomadic schools in the country.

In line with this, a more participatory approach was adopted in the monitoring of the programme. Monitoring exercise was carried out by a joint committee of stakeholders in the Nomadic Education Programme. Members of the committee were drawn from the

Federal Inspectorate Division (FME), the State Inspectorate Units, and State Coordinating Units of the programme, Local Government Education Authority, Active Community Leaders, Pastoral NGOs, PTA and indeed some staff of the Commission (NCNE, 2008b).

The involvement of government agencies and civil societies have also help strengthening the support and commitment to programme delivery as well as active participation in the programme implementation and management of nomadic schools. To the nomadic communities, this approach gives them sense of belonging in the affairs of nomadic education. This has improved the existing relationship between parents and teachers as some parents have provided accommodation for teachers in their homesteads. As a result of the new development, most communities have established their own schools, employed teachers as well as paid their salaries.

Similarly, communities have donated land for the sitting of schools, build classrooms and in some cases staff quarters. Also communities have impacted in the area of provision of teaching aids and textual materials as well as school uniforms. The outcome of this strategy has also improved the enrolment and retention of pupils in nomadic schools as well as encourages pupils' transition to secondary education. It has minimally reduced truancy among teachers and pupils in nomadic schools and also paves way for budgetary provision for the programme at states and local government levels. In a bid to improve on the level of tuition in nomadic schools, a Teacher Performance Rating Scale was introduced to evaluate the performance of teachers in nomadic schools. The rating scale has four variables. These are: planning of lesson,

classroom management; teaching procedure and the teachers' personality (NCNE, 2008b).

The strategy has considerably improved the level of tuition in nomadic schools as teachers have been trained and retrained by the Nomadic Education University centres at Maiduguri and Port Harcourt respectively. The training has exposed the teachers to the new trends in teaching, thereby improving the quality of tuition in our schools. The innovation has resulted to an improved lesson plan as well as effective teaching and classroom management. There has been remarkable improvement in lesson presentation, appropriate use of teaching aids and the overall evaluation of lesson taught. Teachers have become more composed and confident in lesson delivery.

The innovation has also led to steady progression of pupils from one class to the other and the rate of dropout has drastically reduced. In the same vein, nomadic pupils have favourably competed with pupils from conventional schools in the gifted examinations as well as national and state commissions. This is because between the period 1992 – 1998, 28,769 pupils graduated from the nomadic primary schools in Nigeria and 15,429 (54%) of these pupils gained admission into junior secondary schools. By 2002, the number of graduates from nomadic schools rose to 46,824 and the rate of transition to junior secondary schools rose to 55% (NCNE, 2008a).

Similarly, through monitoring and evaluation activities of the NCNE, the Nigerian government concurrently introduced a number of intervention strategies aimed at improving the quality of its nomadic education programme. These included capacity building, provision of relevant curricula and instructional materials and special

infrastructural development to the nomadic schools. Other key elements for the improvement in quality of educational programmes for the nomads in Nigeria are: provision of relevant curriculum and rigorous and innovative in-service and pre-service teacher training initiatives. These broad views were illustrated by:

- i.* The design and development of tailor-made educational materials with high contextual relevance to the target populations;
- ii.* Selecting and training of teachers from the same backgrounds as the target populations in order to offset the problem of high teacher attrition rate; and
- iii.* A combination of elaborate teacher manuals with regular training of teachers on innovative teaching methods and effective communication skills;

A number of conclusions can be drawn from this experience of attempting to improve the quality of nomadic education in the country. They include the following:

- i.* That barriers to improving quality can, in fact, be transcended through innovative policies and programmatic interventions;
- ii.* Unconventional approaches and initiatives in the delivery of education do present opportunities for reform; and

- iii.* Above all, improving overall monitoring and evaluation service by standardizing and supervising teachers to ensure nomadic pupils receive qualitative education is essential to the success of nomadic education in Nigeria.

A number of recommendations can be drawn from this experience. They include the following:

- i.* There is need for increased government commitment to education, particularly in the area of teacher development and capacity building in order to sustain the programme;
- ii.* Innovations for improving quality should be introduced simultaneously with those for improving quantity. That is, access and quality should be integral and inseparable parts of NEP; and, indeed, any educational programme;
- iii.* Teachers need regular pedagogical renewal to enable them to deliver the new curriculum more effectively (NCNE, 2008b).

2.5 Previous Studies on the Socio-Economic Characteristics of Nomadic Pastoralists

The nomadic pastoralist groups in Nigeria constitute the *Fulani* (9.3million), *Shuwa* (1.01million), *Koyam* (32,000) and *Badawi* (20,000).The *nomadic Fulani* who constitute the majority are found in the 36 States of Nigeria including the federal capital territory (Abuja) while the rest are mainly found in the Borno plains and shores of Lake Chad. These nomadic groups in Nigeria have similar traits with other migrant peoples in West Africa as well as the *Masaai*, *Turkana* and the *Karamajong* in East Africa,

including the *Travelers/Gypsies* in Europe and the *Show* people in Australia (Gefu, 2008).

Within the African continent, the nomadic pastoralist is diverse ethnically related people living in the West, Central and East Africa. The traditional economy of nomadic pastoral societies is based on raising animals which include cattle, camel, buffalo, reindeer, goats, and sheep. For most pastoralists, their animals particularly the large stock like cattle and camel are status symbol, and the most significant part of their self-identity and self-respect (Mlekwa, 2009). For the Masaai pastoralist, the short horned zebra cattle breed is the major source of milk, meat and blood. The income from the sale of a cow/ bull is used to purchase food, utensils, clothing and adornment. In addition, the maasai cattle also signifies wealth, conveys status, serve as a medium of exchange, legitimizes marriage, a symbol for social relationship, an object of affection and ritual ,as well, signifies life itself (Mtengeti, 2010). According to Ekong (2003), the nomadic pastoralist from northern Nigeria is group of people whose livelihood depends primarily on their livestock.

In order to optimally exploit the meagre and seasonally variable resource of their environment and to provided food and water for their livestock, majority of them practice nomadic pastoralism. In support of above statement, Fratkin (2007) reported that nomadic pastoralism is the primary means by which pastoralist from Kenya, Tanzania and Somali compensate for the sparse and unpredictable resource which characterized the Arid and Semi-Arid environments in which they live. Wurzinger *et al.* (2008) also reported that pastoralist are characterized by cultural and economic orientation towards livestock, This also means that pastoralist families most especially

in sub-Saharan Africa depends on livestock for a significant part of their income and food. The nomad's large herds of cattle usually guarantee subsistence and income confer status and it is regarded to provide insurance against impact of drought among wealthy pastoralist families. The types of livestock kept by nomadic pastoralist vary from one geographical location to another. For example most of the nomadic pastoralist keep variety of livestock such as cattle, sheep and goats in Nigeria; cattle, sheep, goats, donkeys and camel in Niger republic and among the east African nomads. Others include yaks and horses in central Asia, Buffalo in southern Asia and Lamas/Alpacas in South America (Gefu and Gills, 2005).

In sub-Saharan Africa, most pastoralist herds are mainly composed of indigenous and cross breeds that can adapt to the harsh nature of arid and semi-arid range lands and also resistance to pest and disease prevalent on the range lands. Similarly, the preference for milk production for subsistence and market among most pastoralist families constitute a reason why pastoralist herd structure are dominated by female animals rather than bulls and steers (Barton *et al.*, 2007). Serunkuma and Kent (2008) noted a similar pattern where female cattle constituted 81.4% of the herd among the nomads in Nyabushozicounty, Mbarara district, Uganda. This herd structure significantly affects their market take off rates where by their sale decision are influenced by the decision rule that first to be sold is the cull cows and bulls. However, the poor households are forced to sell immature bulls to generate cash for their subsistence requirements.

In a study conducted among the pastoral Fulani in Yobe, Bauchi and Gombe States,, Ardo (2006), reported that most of nomadic pastoralists were middle aged and active people which encouraged constant migration from one place to another in search of

pasture / fodder for their livestock depending on the season. Similarly, Gefu (2006) reported that because of scarcity of grazing resources, conflict between farmers and pastoralist, bush burning, diseases, seasonal variation and drought; nomadism will continue for sometimes as long as traditional system of cattle rearing is not abolished.

Ogunfiditimi and Ogunbameru (2004) stated that, the nomads are always reluctant to take their children to school, though they are aware of the advantage of schooling. This is because of their too much dependency on their children's labour for livestock rearing, and this is the main reason for their educational backwardness in Nigeria. In support of the above report, Ardo (2004) reported that about 66% of the nomad's population in Yobe, Bauchi and Gombe states never had any form of education, while 24% had exposure to one kind of education or the other ranging from primary to Koranic School with little secondary education. Similarly, Bayero (2011), also conducted a study on the effect of Kachia grazing reserve on pastoralist livelihood. The study unveils that the low level of western education among the nomadic pastoralist in the Kachia grazing reserve was due to the fact that the nomads attached less importance to the value of western education because of the immediate gain in livestock rearing compared to the unforeseen gains to western education.

Ogunfiditimi and Ogunbameru (2004) also stated that most pastoral Fulani possess high sense of cultural consciousness and extremely high emotional attachment to their herds and possession. In support of the above statement, Fratkin (2007) disclosed that cattle are of both economic and social importance among the nomads sub-Saharan Africa. This is because cattle mean more than monetary income or subsistence. For instance,

the identity of the Maasai nomads in Kenya is based on their close association with livestock which forms a key component of their social and ritual life.

Gefu (2006) also indicated that most of the transhumance nomads in northern Nigeria are predominantly Muslim by religion. They are also fearless and vigilant with moderate ability to withstand hardship across the North east Agro ecological zone of Nigeria. In the same vein, Momale (2010) attributed the predominant nature of the nomadic Fulani as Muslims was due to the influence of Sheikh Usman Danfodio. Likewise the attribute of been fearless, vigilant and brave is among the major characteristic that qualifies the males among the pastoral Fulani to be given a wife or to be loved by their female counter parts. Other important social characteristic of the nomadic Fulani include self-reliance, sex role and modesty (pullaku) which also dominates the social life of the nomadic pastoralist.

