EFFECTIVENESS OF TRADITIONAL CONFLICT RESOLUTION MECHANISMS IN IMPROVING FARMER–PASTORALIST RELATIONS IN NASARAWA AND NIGER STATES, NIGERIA

BY

OMAKU, Mohammed Isa

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DEPARTMENT OF AGRICULTURAL EXTENSION AND RURAL DEVELOPMENT,
FEDERAL UNIVERSITY OF TECHNOLOGY MINNA, NIGER STATE, NIGERIA

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ABSTRACT

The study examined the effectiveness of traditional conflict resolution (TCR) mechanisms in improving farmer–pastoralist relations in Nasarawa and Niger States, Nigeria. Multi-stage sampling technique was employed to select a total of two hundred and ninety (290) farmer while snowball sampling was used to select eighty-nine (89) pastoralist. Data were collected from primary source using a semi-structured questionnaire complemented with interview schedule. The data collected were analyzed using both descriptive statistics such as (means, percentages and frequency distribution) and inferential statistics such as (Ordered logit regression model, Heckman model regression, Kendall's coefficient of concordance and Pearson Product Moment Correlation (PPMC). The results shows that all the pastoralists (100.0%) and (95.5%) of the farmers were male with a mean age of 40 years and 41 years respectively. Majority (95.5%) and (90.3%) of the pastoralist and farmer in the study area were married with household size of 8 and 9 persons respectively. The mean experience in primary occupation of farmer and pastoralist were 19 years and 14 years respectively. The major causes of conflict as reported by farmer were crop damage (87.2%) and stealing of crops (48.6%) while damage to crops (60.7%) and competition for land and water (34.8%) were the major causes of conflict as reported by pastoralist. Use of agents to monitor the conflict ($\bar{X}$=13.50) and dialogue/convening meeting ($\bar{X}$13.46) were the most common TCR mechanisms used as reported by farmer while compensation and punishment ($\bar{X}$=16.28) and dialogue/convening meeting ($\bar{X}$12.33) were the commonest mechanisms reported by pastoralist. Further findings show that the farmer are willing to use TCR because TCR mechanisms focus is on understanding issues better ($\bar{X}$4.15) and panelists involved in TCR are highly experienced ($\bar{X}$=4.11) while the pastoralist were willing to use TCR because TCR is restorative ($\bar{X}$=3.80) and parties have equal control over the outcome ($\bar{X}$=3.76). The coefficient of experience in farming (0.00402037), education status (0.004) number of conflicts (-0.0049) influenced the farmer willingness to use TCR while marital status (-0.3494), extension access (2.584) and cooperative membership (0.8881) influenced the pastoralist willingness to use TCR. The most effective TRC mechanisms as reported by farmer were mediation by elders ($\bar{X}$=2.57) and dialogue/convening meeting ($\bar{X}$=2.54) while mediation by elders ($\bar{X}$=2.61) and compensation and punishment ($\bar{X}$=2.31) were the most effective TRC mechanisms as reported by pastoralist. The coefficient of occupation (-0.6152), experience (-0.0309), educational status (0.0677) and cooperative membership (0.8071) influenced farmer opinion on the effectiveness of TCR while household size (0.1096), cooperative membership (2.2719) and number of conflicts (0.3723) influence pastoralist opinion on the effectiveness of TCR mechanisms. Re-establishing cattle routes ($\bar{X}$=7.84) and provision of education and civic training for both farmer and pastoralist ($\bar{X}$=7.58) were the most preventive measures used to avert conflict as reported by farmer while pastoralist reported that avoiding indiscriminate bush burning ($\bar{X}$ =7.94) and compensation by the culprits ($\bar{X}$ =7.88) were the preventive measures used. Farmer reported that distrust, leadership factor, cultural/political factors were the problems associated with TCR while cultural differences, attitudinal factors and knowledge and distrust were the problems associated with TCR as perceived by the pastoralist. There was significant relationship between socio economic characteristics and effectiveness of TCR mechanisms among the respondents in the study area. It was recommended that extension agents, NOA and other stakeholders should enlighten pastoralist on the need to compensate farmer that lose their produce to herdsmen attacks, It is necessary to increase extension visitation to farmer in order to boost their willingness level and that older pastoralist should be involved and encouraged to use TCR for conflict resolution in the study area.