It is of interest to note that the main item of the economy of most nomads is the cattle..Hence, constant migration from one place to the other in search of water and pasture/ fodder for their cattle and other livestock gave them the economic characteristic of having poor housing, lack of social amenities, absent of land ownership right and poor standard of living and community life (Ahmed and Atala, 1994).

Mohammad and Sahabo (2005) also reported that nomadic pastoralist have no permanent abode and address, most of them are excluded from the mainstream Nigerians. Hence, they cannot vote or be vote for, nor can they benefit from education, health and other services like other Nigerians yet, they pay their personal income tax including cattle tax per every live animal in all the states of the federation. It has also

been reported that nomadic pastoralist from Kenya produce much of their countries meat and milk including hides and skins but are displaced/ forced to move elsewhere and the vacated grazing lands are either turn to commercial agricultural lands or national parks. The reason for the policy of ignoring the pastoralist interest by the politician is because most of them are city based and do not regard nomadic pastoralism as a viable way of life. Hence, their political marginalization constitute a reason why nomadic pastoralist in Kenya and other sub-Saharan African countries are educationally backward, landless with poor community/rural life (Franzel *et al.*, 2006)

Pastoralist' livestock are predominantly dependent on natural pasture and fodder for their diets on the rangelands where the natural resource are managed through a mix of common property and private regimes. As a coping mechanism, the nomads have to adapt and evolved to cope with constraint of climate and economic changes as well as opportunities facing them. Therefore, some of the key livestock management strategies may include herd mobility, herd diversification, raising several species of animal in one herd and maintenance of a high proportion of female stock (Hasse, 2006). However, due to increase in land pressure arising from population growth, cropping intensity, individualization of land, gazettement of land by the government for national parks and games reserves, the pastoralist in most of the sub-Saharan African countries are recently adopting sedentary lifestyle in order to engage in crop cultivation and increase their involvement in the livestock market economy so as to improve on their livelihood.

2.6 The Concept of/Impact

All meaningful innovations have effect, impact or consequences. The advance learner's dictionary defined impact as a change produce by an action. It can also be interpreted as

a strong impression or impact; it is also suggested that an effect/impact is due to the introduction of a force, an input or a cause which is expected to result in some effect or action over a short or long period of time.

The term effect is used in many different ways by different people but generally, the concept is often used for short term appraisal or evaluation studies. The concept of impact on the other hand refers to the broad, long term economic, social and environmental effect resulting from project/programme intervention. Effect/Impact assessment is an established practice in public goods investment schemes, projects/programmes such as educational development, agriculture, health, transportation, and urban development (Aku,2009).

According to Alene *et al.* (2006), effect or impact assessment of agricultural projects is viewed as an important activity to ensure accountability, maintain credibility and improve internal decision making processes and the capability to learn from the past experience. Impact assessment is often seen as a critical component of agricultural project/programs or schemes that help to defined priorities of action projects and facilitate resource allocation among development programs, guide researchers and those involved in technology transfer to have a better understanding of the way new ideas or technologies are assimilated and diffused in to agrarian communities and show evidence that clients benefited from the project/programme (IAEG, 2006).

Impact/effects evaluation studies are of great importance in agriculture because it is used to identify alternative ideas/technologies that could be used to address a major production constraint while at the same time taking in to consideration farmers

preferences and farming conditions (Alene *et al.*, 2006). The focus and method of impact assessment have evolved overtime in response to agricultural development donor interest and research mandate in an effort to reduce poverty among rural dwellers. Hence, the focus of impact assessment activities is said to have expanded to estimating rate of return of research investment since 1980s in order to examine a wider range of impact including environmental benefit and cost across different socio-economic groups of the present day. However, in using effect/ impact assessment as a measure of accountability is very significant in understanding whether or not a programme has achieved its targeted objectives (Manyong *et al.*, 2007).

De-janvry and Sadoulet (2004) reported that effect/ impact analysis of a rural development project should be based on their net social benefit to the community in which the consequence may be functional or dysfunctional. He explain that functional consequence are desirable effects of such innovations in the social system but on the contrary, the dysfunctional consequence are undesirable effect/ impact of an innovation hence, the degree to which consequences are desirable ultimately depends on how the innovation affect the members of the social system. Alene *et al.* (2006), suggested that, desirable consequence of any innovation can be accessed through impact evaluation using the below parameters;

- i. Change of attitude and knowledge,
- ii. Information seeking behaviour of the client system,
- iii. Changes in individual behaviour toward the activities of the organization, and
- iv. The resulting outcome of the organization's programs on the target population or group, using economic indices or general well-being.

However, in recent times, the focus of effect/impact assessment of agricultural research is not only for estimating rates of return to research investment and the goals of assessing the increasing food production but also the need to assess the potential impact of agricultural research on poverty alleviation with a view to setting priorities of research (Alwang and Siegel, 2005) . Chen *et al.* (2006), also reported that assessing development aid effectiveness at project level is difficult and many require a long term commitment to collecting high quality longitudinal survey data. Complexities are often involved in an effort to understand the link between agricultural development technologies and livestock. This is because rural people generally have a lot of coping strategies of combining their assets and agricultural technologies to attain their life goal of food sufficiency in order to better their livelihood. For instance, a farmer who is a beneficiary of a particular technology may be involved in other form of business apart from being a farmer to improve his income level. In this case if an impact study is carried out on such a farmer's level of income as a result of the new technology adopted, a times it may be very difficult to isolate the impact of the adopted technology/innovation. Thus for this reason , a sustainable rural livestock framework method has been devised, adopted and are also used in assessing the development programs in rural areas to in order to ascertain improvements in rural livelihood as a result of program intervention (Chen *et al.*, 2006).

According to Haggblade and Hazel (2005), impact assessment methods are classified in to three broad method namely (i) quantitative method, (ii) qualitative method and (iii) combination of both qualitative and quantitative technique /method. The quantitative method of impact assessment include the use of social experiment technique, cross-sectional and longitudinal comparison, econometric technique, propensity score

matching and the use of double different estimate or technique. While the qualitative method of impact evaluation involve the use of counter factual data as causal inference. In other word, this technique rely on participant knowledge of the condition surrounding the project or program being evaluated, and stakeholders are involved fully in all stage of the evaluation, determining the objective of the study, identifying and selecting indicators to be used, and participatory in data collection and analysis. Likewise the combination of quantitative and qualitative impact assessment methods involves using both techniques in assessing impact of a project or programme of interest (World Bank,2006). Thus, for the purpose of this research work, the use of qualitative method of evaluation was considered more appropriate.

2.7 Previous Studies on the Role of Nomadic Education System on Nomads Livestock Production

In Somalia, the concept of Nomadic Education is also intended to provide basic and functional education system to the transhumance group of the country. Towards this direction, ILCA (2004) conducted a comparative economic analysis between the dairy herds own by some Somali pastoral families who benefited from the nomadic education system in the Somali central range land and those pastoral families outside the range land. The report from the study conducted reveal that on the average 198 and 225liters of milk per cow/season was produce in the dry and wet season by those pastoral families who did not benefit from the nomadic education programme outside the central range land. Also an average of 495 and 562.5litres was obtained in the dry and wet season by those pastoral families that were resettle and have benefited from the nomadic education system. The average gross margin realize by those pastoral families who have not benefited from the nomadic education system was 15,676.50 (US Dollar) and 27,144.00(US Dollar) for those within the central range land and have benefited from

the nomadic education system respectively. Recommendation made at the end of the study were based on encourage those Somali pastoral families outside the range land to resettled within the central range land so that they can benefit from the nomadic education programme for better milk yield. Although, the concentration of permanent water point in the range land should be decentralized to avoid overgrazing and damage to the vegetation for better productivity (ILCA, 2004).

Daddy and Okaeme (2007) reported that, sedenterization of the nomads in Yauri grazing reserve have provided the opportunity for crop and livestock integration farming among the nomads there by reducing total dependency on selling their livestock to purchase food items for their family consumption. The less dependency on the sales of their cattle for food has given their livestock the privilege of increasing rapidly in number from an average of 45-60 cattle/herd when they are yet to benefit from the NEP Programme to an average 75-100 cattle/herd within few years after inception of the NEP in the grazing reserve.

The prospects of Wase grazing reserve nomadic education centre established in 1999 was evaluated in 2009 to determine the types of benefit enjoyed by the pastoralist in the grazing reserve. Appraisal studies conducted by PARE (2009) revealed that the herd of livestock consisting of cattle and sheep increased from 383 to 771 and 26,658 to 71,469 respectively. The average milk yield per cow/day also increased from 1kg to 1.90kg with surplus dairy milk available in each family for sale more than what was recorded in the pre-project survey data (PARE, 2009). In conclusion the study showed that, there were feasible benefit accruable to the pastoralist after the inception of Nomadic

education programme in Wase grazing reserve despite the problem faced by the nomads in the area of inadequate livestock production infrastructure.

2.8 Problems of Nomads Education System in Nigeria

The Nigerian government has spent millions of naira on nomadic education programme, but the measure of educational attainment among the Fulani nomads still remains very low. In other words, the quality of education among them is mediocre at best, this is because the Nomadic education system in Nigeria is affected by defective policy, inadequate finance, faulty school placement, incessant migration of students due to conflicts, unreliable and obsolete data including cultural and religion taboos. A top-bottom planning, where the Fulani are the recipient rather than the planners to their education dominates the nomadic education policies. For instance, during the first national workshop on nomadic education, only a few Fulani were invited to attend. Ironically, it is at this workshop that far reaching decisions that will affect the lives of the Fulani nomads are taken (Abbo, 2008).