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CHAPTER ONE

1.0 INTRODUCTION

1.1 Background to the Study

Marx's perspective on conflict is deeply rooted in his theory of historical materialism and his analysis of capitalist societies (Manzi, 2007). Marx believed that the history of human societies is a history of class struggles. In the Marxist framework, societies are divided into different classes based on their relationship to the means of production—those who own the means of production (bourgeoisie) and those who sell their labour power to the owners (proletariat) (Miguel *et al.*, 2014). Marx argued that this economic structure shapes the political and ideological superstructure of society. The conflict, according to Marx, arises from the inherent contradictions within the capitalist system. The bourgeoisie seeks to maximize profits and maintain control over the means of production, while the proletariat seeks better working conditions, higher wages, and ultimately, the overthrow of the capitalist system (Moritz, 2012). Marx's perspective on conflict is deeply rooted in his theory of historical materialism and his analysis of capitalist societies. Marx believed that the history of human societies is a history of class struggles.In the Marxist framework, societies are divided into different classes based on their relationship to the means of production—those who own the means of production (bourgeoisie) and those who sell their labor power to the owners (proletariat). Marx argued that this economic structure shapes the political and ideological superstructure of society. The conflict, according to Marx, arises from the inherent contradictions within the capitalist system. The bourgeoisie seeks to maximize profits and maintain control over the means of production, while the proletariat seeks better working conditions, higher wages, and ultimately, the overthrow of the capitalist system. Marx's view that conflict is a driving force in historical development.

Conflict can be defined as an inevitable phenomenon within a society that occurs as a result of disagreement and misunderstanding from two or more parties. Conflict arises whenever people disagree over their values, ideas; motivation and desire, which later result in hatred among one another (Mwajaide *et al.,* 2015). The occurrence of conflict is always associated with the struggle for inadequate resources and egocentricity. Also, conflict creates an avenue for dispute resolution, and dispute resolution can reduce or eliminate causes of underlying conflictwith the agreement of both parties involved (Mwajaide *et al.*, 2015).

Farmer and pastoralist conflict have been a recurrent issue affecting many countries, N igeria inclusive. The country has witness the re-occurrence of farmer and pastoralist disput which has not only resulted in deteroration of farmer-pastoralist relation but also losses of life and properties. There are many different causes of farmer-pastoralist conflict and they can largely be classified under a limited number of headings; land disputes, political, religious and cultural differences and the distribution and use of resources. Other sources of dispute may be locally important but they are essentially tied to point enterprises, such as mines, large-scale farming, game parks or infrastructure projects. In Nigeria, most conflicts are caused by a combination of factors and it is very difficult, in most cases to highlight their dominant and less dominant causes (Abbas, 2012).

Efforts to control farmer-pastoralist conflict has led to the government of the then Northern Region enacted the Northern Nigeria Grazing Law in 1965 (Iro, 2015). The law provided for the establishment of grazing lands to encourage the nomadic Fulani herdsmen to adopt sedentary practices. In 1975, the Federal Government initiated the National Livestock Development Plan (NLDP) intending to enhance livestock productivity, through effective and efficient management of livestock and grazing

resources (Tukur, 2013). These policies, however, did not comprehensively address the peculiar needs of the herdsmen whose major concern was the elimination of multiple tax regimes. Thus, these policies did not attract the necessary cooperation for effective implementation.

Efforts to implement the Northern Nigeria Grazing Law led to the acquisition of 6.4 million hectares of forest reserve for the grazing reserve scheme (Iro, 2015). The land was earmarked for the establishment of grazing reserves at Sokoto, Bauchi, Zaria, Ilorin, Katsina, Wase, Zamfara and Udubo. The NLDP further necessitated the establishment and demarcation of about 4,125 grazing reserves across Nigeria, covering about 4.3 million hectares, as well as grazing routes (Tukur, 2016). The well-demarcated grazing reserves and grazing routes were designed to prevent contact between farmer and herdsmen during the seasonal migration of herdsmen. However, most of the reserves have been encroached upon, while insufficient information on the stock routes has contributed to herdsmen straying away from demarcated routes into farming areas. This has further promoted farmer-herdsmen disputes, thereby undermining the security of the country. Incidents of disputes between farmer and herdsmen emerged again in 1991 when farmer and herdsmen clashed in Kaduna (Olayoku, 2014).

Thereafter, intense disputes were witnessed in Plateau, Benue, Taraba and Niger States (Olayoku, 2014). Between 1991 and 2005, farmer-herdsmen disputes accounted for over 35 per cent of all reported disputes in Nigeria (Tukur, 2016). This period also witnessed the increase and use of firearms and automatic rifles in farmer-herdsmen disputes.