Because of the non-participation of the Fulani in decision-making, a simplistic approach to nomadic education planning is adopted. Thus, advices on nomadic education are sometimes emotional, tactless, and ill-intentioned. Planners do always fail to take account of the government's inability to provide specialized services. For example, just to impress the public, the government has rushed in to a policy pronouncement for mobile school system without considering the difficulties in getting teachers, monitoring students, and developing suitable curricula. Similarly, the use English for instruction at the elementary school level is inappropriate because learning in English language is difficult for the Fulani children who are yet to master their own language to

speaking English as a medium of instruction in school. Furthermore, the curricular according to the Miyetti-Allah cattle Breeder Association of Nigeria (MACBAN) Focus on teaching irrelevant subjects like insects breeding, how to play football and basketball, tuck-in and wear neck tie which do not interest the Fulani or that look down upon their cultures and lifestyles are giving priority in the nomadic schools (Abbo, 2008).

Towards this direction, Niamir (2009) stated that the formal school provides the literacy needed in modern times, but their content is too foreign to the nomads because they teach the value of sitting in office behind desks, instead of teaching pastoral procedures which the pastoralists least know or want to know about. He also added that “pastoralist in our education system get knocked on the head, being told they don’t know anything...., although they in fact do come with knowledge that even if we continue studying to the end of our lives we wouldn’t achieve it, but primarily, the nomads are mostly concerned about the attitude of their children who go to school and graduate with ideas that are odd with traditional pastoral practices. According to Kratis (2006), reported that nomads’ leader once told him that: ‘we are not opposed to the idea of taking our children to schools, but we fear that at the end of their schooling, they will only be good at eating up cattle instead of tending and caring for them. For this reason, Dyer (2009) also reported that nomadic pastoralist have an ambivalent relationship with nomadic education. On one hand, taking their children to school is a strategy to facilitate an alternative livelihood for pastoral families and communities. On the other hand, nomadic education presents danger to the nomads’ livelihood by antagonizing social institutions and altering social learning. In other words, many nomads view nomadic education as a system of education which undermines the institutions and systems that

are utilized in the nomad livelihoods, that is, it displaces both the technical knowledge and the social relationships of pastoral livelihoods.

While the oil fortunes of the seventies have helped Nigeria fulfil its universal primary education dream, the fiscal slump of the late eighties has narrowed the country's ability to implement the nomadic education program due to economic hardship as a result of widespread corruption. The miss-management of money by officials in the NCNE and the ministries of education in purchases, contract awards, and payment of teachers have also hampered the progress of this educational programme. The NCNE (2006) annual report also lamented on the abuse of funds as a setback to the NEP programme because the expenditure of the money disbursed to the States and Local government was not properly monitored to determine its proper use in paying teachers' salaries, infrastructural development and provision of teaching materials. The progress of the mobile schools has been curtailed by the shortage of roads and Lorries in the rural areas. According to NCNE (2006), the financial burden has force some schools to operate in the open while learning in unroofed or partially-roofed space may be possible during dry days but teaching under such conditions is impossible on wet days. Likewise flood, muddy terrain, leaking roofs, and uncooperative weather have resulted in the loss of school days .Lack of finance also forces the government to rely on volunteers or unqualified teachers.

The uncertain movement of the nomads makes educational planning and monitoring very difficult. Unscheduled out-migration due to environmental failure or conflict between the farmers and the pastoral Fulani disrupts school operations. Many Fulani

ascribe erratic attendance and low enrolment in school to habitual movement (Joshua *et al.*, 2012).

The under-funding of nomadic education is partly blamed on inaccurate demographic data. The lack of reliable statistic on the nomads leads to planning based on guessing. There was much confusion as the actual number of the nomadic schools, types of school facilities and number of teachers in various locations. Lack of authentic data in these areas made planning for nomadic education very difficult because some schools are stationed inappropriately: few in densely populated areas, and many in sparsely populated areas. On the one hand, having many schools in the pastoral areas attracts non-Fulani children and accentuates competition for other resources. On the other hand, having few schools discourages the Fulani from participating in education.

Considering the routine grazing treks, some nomadic schools that seem close enough to the nomads homestead may actually be far beyond the walking distance of the children. The extra walk to school has implication to the health of the herding children. If they manage the extra trek, they arrived in the school too fatigued to understand lectures (Mohammed, 2006). The Fulani nomads rely heavily and continuously on their children for labour. This serve as a hindrance why a Fulani man will not send his child to school even if adult is available to tend the animals simply because the children also need to learn the herding skills too. The reliance on juveniles for shepherding task, and not ignorance or conservatism, explains the poor participation of the pastoralist in formal education. Hence, time-sharing therefore between routine grazing trips and school attendance is always a dilemma of nomadic education system (Mohammed, 2006).

Junaid (2006) also reported that, the success of nomadic education depends largely on vigorous and continuous outreach programs in the rural areas. Consequently, government has embarked on village-level campaigns using radios, village announcers, and rural cinematography .However, because the nomads lack centralized authorities , these campaigns run into difficulties in reaching individuals from isolated areas. The nomadic educational drive is limited to few people in village precincts which may not be within the territories of the wandering nomads.

Nafisatu (2008) reported that the Nomadic Education Programme is constrained by sectarian and cultural issues. The predominantly Muslims Fulani times rejects the nomadic schools, fearing that their children will become Christianized. This fear is not unfounded, first, the Fulani are drawing from previous experience when the missionaries, who have brought western education to Nigeria, have mixed education with Christian evangelism .Secondly, and accusations are made against teachers who preach Christianity in some nomadic schools. In addition, the worry of most Fulani on nomadic education is also expressed in Miyetti Allah and PAREs grudges against the failure of the NCNE to uplift the educational status of the Fulani by using faulty school curricula, mismanagement of funds, favouritism and tribalism in recruiting nomadic schools teachers (Nafisatu,2008).

CHAPTER THREE

3.1 Theoretical Framework

The theoretical framework by which this study is guided is the theory of social change, particularly the adoption and diffusion perspectives.

3.1.1 The Social Change Theory

Social change refers to the process by which alteration occurs in the structure and function of social systems (Rogers, 1995). Ekong (2003), also defined social change as the alteration in the social order of a society or total replacement of a phenomena, activities, values or processes through time in a social system in a succession of events. Social changes may include changes in nature, social institutions, social behaviours or relations. Social change may be driven by cultural, religious, scientific or technological forces (Adebayo, 2006). The social system in these definitions may be a social group, a community/city/region or a nation. Therefore, any change that occur either in ideas/methods/techniques, norms, values, roles and social habit of the people or in the composition or organization of their society can be referred to as social change. Moore (1963) in Ekong (2003), had further summed up the definitions of social change as the significant alteration of social structure (i.e. of pattern of social action and interaction), include consequences and manifestation of such structure embodies in norm (rules of conduct), values and cultural product and symbols. In another context, social change simply refers to the transformation of social structure and social relationship in society.

It is well known that societies have experienced certain level of change in their social structure overtime. This implies that the mode of production in a social system basically

determines the trend of the change and development that occur in a society. Smith (1997), Stressed that the essence of human life is change, development and growth. The three words, change development and growth are often used interchangeable to associate the dynamic of society with progress. Social change is associated with progress in this regard; it could as well be retrogressive. Thus, the two types of changes; progressive and retrogressive may result from either planned or unplanned change. Progress carries a value judgment that is; progressive change means change in a desirable direction, while retrogressive change means change in an undesirable direction.

Ekong (2010) also stated that social changes are brought about mainly through invention, diffusion and discovery and they may refer to changes in behavioural patterns, norms and values over time. This also constitute the reason why theories of social change have in general been concerned with the explanation of the sources of social change, the time span of change and the effect of change on the changing unit(Ani,2007). In addition, Smith (1997), disclosed that most of the social changes experienced in many known societies developed through diffusion of culture from other societies. The theory of social-change within the framework of this study will help us to understand the social reality, which demonstrates the changes that have taken place in the nomadic pastoralist through the adoption of the Nomadic Education Programme package.

3.2 Conceptual Framework

This work will be guided by the adoption and diffusion of innovation concept as propounded by Rogers (1995).

3.2.1 The concept of adoption

The concept of adoption is an individual process detailing the series of stages one goes through from initial hearing about a product to finally adopting it. Rogers (1995) defined adoption as the decision to make full use of innovation or technology as the best course of action available. Thus, a complex web of social, economic, technical, organizational and individual factors always interact to influence which technologies are adopted and to alter the effect of a technology after it has been adopted. Hence, it is important to note that these changes occur where diffusion, adoption, implementation and institutionalization comes in (Smith, 1997)

According to Rogers and Shoemaker (1971) in Jibowo (2005), in every technology disseminated to any target population irrespective of its magnitude of relative advantage, may not be adopted at the same time, hence the concept of adopter categories in this case constitute an important and influential idea in the adoption process. This concept states that for any given innovation, certain percentage of the population would readily adopt the innovation while others will be less likely to adopt. Under this platform therefore, diffusion of innovation is a theory that seeks to explain why, how and at what rate new ideas /methods or technology spread through cultures. This has also pre-indicated that the concept of diffusion as a process by which innovation is spread / communicated through certain channels to the members of a social system over a given period of time need to be explained in order to understand the adoption and diffusion theory as a premise /predicament of social change.

3.2.2 Rate of adoption

Onuoha and Nnandi (2006) defined the rate of adoption as the relative speed in which members of a social system adopt an innovation. Rate of adoption is usually measured by the length of time required for a certain percentage of the members of a certain system to adopt an innovation. Rogers (1995) presented three adoption/ diffusion theories in an attempt to further explain the adoption and diffusion theory and its' application on how to understand and solve our daily live problems. These theories include:

- i.* **Innovation decision process theory:** this theory states that potential adopters of any given package/ technology progress over time through five stages in the diffusion process. At first, they must learn about the innovation (knowledge); secondly, they must be persuaded of the value of the innovation (persuasion); thirdly, they must decide to adopt it (decision); the innovation must be implemented (implementation) and finally, the decision must be reaffirmed or rejected (confirmation). However, the focus is usually on the user or adopter of the innovation in question.

- ii.* **Individual innovativeness theory:** According this theory, individuals who are risk takers or otherwise innovative will adopt an innovation earlier in the continuum of adoption/diffusion process.

- iii.* **Rate of adoption theory:** diffusion takes place over time with innovations going through a slow, gradual growth period, followed by dramatic and rapid growth in the adoption process and then a gradual stabilization and finally a decline.

Thus, the overall aim of adopting any change programme, particularly that of agricultural innovation, is to intensify and expand food production most especially crops and livestock product that will lead to important change in rural livelihood. This is also similar to the adoption of Nomadic Education Programme Packages by the nomads from the North West zone of Nigeria.

3.3 Conceptual Model

According to Scott and Marshall (2005), a model is simply “an attempt of classifying the major elements of an entity or a phenomena with regards to their functions and inter relationship so as to observe more closely how the elements function within the entity, how they enable it to operate and how they act upon one another. In other words, the conceptual model illustrates a means by which social scientists seek to analyse social phenomena by classifying the objects of the observed world, impart meaning through explanation to these phenomena and formulate higher level prepositions on the basis of these observations. The relationship that exist between variables in a given model can also be depicted schematically or mathematically in order to illustrate the interdependent nature between the variables and how they function in the model.

In developing the model for this research work an attempt was made to integrate the theories and findings of some experts; these include those of Rogers and shoemaker (1971), Rogers (1995), Smith (1997) and Ekong (2003). Emphasis in the model is placed on the provision of nomadic education package to the nomadic pastoralist in the North West agro ecological zone of Nigeria and how the adoption of the Nomadic Education Programme Package have affected their rural employment opportunity and livestock output in the study area. Thus, from the model, the effect of adopting Nomadic

Education Programme package on the nomads employment opportunity and livestock output depends on their privilege to participate, adopt and also puts into practice of one Nomadic Education Programme package or the other within the nomadic education canters in the North West Zone of Nigeria. Figure 3.1 shows the diagram of the conceptual model which identifies the factors influencing the adoption of recommended nomadic education package to the nomads in the study area. Hence, the independent variables in model include the nomads' socio economic characteristics and the dependent variables in the model are the Nomadic Education Programme packages provided in the nomadic education training centres. In the context this study, the independent variables in the model includes:

- i.* The socio economic characteristics of the nomads which comprises of age, educational status, house hold size and livestock rearing experience.
- ii.* Institutional variables which comprises access to credit, contact with extension agents and membership of cooperative associations.
- iii.* Technological variables which comprises of relative advantage, compatibility and complexity.

The dependent variables of the study includes; the provision of nomadic education package such as formal nomadic education, milk/hide and skin processing techniques, capacity building in vocational skills, hay /fodder production techniques, para-veterinary skills development and livestock health management, while the observable effects/ impact variables in the model includes nomads' employment opportunity and cattle production output (milk yield and herd size).

The model in figure 1 shows that the independent variables(X) would influence the dependent variable(Y) which is adoption of recommended nomadic education package. The observable impact of adopting the nomadic education package are changes in the nomads' employment opportunities, herd size and milk yield as illustrated in figure 3.1 below.

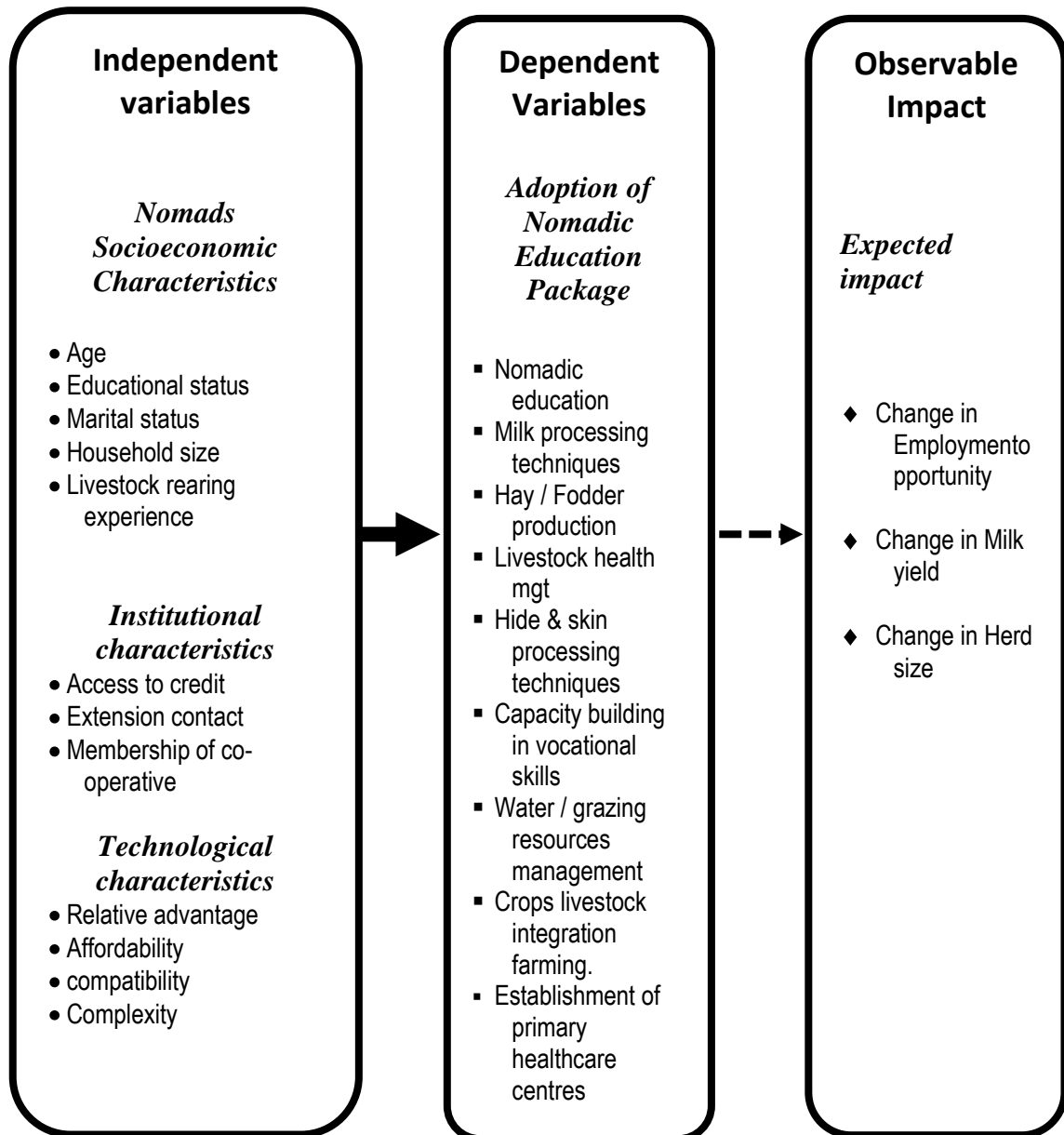


Figure 3.1: Factors Influencing the Adoption of Nomadic Education Programme Package

CHAPTER FOUR

METHODOLOGY

4.1 Study Area

The study area is the North West zone of Nigeria. This zone lies between latitudes 9⁰N and 14⁰N and longitude 7⁰ and 60⁰ of the green witch meridian. The zone comprise of seven states namely: Jagawa, Kano, Kaduna, Katsina, Zamfara, Sokoto and Kebbi States (Mohammed,2006).

According to National Population Commission (NPC, 2012). The North West-zone of Nigeria has a population of 35.7million, with an average population density of 103 people per square kilometre and a projected population of 44.1 million by the year 2014, based on an annual population growth rate of 3.2%. Hausa and Fulani are the two major ethnic groups dominating the seven states of the zone. Other ethnic minorities found within the zone includes, Manga and Badawi ethnic groups in Jigawa State, Gbagy, Bajju, Jaba, Kataf and Kurama ethnic groups in Kaduna State, Tuaregs and Bazarmawa ethnic groups in Sokoto State and Kabawa, Kambari, Dakarkari and Dukkawa ethnic groups are mostly found in Kebbi State. Major settler groups found within this geographical location includes, Igbo, Yoruba, Igala, Tiv, Idoma, Kanuri and Ijaw people from other parts of the country(Ogungbile *et al .*, 2005).

The North West zone lies within the Sahel and Sothern Guinea savannah zones of the country. The two zones have distinct dry and wet seasons in which the length of the dry season being longer than the length of the wet season across the North Western states with the exception of southern part of Kaduna State. The zone usually experienced mean annual rainfall of 1,542mm per annum with about 4-5 months of rainfall beginning from the month of May and reaches its peak in the month of August and ends in the month of September (Mohammed, 2006)

The annual temperature within the North West zone range between 10.6°C to 28.7°C. Relative humidity (RH) is lowest in the drier month of December to March, in which about 10% is recorded in the month of February but rising to a maximum of 75-90% in August. It is also of interest to note that, the predominant types of soil found within the North West-zone include Hydro orphic, ferruginous, late rite and Luvisols. The vegetation cover is similar to that of Sudano-Sahel savannah belt of the county with different types and varying kinds of trees and shrubs. During Hamatan, a dry cold and fairly dusty wind is experienced in the zone between November and February. The topography is mainly of the famous Hausa plain lands of Northern Nigeria (Mohammed, 2006).

The climate within the confinement of the North West-zone of Nigeria favour the production of wide varieties of livestock and crops, which constitute a reason why nomadic pastoralist and arable crops farming constitutes the major occupation of the people from the zone. The most common arable crops produce in this zone include cereals crops like maize, millet, sorghum and rice. Legumes include groundnut, soya beans and pigeon pea. Solanacious crops include tomato, garden egg, onion, ginger and pepper. Root crops include; cassava, yam and sweet potatoes. Similarly, the most common livestock kept by the nomads from this zone include camels, cattle, goats, sheep, chicken, guinea fowl and ducks. Hunting and bee keeping is also practiced by the people from this zone.

Thus, it is very important to mention that the practice of nomadic pastoralism by the Fulani ethnic group from the North –West zone of Nigeria constitute the strong reason why many grazing reserves were established and gazetted in all the north western States

in order to resettle the nomads with the aim of providing them with livestock production infrastructure and nomadic education to improve their livelihoods. The study will be conducted in four out of the seven States of the North West-zone of Nigeria. The selection of the four States was based on their popularity in nomadic education activities within the North Western Agro –ecological zone of Nigeria.