As such, many States, today in the country including Adamawa, Zamfara, Ekiti, Enugu, Benue, Plateau, Taraba, Kaduna, Niger, and the Kogi States have experienced these disputes with varying degrees of devastation. In Southern Kaduna for example,

particularly in the Local Government Areas of Jama'a, Kachia, Kagarko, Kaura and Sanga, Kaduna States have been subjected to a series of attacks from suspected Hausa-Fulani Muslim herdsmen since 2011. For example, Ibanga and Adekunle (2016) reported that attacks by Fulani in Benue in 2016 have led to the invasion of 14 Local Government Areas out of the 23 Local Government Areas in the State.

Haruna (2014) also noted that in Gassol local government of Taraba State, for instance, villages such as Borno-Kurukuru, Nyamtsav, Orga, Igbough, Tyougese, Orshio, Ukuusu, among many others have been ransacked by Hausa-Fulani Muslim herdsmen, destroying farms, burning homes and churches. Statistics from the Nigeria Watch database indicate that between 2006 and 2014, the country recorded a total of 615 violent deaths related to cattle grazing, out of 61,314 violent fatalities in Nigeria between June 2006 and May 2014 (Olayoku, 2014). Ugbudu (2017) observed that in Benue state for instance in May 2015 before the 2015 general elections, over 100 farmer and their family members were reportedly massacred in villages and refugee camps located in the Ukura, Per, Gafaand Tse-Gusa areas of the state. And in December 2016, six persons were killed at Idele village in the Oju local government area, while a reprisal attack by youths in the community saw three Fulani herdsmen killed and beheaded (Adetula, 2016).

These attacks by Fulani herdsmen are not limited to the middle belt region of the country but cut across the length and breadth of the country. In Yobe State for instance a total of 38 clashes were recorded between Fulani herdsmen-farmer in ten local government areas across the state, Alhassan (cited in Luka and Erunke, 2016). Also, in Jigawa State, Fulani herdsmen have had clashes with farmer in places like Miga, Kangama, Birnin Kudu, Garki and Maigatari Local Government Areas with a lot of losses in human and material goods. The year 2018 has witnessed a resurgence of this violence in Benue, Taraba and

Adamawa and other parts of the country where many people have been killed and properties destroyed, (Ugbudu, 2017).

Traditional conflicts resolution (TCR) encompasses all legally permitted processes of dispute resolution other than litigation (Ibrahim, 2014). It is also seen as an umbrella term that refers to general, alternatives to court adjudication of disputes such as negotiation, mediation, arbitration, minitrial and summary trial (Nformi *et al.,* 2014).

TCR has been useful in restoring farmer and pastoralist relationships in the past along with other traditional means of dispute resolution. According to Craig and John (2015), arbitration, mediation and negotiation have shown significant success in settling disputes between farmer and pastoralist. Furthermore, Oladele and Oladele (2015) reported that between 2014 -2016, a total number of 800 disputes were reported between farmer and pastoralist in Nasarawa State but only 80 were resolved using mediation and negotiation.

On the effectiveness of the mechanisms employed for improved farmer-pastoralist relation, Olaleye *et al.* (2010) identified the mechanisms to include; intervention by traditional leaders, payment of compensation to victims, court verdicts, dialogue between parties involved, the intervention of Miyetti Allah cattle breeders association, local community crop farmer/herders intervention and establishment of grazing routes, educating farmer and herders by person or bodies responsible for conflict resolution. In addition, Okoli and Atelhe (2014) established the emergence of local militias such as Sojan Patari (a Tiv Militia) and the Ombatse (an Eggon Militia) whose principal aim is to protect the farmer against the onslaught of the Fulani militant. Furthermore, Iyorchia (2014) and Makinta *et al.* (2017) opined that the farmer-herder conflict management mechanisms include; mediation, compensation, carrot and stick, coercion, jokes, spiritual and oath taking and in some cases verbal warning.

According to Ibrahim and Chaminda (2017), the mechanisms currently in use to settle the conflict between farmer and pastoralist in North Central Nigeria were; clear demarcation between farming sites and grazing routes, adoption and implementation of effective land use and environmental policies by the Nigeria government, proper policing of rural and agrarian communities and promotion of tolerance among farmer and pastoralist in the North Central.

Moreover, the farmer and pastoralist relationship in Nigeria is based on the land-use system, as well as complexities over the use of land for grazing and production of crops. However, dispute management is premised on the principle that not all disputes can necessarily be resolved. It entails acquiring skills related to dispute resolution, self-awareness about dispute modes, dispute communication skills, and establishing a structure for the management of disputes (Nformi, 2014).