Fig 4.1:Map of Nigeria Showing the North West Zone of Nigeria

4.2 Sample Size and Sampling Technique

A multi-stage sampling technique was used for the study. The first stage was the purposive selection of four states namely Jigawa, Kaduna, Zamfara and Sokoto states due to their highest number in nomadic pastoralist and notable Nomadic Education Programme activities (NCNE, 2011). In the second stage, one local government area (LGA) from each of the selected states was purposefully selected. Kiyawa from Jigawa State, Kachia from Kaduna State, Gumi from Zamfara State and Illela from Sokoto State. The selection of the (LGAs) was based on well-established Nomadic Education Programme in the area.

The third stage involved the purposive selection of one village with established Nomadic Education Centre in each of the selected LGA. Therefore, four villages were selected for the study. The villages selected were Mekiya in Kiyawa LGA (Jigawa State), Idon in Kachia LGA (Kaduna State), Bakin Dutse in Gumi LGA (Zamfara State) and Tulun Gwanki in Illela LGA (Sokoto State). Twenty percent (20%) respondents were randomly selected each from the participants and non-participants of nomadic education programmes in each of the villages selected for this study based on the sampling frame. A total of 460 respondents were therefore, selected for the study.

Table 4.1: Distribution of Respondents in the Study Area

States	L G As	Nomadic Education Centre	Population	Sample (20%)	Villages	Population	Sample (20%)
Jigawa	Kiyawa	Mekiya	420	84	Mekiya	301	60
Kaduna	Kachia	Kachia	292	58	Idon	280	55
Zamfara	Gumi	BakinDutse	320	64	Bakin Dutse	292	58
Sokoto	Illela	TulunGwanki	290	58	TulunG wanki	256	51
Total			1,322	264		1,129	224

Source: Local Government Population data, 2014

4.3 Data Collection

Data were purely collected from primary sources. This was achieved through the use of interview schedule questionnaire (which was administered to the nomadic pastoralist in the study area) and Focus Group Discussion (FGD). Information collected included the socio economic characteristics of the nomads, Nomadic Education Programme package, pastoralist livelihoods indices such as educational level, herd size, milk yield and rural employment opportunities.

4.4 Analytical Technique

4.4.1 Descriptive statistics

This involved the use of frequency and percentage distributions. The descriptive statistics in this study was used to analyse objective (v). However, the arithmetic mean and standard deviations which were calculated from the distributions were also used for description to explain part of objectives ii-iii and iv.

4.4.2 The logit regression model specification

This was used to determine the factors influencing the nomads' participation in Nomadic Education Programme (objective i). The theory of profit maximization was employed to hypothesize this model. The preference of the i -th respondent to participate in nomadic education programme is therefore given by the difference between the marginal benefits derived from the participation in nomadic education programme against the marginal benefits foregone. It is therefore, expected that a respondent will desire to participate in nomadic education programme if the benefits derived from the participation in nomadic education programme outweighs the benefits derived from not participating in the programme. The nomad is thus expected to participate in the programme with the highest benefits to his livestock. In this study, participation is

assumed to be a binary choice such that a respondent is expected to either participate in the nomadic education programme or not. The nomad scores a value of one (1) if the nomad participates in nomadic education programme, otherwise, the nomad scores a value of zero (0).

Since the dependent variable (participation in nomadic education programme) takes values of either zero (0) or (1), it is assumed that the error term follows a logistic distribution, regression estimates were obtained through the use of the logit model. Specifically the model takes the implicit form as follows:

$$P_r = \frac{1}{1 + \exp(-X'\beta)} \dots\dots\dots (1)$$

Where P_r denotes probability and ϕ is the logistic distribution function of the standard normal distribution. Equation (1) is simplified as:

$$Y^* = X'\beta + \varepsilon_i \dots\dots\dots (2)$$

Where: $\varepsilon \sim N(0, 1)$. Therefore Y_i becomes

$$Y_i = \begin{cases} 1 & \text{if } Y^* > 0 \text{ (} \varepsilon < X'\beta \text{)} \\ 0 & \text{otherwise} \end{cases} \dots\dots\dots (3)$$

Therefore applying the logistic cumulative distribution function, equation (2) becomes explicitly written as:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \varepsilon_i \dots\dots(4)$$

Where:

Y_i = Participation in Nomadic Education Programme (Value = 1 if participated and 0 otherwise)

X_1 = Age of respondents (years)

X_2 = Sex (Male = 1, Female = 2)

X_3 = Household Size (number)

X_4 = Livestock Rearing Experience (years).

X_5 = Herd Size (Number)

X_6 = Access to Credit (Amount received in naira)

X_7 = Contact with Extension Agents (Number of visits per annum)

X_8 = Membership of Cooperative Societies (Number of years in any cooperative societies)

X_9 = Relative advantage of nomadic education package technology

X_{10} = Affordability of Nomadic Education Package Technology

X_{11} = Compatibility of Nomadic Education Package Technology

X_{12} = Complexity of Nomadic Education Package Technology

$\beta_1 - \beta_9$ = estimate of respondents' socio-economic characteristics

ε = Error Term

4.4.3 The z-statistics

This was used to analyse the impact of Nomadic Education Programme on the nomads employment opportunity (objective ii), herd size of the nomads (objective iii) as well as nomads milk yield (objective iv).

$$z = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}} \dots\dots\dots (5)$$

$t =$ Calculated value of z

$\bar{X}_1 =$ mean employment opportunity /livestock /dairy output of nomads who participated in nomadic education programme.

$\bar{X}_2 =$ mean employment opportunity /livestock /dairy output of nomads who did not participated in nomadic education programme.

$s_1^2 =$ variance of employment opportunity /livestock /dairy output of nomads who participated in nomadic education programme.

$s_2^2 =$ variance of employment opportunity /livestock /dairy output of nomads who did not participated in nomadic education programme.

$n_1 =$ sample size of nomads who participated in nomadic education programme

$n_2 =$ sample size of nomads who did not participated in nomadic education programme.

The decision rule is that, if the calculated t -statistic is greater than the tabulated t -statistic, then the gap between the participants and the non-participants is significant. If the gap created is positive, then it is taken that nomads who participated in nomadic education programme package have higher employment opportunities, livestock and dairy output

values than the non-participants. As such, the nomadic education is assumed to have significant impact on the nomads' employment opportunities livestock and dairy output.

4.5 Definition and Measurements of Variables

4.5.1 The independent variables

The independent variables in this study includes the nomads socio-economic characteristics such as age, sex, family size, years of livestock rearing experience, membership of cooperative organization, access to credit, extension contact and technological characteristics such as relative advantage, affordability, compatibility and complexity of the Nomadic Education Programme package technology.

4.5.2 Measurement of the Independent variables

4.5.2.1 Age

The age of a nomad is a very important socio-economic variable. The younger and energetic nomads may be involved in strenuous livestock based activities while the older nomads on the other hand are more likely to be involved in less strenuous activities like York making, manual tick removal, milking and livestock trading activities (Ogunfitidimi, 2004). Thus, age can be regarded as the youthful and active period that a nomad can make vital impact in livestock production (Momale, 2010).The age of a nomad is measured in years.

4.5.2.1 Sex

This is masculine or feminine attributes of an individual usually expressed as male or female.

4.5.2.2 *House hold dependency ratio*

This is the ratio of the vulnerable to the economically viable in the household. It measures the ability of the nomadic household in meeting with its domestic needs. It is also a measure of the active labour available in the household for livestock production activities. It is the ratio of the number of children below 18 years of age, disabled members and elders above 50 years of age to the number of economically active family members (18–60 years of age). An increase in dependency ratio reduces the ability the household to meet subsistence needs and also increases the personal rate of time preference.

4.5.2.3 *Experience in cattle production*

This is the number of years the nomad had spent in livestock production. It is expected for the more experience nomads to be able to perceive and judge positively. Experience is a factor that influences desirable change in attitudes, skills and knowledge of individuals. Ekong (2003) observes that experience is dynamic instrument for enhancing the adoption of modern livestock management system by the nomads. The higher the nomads level of experience, the better the nomad's ability to understand and interpret new ideas and skills into income generating activities to better their level of living.

4.5.2.4 *Herd size*

This is the total number of livestock owned by the respondents. It is assumed that nomads with large herd size would be more open to participate in Nomadic Education Programme if proper awareness is created about the nomadic education programme. This is because nomads with more herd size would find it more difficult to feed their

flock in the wake of insecurity and incessant clashes between farmers and the pastoralists which sometimes lead to loss of lives and properties in the zone and the country at large. Nomads with larger herd size are therefore, expected to seek for better ways of feeding their cattle to minimise loss.

4.5.2.5 *Membership of cooperative societies*

This is also very important because it is an avenue that people come together to achieve in group what they cannot achieve alone (Ijere, 2002). Membership of a cooperative can serve as a means of having access to credit and information on modern livestock management enterprise. It is measured in years of membership in a cooperative society that are respondent belongs to.

4.5.2.6 *Contact with extension agents*

Frequent extension contact between nomads and extension agencies has the tendency of influencing nomads to fully participate in Nomadic Education Programme. Contact with extension agents enables the farmer to be aware of new technology which will improve his production. This was measured by the number of visits by extension personnel and total training received on Nomadic Education Programme.

4.5.2.7 *Access to credit*

This refers to the external source of fund received by the nomads on nomadic education programme package practices. This was measured by the reported amount received in naira by the respondent in the past one year.

4.5.2.8 Measurement of dependent variables

This includes all the Nomadic Education Programme packages like nomadic education, milk processing techniques, hay/fodder production, livestock health management, hides and skins processing techniques, capacity building in vocational skills, water and grazing resource management, crops-livestock integration farming and access to primary health care centre. This is measured as the number of packages that a nomad has adopted and put into practice as at the time of data collection in the field.

4.5.2.11 Measurements of impact variables

The impact variables in the model are the nomads employment opportunity and cattle production output characterized by their herd size and milk yield. The impact variables of the study are also defined and measured as follows:

- i. Rural employment opportunities:*** This refers to rural job opportunities available for the nomads as a result of NEP intervention. The number of the occupation constituted the nomads rural employment opportunities.

- ii. Herd size:*** This refers to the number of livestock owned by the individual nomads as at the time of field data collection. This was measured in number. That is, the respondents were asked to state their number of livestock as at the time of the field work.

- iii. Milk yield:*** This is the quantity of milk harvested in liters per cow / day by the nomads from their herd. Milk yield was measured in liters. That is, the respondents were asked to state the quantity of milk harvested in liters per cow/ day.

CHAPTER FIVE

RESULTS AND DISCUSSION

5.1: Factors Influencing Nomads participation and Adoption of Nomadic Education Programme Package in the North West zone of Nigeria

Objective (i) is aimed at determining factors influencing nomads' participation and their extent of adoption of Nomadic Education Programme package in the North West zone of Nigeria namely: age, sex, household size, educational level and livestock rearing experience. Institutional variables include: extension contact, access to credit and membership of cooperative as well as technological variables which include: relative advantage, affordability, compatibility and complexity of the technology to be adopted were also determined as follows:

5.1.1 Age

The age of the nomads is expected to have positive or negative influence on the participation and adoption of the Nomadic Education Programme package in the study areas. The result of logit regression analyses from Table 5.1 shows an inverse and significant ($p < 0.01$) relationship between age and the participation of the nomads in Nomadic Education Programme. This also implies that the younger nomads participate more on nomadic education programme than their adult counterpart. This is because the younger nomads are very energetic and innovative in handling livestock based activities but the older ones mostly participate in less strenuous livestock rearing activities like milking and yolk making. The study agreed with the finding of Ogunfiditimi and Ogunbameru (2004) who reported that most nomads fall within the middle age category to be able cope with their constant movement among the Fulani in Borno, Gongola States.

5.1.2 Household size

In traditional agriculture, household size determines the availability of labour in every family house. The additional labour to be hired depends on the available family labour. Results in Table 5.1 reveals that nomads household size had inverse and insignificant ($p < .124$) effect on nomads participation and adoption of Nomadic Education Programme package. This finding agrees with Momale (2010) who reported that nomads' household size has no influence on the adoption of improved livestock production practices. On the other hand, nomads house hold with inadequate number of children may results in having their cattle not properly grazed, thus resulting in crop destruction and loss of cattle from their herds during livestock grazing activities and may also affect their milk yield and consequently their herd sizes.

5.1.3 Livestock rearing experience

Years farming/livestock rearing experience has the tendency of influencing the adoption of improved crops/ livestock production technology positively or negatively. The result in Table 5.1 shows that nomads years of livestock rearing experience is directly and significantly ($p > 0.01$) related to nomads participation and adoption of the Nomadic Education Programme package .This implies that more years of livestock rearing experience has influence on nomads participation and adoption of Nomadic Education Programme package at 1% level of probability in the study area.

5.1.4 Sex of the nomads

The results in Table 5.1 show that this variable has a positive and insignificant ($p < .113$) relationship with nomad's extent of participation and adoption of Nomadic Education Programme package in the North West zone of Nigeria. This implies that the sex of the

nomads have no influence the on the extent of participation and adoption of the Nomadic Education Programme package. Although, most of the nomads activities are gender bias but the Nomadic Education Programme should not be targeted to a particular sex alone. Hence, both males and females should be encouraged to participate on the programme.

5.1.5 Educational level

The nomads' educational level may have positive or negative influence on the nomad's participation and adoption of Nomadic Education Programme package. The results in Table 5.1 show that nomads educational level is directly and significantly ($p > 0.01$) related to the nomads extent of participation and adoption of Nomadic Education Programme package. This implies that nomads educational level has influence on the participation and adoption of Nomadic Education Programme package/technology in the study area. This is because nomad's sedenterization in the nomadic education centers in the study area has given them the privilege of attending formal or informal nomadic education schools in which most of them are having equivalent of either primary, junior secondary or senior secondary school leaving certificates and above. The literacy of the nomads within the nomadic education centers has giving them an added advantage on their livestock management activities in respect to information seeking on improve livestock production practices (Gefu, 2005).

5.1.6 Access to credit

The results in Table 5.1 show that nomad's access to credit had a statistically insignificant ($p < .072$) direct relationship with nomads participation and adoption of Nomadic Education Programme package in the North West zone of Nigeria. This also

implies that access to credit will empower the nomads financially and encourage them to participate and also finance the cost of adopting the improve Nomadic Education Programme technology in the study area.

Table 5.1: Logit Regression Analysis of the Influence of Nomads Socio-economic Characteristics on the Adoption of Nomadic Education Program Package

Variables		B	SE	Sig.	Exp(β)
Age	(X ₁)	-146	.187	.008*	3.240
Sex	(X ₂)	.122	.144	.113	1.429
Educational status	(X ₃)	.281	.115	.001*	1.325
House hold size	(X ₄)	-.084	.074	.124	1.301
Livestock rearing experience	(X ₄)	.404	.199	.004*	1.622
Access to credit	(X ₆)	.005	.003	.072	.995
Extension contact.	(X ₇)	-.039	.014	.227	2.821
Membership of cooperative groups	(X ₈)	.001	.002	.169	1.444
Relative advantage	(X ₉)	.018	.013	.033**	.984
Affordability	X ₁₀	.021	.563	.020**	.916
Compatibility	X ₁₁	.511	.342	.011**	.600
Complexity	X ₁₂	.001	.215	.012**	1.114
Constant		.141	.129	.222	.871

SE: standard error, Sig: significance level.

* = Significant @ 1% level of probability

** = Significant @ 5% level of Probability.

5.1.7 Extension contact

Frequent extension contact between nomads and extension agencies has the tendency of influencing nomads' participation and adoption of Nomadic Education Programme package. The results in Table 5.1 show that extension contact had a statistically insignificant ($p < .227$) direct relationship with nomad's participation and adoption of Nomadic Education Package in the North West zone of Nigeria. This implies that frequent extension contact will result in better nomad's participation and adoption of Nomadic Education programme package in the study areas. Most of the nomads within the grazing reserves nomadic education centers attributed their poor extension contact to the mal-function of the grazing reserves extension service units and the respective Local Governments livestock extension service units due to inadequate extension personnel and poor funding of the extension services.

5.1.8 Membership of cooperatives

Results in Table 5.1 show that cooperative membership had statistically insignificant ($p < .169$) relationship with nomads' participation and adoption of Nomadic Education Programme package. This also implies that nomads' membership of cooperative groups in the study area has less influence on the adoption of nomadic education package in the study area. The less influence of the nomads cooperative association on the adoption of nomadic education package is owing to the fact that less than (50%) of the nomads within the grazing reserves nomadic centers belongs to one cooperative association particularly the Miyetti Allah, ". The less membership of the nomads in this cooperative group was due the fact that the Miyetti Allah association is politicized by placing more emphasis on political issues than any other problem related their occupation and personal wellbeing of the nomads in the study areas.

5.1.9 Relative Advantage

All improved packages /technologies are expected to have relative advantage over rudimentary /local technology. This relative advantage is also expected to have influence on the nomads participation and adoption of such technological/ package. The result in Table 5.1 shows that the relative advantage of nomadic education programme package /technology has statistically significant ($p > 0.05$) direct relationship with nomads extent of participation and adoption of Nomadic Education Programme package in the North West zone of Nigeria. This also implies that the relative advantage of Nomadic Education Programme package/ technology has influence on nomad's participation and adoption of Nomadic Education Programme package at 5% level of significance in the study areas. Most of the nomads in the study areas had admitted that the Nomadic Education Programme package technology has relative advantage over the

existing ones' most especially in the area of parent breeding stock, hay and fodder production and preservation techniques , hides and skins as well as milk processing technology .

5.1.10 Affordability

Affordable improved crops/ livestock production packages/ technologies has tendency of influencing the extent of participation and adoption of such technology by the target population. The result in Table 5.1 shows that affordability of Nomadic Education Programme technology had a statistically significant ($p>0.05$) direct relationship with nomads participation and adoption of Nomadic Education Programme package in the study areas. According to most of the nomads, the Nomadic Education Programme package technology was affordable to most of them, in view of the fact that some of the materials needed can be found within the nomads environment like Hay and Fodder production raw materials, milk preservation or processing materials as well as most of the sewing machines used in the package are relatively cheap and available in both rural/urban markets. For instance, sewing machines are always available and affordable in the rural or urban market places in the study areas.

5.1.11 Compatibility

It is a measure of the extent to which improved technological package is practicable, sustainable and the degree to which its conforms to the norms and values of the user. Thus, the extent to which a technological package is compatible with its users can affect the extent of participation and adoption of the technological package positively or negatively. The results in Table 5.1 shows that the compatibility of Nomadic Education Programme package has a statistically significant ($p>0.05$)direct relationship with

nomads extent of participation and adoption of Nomadic Education Programme package in the study areas. The compatibility of the Nomadic Education Programme package technology with the nomads was due to the fact that the technology is relatively cheap, available and accessible at all times to the nomads. In addition, the package technology can be maintained and even be manipulated for improvement by the nomads.

5.1.12 Complexity

This measure the extent to which a package technology is difficult or complicated. The extent to which technology is complicated or difficult to understand also affect the extent to which such technology is adopted by its' potential users. The result in table 5.1 shows that the complexity of Nomadic Education Programme package had a statistically significant ($p>0.05$) inverse relationship with nomads extent of participation and adoption of Nomadic Education Programme package in the North West zone of Nigeria. This implies that the Nomadic Education Programme package technology is not very difficult for the nomads to understand and adopt as well as put it into practice.

Hypothesis: the result of logit regression in Table 5.1 revealed that nomads socio - economic characteristics like age(.008), educational status(.001), livestock rearing experience(.004) and technological variables like relative advantage(.033), affordability (.020), compatibility (.011) and complexity (.012) had significant influence on nomads participation and adoption of nomadic education package in the study areas. Therefore the first (1) hypothesis of the study which states that there is no significant influence between nomads socio-economic characteristics and their extend of participation and adoption of Nomadic Education Programme package is now rejected and the alternative hypothesis accepted.