1.2 Statement of the Research Problem

The backdrop of environmental degradation, resource scarcity, demographic change and political instability have perhaps made some States in North Central demonstrate the element of anarchy and disputes. Farmer –pastoralist dispute is one of the coredisputes, and this is deeply rooted in the history, ecology and political economy of the States. Livestock is the major means of livelihood for over 50 million people in Nigeria, while over two million people also rely on livestock and livestock-related enterprises for their livelihood as well (Okoli and Atelhe, 2014). The livestock sector is dominated by traditional systems of production, processing and marketing; and the nomadic and semi-nomadic pastoralist hold a large proportion of the cattle, camel, sheep and goats.

These pastoralist operate within expansive geography, moving within and across communities, principally in search of pasture and water for their herds, and in the process,

contact with settled crop farmer is unavoidable which later leads to disputes that result in losses of lives and properties, hence, the search for means of resolving the menace.

Over the years, government efforts such as the use of force from various security agencies including the military to restore order, as well as applying various measures and mechanisms to solve these conflicts. Some of these measures include the establishment of grazing reserves and the institution of mediatory panels, as well as payment of compensation to aggrieved persons. Despite these measures, the farmer-herdsmen conflict still rages in several States around the country.

Existing conflict resolution mechanisms have been deficient in bringing a comprehensive end to the crises, which has continued unabated in some states. Indeed, more States could experience these conflicts, which still inevitably lead to loss of lives and properties, thereby undermining Nigeria security.

The government of Nigeria at various levels of the Local, State and Federal Government have proposed and employed different measures including the designation and gazettig of grazing reserves, prohibition of open grazing, and the deployment of security agents to forestall emerging crises and a recent proposal to create ranching and cattle colonies. These measures have not been effective and the result is further degeneration of these conflicts resulting in increased deaths and destruction of properties with a high potential to exacerbate the insecurity, food crisis and unity of the country. These efforts that are geared towards ameliorating farmer and pastoralist disputes have also not been effective in the North Central Region of Nigeria.

In fact, there has been a reoccurrence of farmer and pastoralist disputes despite government intervention efforts. These efforts have not yielded positive results because the rate of attacks from both parties is on the increase. More so, every attack and clash

between the two mainland users is often accompanied by the deployment of government security personnel to affected communities who are shortly withdrawn after the dispute subsides creating an avenue for the launching of fresh attacks which are also accompaned by reprisal attacks or retaliation for previous or initial attacks that keeps exacerbating the magnitude of the dispute.

However, the concerted efforts of government and stakeholders listed above for ameliorating the situation have not yielded positive results, the committees set up by the government on disputes resolution have not succeeded in directing the government into adopting traditional conflict resolution mechanisms required to resolve and manage the situation in the conflict-prone regions effectively. Some researchers have linked this crisis to the theory of eco-violence (Ugwu and Enna, 2015), where environmental factors and exploitation of scarce resources lead to conflict and violence. However, TCR and other methods of dispute resolution have played active roles in conflict settlement between farmer and pastoralist; but yet there exists a knowledge gap as regards to the effectiveness of these mechanisms in improving the farmer-pastoralist relationship. It is on this basis that this study attempted to determine the effectiveness of TCR mechanisms in improving farmer-pastorialist relation in Nasarawa and Niger States, Nigeria. The study therefore, attempted to find answers to the following research questions?

i. what are the socio-economic characteristics of farmer and pastoralist in the study area?
ii. what are the TCR mechanisms used in improving farmer-pastoralist relations in the study area?
iii. What is the willingness to use TCR and level of TCR usage by the farmer and pastoralist?

iv. What is the effectiveness of the TCR mechanisms being used in improving farmer-pastoralist relations?

v. What are the factors influencing the opinion of farmer and pastoralist on the effectiveness of TCR mechanisms?

vi. What is the role of the institutions involved in conflict resolution and preventive measures put in place to avert disputes between farmer and pastoralist?

vii. what are the problems associated with the traditional conflict resolution mechanisms used in averting farmer and pastoralist conflicts?

1.3 Aim and Objectives of the Study

The study aims to determine the effectiveness of TCR mechanisms in improving farmer-pastoralist relations in the study area, the specific objectives are to:

i. describe the socio-economic characteristics of farmer and pastoralist in the study area;
ii. examine the TCR mechanisms used in improving farmer-pastoralist relations;
iii. examine the factors influencing willingness to use TCR and level of TCR usage by the farmer and pastoralist;
iv. determine the effectiveness of the TCR in improving farmer-pastoralist relations;
v. determine the factors influencing the opinion of farmer and pastoralist on the effectiveness of the TCR mechanisms;
vi. assess the role of the institutions involved in conflict resolution and preventive measures put in place to avert dispute between farmer and pastoralist and
vii. examine the problems associated with the TCR mechanisms used to avert farmer and pastoralist conflicts.