5.2 Impact of Nomadic Education Programme Package on Nomads Employment Opportunity and Cattle Production Output in the North West zone of Nigeria

In order to achieve objective (ii), (iii) and (iv), Z-test statistic was used to determine the impact of Nomadic Education Programme on the nomads' employment opportunity, cattle production output (herd size) and (milk yield) respectively within the grazing reserves nomadic education centers in the North West zone of Nigeria and also to test the stated research hypotheses as follows;

5.2.1 The impact of nomadic education package on the nomads' employment opportunities in the North West zone of Nigeria.

Results in Table 5.2 indicated the status of nomads' employment opportunity within and outside grazing reserves nomadic education centers in the North West zone of Nigeria. The Table (5.2) revealed that the Z-calculated (5.253) was greater than Z-critical (2.262) value at 1% level of probability, meaning that, there is a significant difference in employment opportunities between the nomads who participated and adopted Nomadic Education Programme package within in the grazing reserves nomadic education centers than none participants of the Nomadic Education Programme outside the grazing reserves nomadic education centers in the study areas.

The result in the Table 5.2 agrees with the findings of Okaiyeto *et al.* (2003) and Gefu (2006) during an appraisal studies of Wase and Udobo grazing reserves in Plateau and Bauchi States respectively in which nomads' sedenterization in grazing reserves had given them the opportunity of practicing crops-livestock integration farming, livestock marketing, bee-keeping and milk processing in order to augment their daily income for the betterment of their families.

Hypothesis: The second (2) hypothesis of the study which stated that there is no significant relationship between nomad's adoption of Nomadic Education Programme package and their employment opportunities within the grazing reserves nomadic education centers is rejected and the alternative hypotheses accepted. This is because z-calculated (5.253) is greater than z-crit (2.262) value which implies that nomads who participated in Nomadic Education Programme have greater access to rural employment opportunities than the none participants in the nomadic education programme in the study area.

Table 5.2: Z-test Statistic on the Impact of Nomadic Education Programme Package on the Nomads Employment opportunity in the North West zone

	Non-Participant	Participant
Mean	2.155	4.186
Variance	1.613	2.381
Observations	224	264
Hypothesized Mean Difference		0
t- Stat		5.253
P(T<=t) two-tail		0.004
t- Critical two-tail		2.262

5.2.2 Impact of Nomadic Education Programme Package on the Nomads' Herd Size in the North West zone of Nigeria

Results in Table 5.3 show the impact of Nomadic Education Programme on nomads herd size. The result in the Table (5.3) reveals that, the z-statistic analysis for nomads' livestock herd sizes (Z-cal-0.068) was less than the Z-critical (1 .96) value at 5% level of probability. This implies that there is no significant difference in cattle herd sizes between the participating nomads within grazing reserves nomadic education centers and the none-participants of the programme outside the grazing reserves nomadic education centers in the North West zone of Nigeria. The non- significant difference in

cattle herd sizes may be due to the fact that nomads outside the grazing reserve nomadic education centers are still transhumance nomads. Hence, they have access to palatable and different variety of pasture as they moved from one place to another for their cattle more than the nomads who sedenterized permanently within the grazing reserves nomadic education centers in the North West zone of Nigeria.

The result in Table (5.3) agrees with the findings of Homewood et al. (2009) and Shem et al. (2005) who reported that animals reared under mobile system are more productive than those kept under range land management system within the same climatic conditions.

Hypothesis: The third (3) hypothesis of the study which stated that, there is no significant difference in herd sizes between participants within and none participants of Nomadic Education programme outside grazing reserves nomadic education centers in the North West zone of Nigeria is accepted and the alternative hypothesis rejected. This is because z -calculated. (0.068) is less than z -critical (1.96) value, which signifies no impact.

Table 5.3: Impact of Nomadic Education Programme Package on the Nomads Herd Size in the North West Zone of Nigeria.

	Non-Participant	Participant
Mean	85.464	69.581
Variance	44.734	42.597
Observations	224	264
Hypothesized Mean Difference		0
t Stat		0.068
P(T<=t) two-tail		0.75
t Critical two-tail		1.96

5.2.3 Impact of Nomadic Education Programme Package on Nomads' Milk Yield in Liters/Cow/Day in the North West zone of Nigeria.

The results in Table 5.4 show the impact of nomadic education programme on nomads milk yield in the North West zone of Nigeria. The result from the Table (5.4) revealed the z-test statistic analysis for nomads milk yield in which Z-cal (0.052) is less than Z-critical (1.96) at 5% level of probability. This implies that there is no significant difference in milk yield between the nomads within and outside the grazing reserves nomadic education centers in the North West zone of Nigeria.

The non-significant difference in milk yield account for the fact that the nomads outside the grazing reserves nomadic education centers have access to palatable varieties of pasture more than the nomads within the grazing reserves nomadic education centers and hence their milk yield is also better than that of the nomads who sedenterized within the grazing reserves nomadic education centers in the study area. This studies also agrees with the findings of Shem *et al.* (2005) and Homewood *et al.*(2009) who reported that transhumance pastoralists' harvest more milk from their herds of cattle of similar breeds more than sedenterized pastoralists' within the same ecological zone.

Hypothesis: The fourth (4) hypothesis of the study which states that there is no significant difference in milk yield between the participant nomads within and none participants outside the grazing reserves nomadic education centers is accepted and the alternative hypothesis rejected. This is because the z-calculated (0.052) is less than z-critical (1.96) value, which signifies no impact.

Table 5.4: Impact of Nomadic Education Programme Package on the Nomads Milk Yield in the North West zone of Nigeria

	Non-Participant	Participant
Mean	3.165	2.733
Variance	2.942	0.525
Observations	224	264
Hypothesized Mean Difference		0
t- Stat		0.052
P(T<=t) two-tail		0.83
t- Critical two-tail		1.96

5.3 Nomads' Constraints in Grazing Reserves Nomadic Education Centers in the North West Zone of Nigeria

Objective (v) was to identify the constraints faced by the nomads and the management of nomadic education programme in the North West Agro-ecological Zone of Nigeria. The results as presented in Table 5.5 show the constraints faced by the nomads in the grazing reserves nomadic education centers in the study areas. NEP constructed earth dams not retaining water beyond March recorded the highest percentage of 81.81% among other constraints. The second and third constraints were inadequate vocational skills training facilities (72.72%) and unmotor able feeder roads (65.15%).

The least among the nomads' constraints in the grazing reserves nomadic education centers in the study areas was lack of related text materials that are nomadic bias (36.36%). The identified constraints in the grazing reserves nomadic education centers constituted a strong reason why some nomads could not sedenterized to pursue nomadic education in the study areas.

This result has supported the findings of Daddy and Okaeme (2007), *Okaiyeto et al.*(2003) and Umar (2011) in the area of poor status of agro infrastructural development for the nomads livestock in grazing reserves nomadic education centers nationwide.

Table 5.5: Nomads Constraints in Grazing Reserve Nomadic Education Centers in the North West Zone of Nigeria

	Constraints	Frequency	*Percentage	Rank
i.	NEP dams not retaining water beyond March	216	81.81	1 th
ii.	Inadequate vocational skills teaching aids	192	72.72	2 nd
iii.	Un-motorable feeder roads	172	65.15	3 rd
iv.	Recruitment of unqualified teachers to teach in nomadic schools	152	57.57	4 th
v.	Inadequate schools infrastructural facilities	156	59.09	5 th
vi.	Inadequate NEP health centers	152	57.57	6 th
vii.	Poor maintenance of existing facilities	136	51.51	7 th
viii.	Inadequate teaching staff	120	45.45	8 th
ix.	Lack of well equip veterinary clinics	112	42.42	9 th
x.	Inadequate NEP breeding stock	104	39.39	10 th
xi.	Lack of text materials relevant to nomadic schools	96	36.36	11 th

v. * = Percentages were calculated based on multiple responses.

CHAPTER SIX

SUMMARY, CONCLUSION AND RECOMMENDATIONS

6.1 Summary

Since the available grazing lands cannot longer support the transhumance system of livestock production practiced by the nomads, which is also responsible for the incessant clashes between nomads and the crop farmers, necessitated the establishment of Nomadic Education Programme in Nigeria in order to educate the nomads on modern system of livestock production. This study was thus conducted to determine the impact of nomadic education programme on the employment opportunity and livestock output (herd size and milk yield) of the nomads in the North West zone of Nigeria.

A total of 488 respondents were sampled for the study consisting 264 respondents within nomadic education centres and 224 respondents from outside the nomadic education centres. Data were collected using interview schedule and Focus Group Discussion. Descriptive statistics (consisting of mean, frequency and percentage distributions) and the logit regression model were employed in analysing the data. The z-test statistic was used to test for statistical significant difference in nomads employment opportunity herd size and milk yield between the participants and non-participants of Nomadic Education Programme in the study areas.

The result from the logit regression analysis revealed that with the exception of sex, house-hold size, access to credit and extension contact, nomads socio-economic characteristics have significant influence on nomads participation and adoption of Nomadic Education Programme package. Similarly, the z-statistic also shows that nomad's participation and adoption of Nomadic Education programme package has

significant impact on their employment opportunities, but it has no significant impact on the nomads herd size and dairy milk yield of the nomads in the study areas. The major constraint facing the nomads in nomadic education centers in the North West zone is earth dams not retaining water beyond the month of March which recorded 82% and inadequate vocational skills teaching aids with 72% respondents score among others.