1.4 Hypotheses of the Study

Ho_1:There is no significant relationship between socio-economic characteristics of farmer and pastoralist and the effectiveness of traditional conflict resolution mechanisms used.

Ho_2: There is no significant relationship between preventive measures put in place to avert dispute between farmer and pastoralist and the effectiveness of TCR mechanisms used.

Ho_3: There is no significant relationship between traditional conflict resolution mechanisms being used in improving farmer-pastoralist relationship and the effectiveness of TCR mechanisms used.

1.5 Justification of the Study

The outcome of this study will be of great intellectual and practical value to a generation of stakeholders, academia, scholars and even role players involved in one way or the other in dispute resolution. The finding on socioeconomic characteristics of farmer and pastoralist will assist the researchers to understand the socio-economic and demographic variable of the respondents in the study area, which would serve as a guide in the resolution of disputes. Information on types of traditional conflict resolution mechanism enables the researchers to understand the types and extent of usage of the TCR mechanisms in curbing conflict between farmer and pastoralist in the study area. Information on the effectiveness of traditional conflict resolution mechanisms will be useful for policy formulation by policymakers for replication in other conflict areas. The TCR mechanisms usually used in settling the disputes between the farmer and the pastoralist will serve as reference material for further studies.

Consultants and researchers alike will also gain current data from the study, which is necessary for upgrading training facilities and programmes that are designed to curtail the advent and impacts of disputes in the interest of political stability and development. The

findings from the study on mechanisms of dispute management will give some useful highlights to the government and other organizations involved in disputes resolution on mechanisms of dispute management and how to deal with the disputes in a sustainable way, especially at this moment when conflict between farmer and pastoralist is intense.

1.6 Operational Definition of Terms

1. Banditry, for the purpose of this study, is operationally defined as organized and unlawful acts of violence, robbery, and criminal activities perpetrated by armed groups or individuals, often with the intention of acquiring wealth, exerting control, or causing fear within a specific region or community.

2. Alterative Dispute Resolution (ADR) is operationally defined as a set of processes and techniques designed to resolve conflicts and disputes outside of traditional legal proceedings. These alternative methods may include mediation, arbitration, negotiation, or other collaborative approaches, aiming to facilitate efficient and amicable resolutions without the need for formal litigation.

3. Effectiveness is operationally defined as the degree to which a particular intervention, strategy, or approach achieves its intended goals and produces the desired outcomes. It is measured by the extent to which the stated objectives are met and the positive impact or success of the implemented actions in addressing the identified issues or challenges.

4. Traditional Conflict Resolution Mechanisms are operationally defined as culturally embedded processes and rituals employed within a community or society to address and resolve disputes. These mechanisms encompass indigenous methods such as mediation by community elders, customary rituals, dialogue sessions guided by traditional norms, and other locally recognized practices aimed at restoring harmony and resolving conflicts without resorting to formal legal systems.

5. Farmers are operationally defined as individuals or communities primarily engaged in agricultural activities, including cultivation of crops and livestock farming, for sustenance or commercial purposes. This term encompasses those involved in various aspects of agricultural production and management.

6. Overgrazing of Land is operationally defined as the excessive and sustained grazing pressure exerted by livestock on a specific area of land, surpassing the land's natural capacity to regenerate and support vegetation. This phenomenon is considered a cause of conflict when it leads to resource scarcity, competition among pastoralist communities, and disputes over land use, ultimately contributing to tensions and conflicts.

7. Drunkenness is operationally defined as the state of intoxication resulting from the consumption of alcoholic substances beyond acceptable or legal limits. This condition may contribute to conflicts when it leads to impaired judgment, aggressive behaviour, or interpersonal disputes within communities.

8. Drug Abuse is operationally defined as the misuse or excessive consumption of psychoactive substances, including illegal drugs or the inappropriate use of prescription medications. Drug abuse, in this context, is considered a cause of conflict when it contributes to behavioral changes, social disruptions, or criminal activities within a community.

9. Indiscriminate bush burning is operationally defined as the uncontrolled and purposeless setting of fires in natural or cultivated areas without proper planning or consideration for the potential consequences. In this study, it is identified as a cause of conflict when it results in environmental degradation, loss of livelihoods, or disputes over the responsible party's actions.

10. Informal Settlement refers to the practice of resolving conflicts through negotiations and agreements reached between parties involved, without the formal involvement of legal or authoritative structures. Informal settlement often involves compromises and mutual understanding to restore harmony within a community.

11. Use of Marriage is operationally defined as a traditional conflict resolution mechanism involving the intentional arrangement or union of individuals from conflicting parties through marriage. This practice aims to foster familial connections and strengthen social ties, contributing to the resolution of disputes and the promotion of unity.

12. Interfaith Dialogue is operationally defined as a traditional conflict resolution mechanism that involves the engagement of representatives from different religious communities in open discussions. These dialogues seek to promote understanding, tolerance, and cooperation among diverse religious groups to address and resolve conflicts.

13 Traditional Oath Taking is operationally defined as a ritualistic practice where individuals involved in a conflict swear oaths, often invoking spiritual or traditional entities, to affirm their commitment to a negotiated agreement. This mechanism is believed to bind parties to their promises and deter potential breaches.

14. Ritual Treaties/Blood Covenant are operationally defined as traditional ceremonies or rituals in which parties involved in a conflict engage in symbolic acts, such as exchanging blood, to signify a sacred agreement. These rituals are believed to establish a bond between parties, reinforcing trust and commitment to resolving disputes.\

15. Time Consuming is operationally defined as the characteristic of traditional conflict resolution strategies that require a significant amount of time to reach a resolution. This

factor highlights the prolonged nature of the processes involved in traditional conflict resolution, which may contribute to delays in settling disputes.

16. Lack of Uniform Traditional Conflict Resolution Mechanism is operationally defined as the absence of standardized or consistent approaches across different cultural or regional contexts in traditional conflict resolution. This factor emphasizes the diversity of methods employed, leading to variations in how conflicts are addressed.

17. Cultural Differences are operationally defined as the variations in beliefs, values, and practices among individuals or communities involved in conflict resolution processes. This factor underscores the influence of cultural diversity on the dynamics of traditional conflict resolution, affecting the understanding and interpretation of resolutions.

18. Capital Intensive is operationally defined as the level of financial resources required for the successful implementation of traditional conflict resolution strategies. This factor highlights the financial investment needed to conduct rituals, ceremonies, or other activities integral to the resolution process.

19. Egocentrism is operationally defined as the presence of self-centered or ego-driven attitudes among individuals involved in traditional conflict resolution. This factor points to the challenge of overcoming personal biases or individual interests that may hinder the collaborative and cooperative aspects of conflict resolution.

20. Pastoralist is operationally defined as an individual or community whose primary livelihood is centered around the practice of pastoralism. Pastoralists are characterized by their reliance on herding and raising livestock, such as cattle, sheep, or goats, as a central means of subsistence. This lifestyle often involves a nomadic or semi-nomadic existence, with a focus on moving herds in search of suitable grazing land and water source

CHAPTER TWO

2.0 LITERATURE REVIEW

This chapter delves into the concept definition elucidating on TCR's concept, highlighting its merits,demerits and exploring various types. The chapter seamlessly transits to an exploration of empirical evidence, grounding the study in real-world examples. Theoretical frameworks are introduced to provide a structured understanding, while the conceptual framework establishes the study's broader context.

2.1 Socio-economic Characteristics of Farmer and Pastoralist

i. Sex

Sex is one of the major socio-economic variable influencing farmer and pastoralist' conflict. Nformi *et al.* (2014) stated that men are more likely to be involved in conflict than women, this is because men farmer were most likely to be present in areas affected by farmer and pastoralist conflicts. This may also be linked to a reflection of African tradition where most families are male-headed households except for widowhood, divorced and the unmarried. Olabode and Ajibade (2015) reveals that the majority of the respondents (both crop farmer and cattle herders) were males. Similarly, Nformi *et al.* (2014) found that most of those who practice crop farming engage in the grazing of animals were mostly mature males. More so, Olaleye *et al. (*2010) stated that males are more involved in both farming and pastoral activities in Kaduna State of Nigeria.

ii. Age

Age is another factor that could cause conflict because the stakeholders were mature to claim their rights, since the majority of people involved in crop farming and herding of livestock were male who could be self-centered, hence they could cause conflict at any point in time. Most crop farmer and cattle herders are within their active age, therefore,

they are vibrant, agile and full of vigour. It implies that as age increases, the conflict between the crop farmer and cattle herders decreases (Adisa *et al.,* 2010).

Adebayo and Olaniyi (2008) reported that age is a factor that could cause conflict because the respondents are matured to claim their rights, since the majority involved in crop farming and herding of livestock are male.

iii. Education

Also, education is another factor that could lead to conflict because education enlightens people and they have access to information as regards their existence and treating them as inferior could lead to conflict (Adebayo and Olaniyi, 2008). Education amongst the cattle herders was not considered a priority because they were known for their nomadic lifestyle, which makes them constantly keep migrating from place to place. Also, the low level of education amongst the cattle herders is a product of several factors in society. Many of them live in remote and enclave areas where schools are not available. So also the parents preferred going to the farm with their children to help them believe that if their children go to school they would have nobody to help them while farmer to some extent have access to formal education (Nformi *et al*., 2014).

iv. Household size

Households of both farmer and pastoralist in Nigeria are high with a mean 11 and 14 respectively (Garba *et al.,* 2015). The reason attributed to higher household size could be attributed to inadequate knowledge of family planning among pastoralist and farmer communities and the tradition of these communities, which in most cases consider having many children to be connected to economic advantages for obtaining manpower for agricultural production and livestock keeping (Garba *et al.,* 2015). Another reason is due

to the practice of the extended family system, which is a characteristic of most African communities.