6.2 Conclusion

Based on the findings of this study, the following conclusions were made:

Resident Nomads within the grazing reserves nomadic education centers in the North West zone of Nigeria had experienced low level of extension contact which may be responsible for the low nomad's participation and adoption of Nomadic Education Programme packages and possibly could also be a reason for the low milk yield and herd sizes of the nomads within the grazing reserves nomadic education centers in the study areas. The results further suggests that nomads participation and adoption of Nomadic Education Programme package had impact on the nomad's employment opportunities than in cattle production output(herd size and milk yield) in the grazing reserves nomadic education centers in the North zone of Nigeria. Thus, the non-significant impact of the Nomadic Education Programme package on the nomad's herd size and milk yield in the grazing reserves nomadic education centers suggests the need for improvement in some of the agro pastoral nomadic education packages provided to the nomads like earth dams, fodder banks development, NEP livestock breeding stock and crops livestock integration farming and grazing resource management. This could also probably be responsible for the non-significant difference in milk yield and herd size between the nomads within and outside the grazing reserves nomadic education centers in the study areas.

6.3 Recommendations

Based on the findings of this study, the following recommendations are made:

- i. The study found that the Miyetti Allah association constitutes the major cooperative organization in the study area but it is politically motivated. This is also responsible for the nomads' low level of cooperative membership and its low influence on nomads' participation and adoption of the Nomadic Education Programme package in the study area. Therefore, it is recommended that nomads should be enlightened through extension contact on the importance of cooperative membership on the livelihood of the nomads in the study areas.
- ii. The study found that the low level of extension contact witnessed in the grazing reserves nomadic education centers was probably responsible for the low milk yield and herd sizes of the nomads in the study area. It is therefore, recommended that extension organizations such as SLDPs, JSADP, KADP, ZSADP, SSADP, NAPRI and other relevant extension organizations should intensify their extension activities with proper monitoring and evaluation of their past programmes in the grazing reserves nomadic education centers in the study areas.
- iii. The study found that, lack of nomads cooperation and sacrifice also constitute a problem on the success of the Nomadic Education Programme in the study areas. It is recommended that collaborative efforts involving the nomads communities and the three tiers of government, to take bold steps towards agro-infrastructure development and maintenance of the existing ones across the grazing reserves nomadic education centers located within the study areas.

- iv.* In the area of lack of nomads access to credit facilities. It is recommended that the nomads should be mobilized to form and join specialized cooperative associations so as to pull their effort together in order to have access to credit in either micro finance or commercial banks located within their vicinity through the help of extension agents.

- v.* There should be periodic dredging of Nomadic Education Programme earth dams, rehabilitation of feeder roads and grazing resource development as well as construction of more bore- holes to facilitate nomads sedenterization in the grazing reserves nomadic education centers so as to benefit from the nomadic education programme package in the study areas.

6.4 Suggestion for Further Studies

It is suggested that a comparative study on the impact of Nomadic Education programme packages on the nomads' employment opportunity and cattle production output should be conducted in other ecological zones of Nigeria. This will facilitate a better understanding of the factors that influence nomads' participation on Nomadic Education Programme and its impact on the nomad's employment opportunity and cattle production output (herd size and milk yield) and hence this study will form the basis for propounding a theory on which decisions on the impact of Nomadic Education Programme packages on the nomads employment opportunity and cattle production output could be based.

6.5 Research Contribution to Knowledge

The study has contributed to knowledge in the following ways:

- i Nomads socio-economic factors such as age (.008), educational status (.001), livestock rearing experience (.004) had significant influence on nomads participation and adoption of Nomadic Education Programme package at 1% level of probability in the study area. Similarly, Nomadic Education Programme technological characteristics such as relative advantage (.033), affordability (.020), compatibility (.011) and complexity (.012) had significant influence on nomads participation and adoption of nomadic education programme package at 5% level of probability in the study area.

- ii Nomads participation and adoption of Nomadic Education Programme package has significant impact ($z\text{-cal}=5.253$) greater than ($z\text{-crit}=2.262$) value at 1% level of probability on nomads' rural employment opportunities but it has no impact on the nomads' herd sizes and milk yield in the study area.

- iii This study has also confirm that the practice of transhumance system of animal husbandry gives better herd sizes and milk yield than the same cattle breeds kept under confined environment in the same ecological zone.

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APPENDIX I: RESEARCH QUESTIONNAIRE

Background Information

1. Name of the nomad
2. Village
3. District
4. Location of nomad resident
 - a. Within Grazing Reserve nomadic centre []
 - b. Outside grazing reserve nomadic centre []
5. Local Government Area.....
6. State.....

Section A: Socio-Economic Characteristics of the Nomads

7. Age of Respondents
8. Sex of respondent: (a) Male [] (b) Female []
9. Marital Status : (a) Married [] (b) Single [] (c) widower []
10. Nomads family size :
 - a. Wives.....
 - b. Male children.....
 - c. Female children
 - d. Other dependentsTotal number in the family
- 11 Do you think that family size has effects on your herd size? Yes [], No[]
- 12 Educational qualification of respondents [in years]
 - a) Adult educationyears
 - b) Primary educationyears
 - c) Secondary educationyears
 - d) Tertiary educationyears
 - e] University education.....years
 - e) Others (specify):
- 13 Major occupation of the respondents (tick)
 - a) Livestock rearing only []
 - b) Livestock rearing and farming []

- c) Livestock rearing, farming and trading []
- d) Livestock rearing, farming and tailoring []
- e) Livestock rearing, farming and carpentry []
- f) Livestock rearing, farming and livestock trading []
- g) Others (specify:

- 14 What type of livestock do you rear as a nomad? (Tick)
- a) Cattle only []
 - b) Cattle and sheep []
 - c) Cattle, sheep and goats []
 - d) Cattle , sheep, goats and donkeys []
 - e) Cattle, sheep, goats, Donkeys and horses []
 - f) Others specify.....

- 15 What breeds of livestock do you rear as a nomads?
- a) Local breeds []
 - b) Improved breeds []
- 16 If, it is improved breeds, where do you source your breeds of cattle?
- a) NAPRRI Shika []
 - b) NEP Breeds []
 - c) Others

- 17 Do you have access to credit facilities?
- (a) Yes []
 - (b) No []

- 18 Where do you source your credit from?
- a) Friends/relations []
 - b) Money lenders []
 - c) Credit institutions []
 - d) Others specify.....

19 If yes, state the Amount of credit received in the last three years: ₦.....

- 20 In what ways have the credit facilities provided affected you? (tick)
- a) Increases milk yield []
 - b) Increases herd size []
 - c) Enhance rural employment opportunities []
 - d) Purchase grazing land/cattle coral []
 - e) Access to mobility []
 - f) Others (specify):

- 21 Are you a member of Cooperative Societies; yes [] No []
- a) Number.....
 - b) Type.....
 - c) Years of membership.....

22 State the importance of cooperative membership.....

23 Have you ever been visited by extension agent?
 a) Yes [] No []
 b) Mention the number of extension contact/annum:.....

24 Do you own any land for livestock/crop production?
 a) Yes []
 b) No []

25 If yes, What is your land size for livestock/ crop production?.....ha

26 How did you obtain the land?
 a) Inheritance []
 b) Allocation by government []
 c) Pledge []
 d) Purchase []
 e) Gift []
 f) Loan []
 g) Rent []
 h) Others (specify:

27 How did you acquire the livestock that you are rearing? (Tick)
 a) Inheritance []
 b) Gift []
 c) Purchase []
 d) Care taker []
 e) Others (specify):

28 Who owns the following in a pastoralist's household? (tick)

		Husband	Wife	Both	Male children	Female Children	Both	Family
(a)	Cattle	[]	[]	[]	[]	[]	[]	[]
(b)	Sheep	[]	[]	[]	[]	[]	[]	[]
(c)	Goats	[]	[]	[]	[]	[]	[]	[]
(d)	Chickens	[]	[]	[]	[]	[]	[]	[]

(e)	Milk	[]	[]	[]	[]	[]	[]	[]
(f)	Donkeys	[]	[]	[]	[]	[]	[]	[]
(g)	Horses	[]	[]	[]	[]	[]	[]	[]
(h)	Others						
	(Specify)						
							

29. What is your herd size on the following livestock?
- a) Cattle.....
 - b) Sheep's.....
 - c) Goats.....

What is your average milk yield per cow/day.....

31. Where do you graze you livestock? (Tick)
- a) Personal land []
 - b) Reserve grazing blocks []
 - c) Government Forest Reserves []
 - d) Communal Virgin Lands []
 - e) Uncultivated/ Fallow Crop Lands []
 - f) Others (specify):
-
-

32. What type of grazing rights do you hold in the place that you have specified above? (Tick)
- a) Permanent (Grazing blocks/personal land) []
 - b) Temporary (Communal virgin lands/ uncultivated /fallow lands and forest reserves) []

33. Have you ever benefited from Nomadic Education Programme?
- a) Yes []
 - b) No []

34. If yes, which of the following Nomadic Education Programme Package have you benefited and adopted:
- a) Nomadic education []
 - b) Para-veterinary skills development []
 - c) Vocational skills development []
 - d) Hide and skin processing []
 - e) Fodder banks development []
 - f) Milk processing skills []
 - g) Crops- livestock integration farming []
 - h) NEP Breeding stock []
 - i) NEP Health services []

35. Which among the above packages had effects on your employment opportunity; (Tick)
 1-[], 2-[], 3-[], 4-[], 5-[], 6-[], 7-[], 8-[], 9-[]
36. Which of the NEP packages listed in question 32 had effect on your herd size; (Tick)
 1-[], 2-[], 3-[], 4-[], 5-[], 6-[], 7-[], 8-[], 9-[]
37. Which among the NEP packages listed in question 32 above had effect on your milk yield (Tick)
 1-[], 2-[], 3-[], 4-[], 5-[], 6-[], 7-[], 8-[], 9-[]
38. What are the constraints facing the nomads in respect of Nomadic Education Programme in the north west agro-ecological zone of Nigeria?
i.
ii.
iii.
iv.
v.
vi.
vii.
39. What are the constraints facing National Commission for Nomadic Education in respect of Nomadic Education Programme in the North West Agro-ecological Zone of Nigeria?
i.
ii.
iii.
iv.
v.
vi.
vii.
40. Suggest the way forward in respect to the problems of Nomadic Education in Nigeria
i.
ii.
iii.
iv.
v.
vi.
vii.

Thank You.