A higher household size among these two communities means high population density in the village, which entails more demand for different resources including land which is the main cause of conflict among farmer and pastoralist (Garba *et al.*, 2015).

Farmer and pastoralist are the main users of village land. They grow crops and rear animals on the land. Over population and people not willing to move to new areas where land is not a problem are mainly the cause of land scarcity. Past conflicts in a mostly rural areas are caused by the absence of land use planning, which entails the demarcation and utilization of every piece of land (Angel, 2013).

iv. Primary occupation

Farming is the major occupation of crop farmer while rearing of animals is the major occupation of cattle herders, therefore anything that will threaten their sources of livelihood will not be taken lightly by both groups and may increase the conflict between the two parties, the implication is that conflict renders victim jobless and lead to poverty. The conflict leads to irreplaceable losses of employment, lives and properties. Some survivors have permanently lost all they laboured for in their lives. As a result, one can safely argue that the aggregate of such instances negatively impacts the overall economy of these communities and by extension, the rest of the country (Garba *et al.*, 2015).

v. Access to extension services

Access to extension is very vital in dispute resolution between farmer and pastoralist. According to Herath (2008), extension agents have been instrumental in promoting peaceful coexistence between farmer and pastoralist. The author stated that extension agents have played active roles through the implementation of several mechanisms

towards smoothening the relationship between farmer and pastoralist. But in the past most of the extension services were targeted at crop farmer neglecting pastoralist

2.2 Concept of Traditional Conflict Resolution (TCR)

Traditional Conflict Resolution (TCR) encourages consensus-based approaches for managing and resolving conflicts. TCR has been used widely in American environmental conflicts since the 1970s. It is seen as a flexible as well as a low-cost substitute to adversarial legal proceedings and adjudication. The main TCR techniques include interest-based negotiation, multi-stakeholder dialogue and negotiated rule making with a strong dependence on the role of facilitators. Considerable attention is also directed in TCR towards capacity building.

The advocates of TCR see it as a means of encouraging creative "win-win" settlements and its emphasis on training and building social capital are portrayed as enlarging human and social capital when promoting social justice. In theory, such procedures should result in environmentally appropriate, socially sound and sustainable agreements. However, it was only recently that such claims started to be evaluated (Solagberu and Oluwasegun, 2013).

Hagmann and Mulugeta (2016) reveals that the critics of TCR question its assumptions, uses and impacts. Much of this criticism centres on issues of power. TCR has power dimensions that have not been adequately analyzed or understood.' Advocates of TCR are seen as accepting too easily, the claims that its interest-based negotiation techniques can effectively level power differences among disputants. However, Sceptics have contended that, masking power differences behind participatory discourse only perpetuates, if not widens inequalities. Some analysts suggest that the effectiveness of

TCR might be helped by political reforms that increase government accountability while also supporting democracy.

Such reforms, however, would probably enhance the performance of all conflicts management processes since each shares difficulty in dealing with power and social exclusion. Some critics view TCR's emphasis on "managing" conflict as disguised people-manipulation, reducing the legitimacy of conflict as a political process. In addition, TCR has been described as undermining or replacing indigenous conflicts management practices. Another criticism is that TCR advocates often focus only on the capacity building while failing to follow up on what people do with this knowledge in the absence of additional resources for conflicts management activities. Finally, it is not clear that TCR-based agreements are more equitable or sustainable than those reached by other means (Solagberu and Oluwasegun, 2013).

2.2.1 Merits of TCR

Despite the pitfalls, the merits and demerits of TCR according to Hagmann and Mulugeta (2016) are as follows: Muigua (2014) stressed that TCR is superior to lawsuits and litigation for the following reasons:

i. It is generally faster and less expensive. The disputants rather than being run by lawyers, judges and the state base it on representation that is more direct. The disputants are involved in outlining the processes to be used and also define the substance of the agreement. This enhances people's satisfaction with the outcome as well as their compliance with the agreement.

ii. It is based on an integrative approach. It is more cooperative and less competitive than court-based methods like litigation that are adversarial. It tends to generate less escalation and ill will between parties. Participating in an TCR process often ultimately improves,

rather than worsen, the relationship between the disputing parties. This is a key advantage where the parties must continue to interact after the settlement is reached in cases such as child custody or labour management

iii. People have a chance to their story as they see it. The parties can often select the arbitrator or mediator that will hear their case, typically selecting someone with expertise in the substantive field involved in the dispute.

iv. It is more flexible and responsive to the individual needs of the people involved

v. TCR is speedy. Trials are lengthy, and in many states and counties, it could take years to have a case heard by a judge or jury. Appeals can then last months or years after that. In a matter of hours, an arbitrator often can hear a case that otherwise may take a week in court to try with witnesses

vi. The parties involved in the process create a greater commitment to the result so that compliance is more likely.

vii. TCR is more likely to preserve goodwill or at least not escalate the conflict, which is especially important in situations where there is a continuing relationship

viii. A jury is not involved; juries are unpredictable and often damage awards are based solely on whether they like the parties or are upset at one party because of some piece of evidence such as a photo that inflames the passion of the jury.

ix. Less stress: TCR is often less stressful than expensive and lengthy litigation. Most people have reported a high degree of satisfaction with TCR.

2.2.2 Demerits of TCR

i. A major drawback of TCR is that it encourages compromise. It can be a good way to settle some disputes, but it is not good for others. In serious conflicts of values and cases of intolerable moral differences, compromise is simply not an option (Muigua, 2014).

ii. TCR settlements are usually private and not in the public record or exposed to public scrutiny. This could be a cause for concern as it could easily be manipulated. For instance, using TCR to settle out of court cases involving a defective product that harms consumers, without a court ruling that forces the company to fix all problems associated with the bad product, could be problematic.

iii. There is no guaranteed resolution except for arbitration, traditional conflict resolution processes do not always lead to a resolution. That means is possible to invest time and money in trying to resolve the dispute and still end having to proceed with litigation and trial before a judge or jury.

iv. Limits or Arbitration Awards. Arbitration can only resolve disputes that involve money. They cannot issue orders compelling one party to do something or refrain from doing something.

v. Discovery limitation: Some of the procedural safeguards designed to protect parties in court may not be present in TCR, such as the liberal discovery rules.

vi. Fee for the Neutral: The neutral mediator or arbitrator charges a fee for his or her services.

vii. May have no choice: Often the contract in dispute contains a broadly worded mandatory arbitration clause.

2.2.3 Types of traditional conflict resolution mechanisms

(i) Arbitration:

This is a process where parties to the dispute agree to submit their dispute to a neutral party, who will decide their case. Arbitration is the closest form to adjudication. The parties agree on a third neutral party or a panel, to whom they will present their case.The

arbitrator has the power of decision in the dispute. It is a private and less formal process than litigation in court. There are several varieties of arbitration; it may be binding or non-binding, and the arbitrator's decision may be with or without a written explanation or opinion (Gadzama, 2015).

The arbitrator meets with the parties to a dispute, hears presentations from each side, and renders a decision. The arbitrator may be professional, familiar and knowledgeable in the issues involved (an accountant, an engineer,and so on). The arbitrator will hear the facts and arguments of each side and render a decision in the light of the relevant laws and procedures (Gadzama, 2015). The parties have the freedom to choose the arbitrator who will deal with their dispute. This process is very often faster and less formal than the judicial process.

The results may be binding or non-binding (depending on a prior decision and local laws) and, when binding, often do not allow the appeal to a higher court. Some states in the United States have special programs of "Court Annexed Arbitration," but this process is often not binding and the parties can ask for a trial. Arbitration hearings can be formal but the rules of evidence used in courts do not usually apply (Pankhurst and Assefa, 2013).

(ii) Conciliation:

Conciliation is a process in which a third party brings together all sides of the conflict or discussion among themselves. Conciliators do not usually take an active role in resolving the dispute, but may help with agenda setting, record keeping, and other administrative concerns. A conciliator may act as a go-between when parties do not meet directly and actas a moderator when joint meetings are held (Pankhurst and Assefa, 2013).

(iii) Facilitation:

This involves a third party offering his/her "good offices" to bring disputing parties together and encourage them to continue their negotiation. A third party will assist the parties to continue the negotiation, reach a consensus and move towards an agreement. The third party should be an "honest broker" who offers "good offices" to bring the parties together. The third party does not get involved in the issues of the dispute, only in the process (Omoweh, 2017).

(iv) Negotiation:

Negotiation is a basic means of getting what you want from others. It is back and forth communication designed to reach an agreement when you and the other side have some interests that are shared and others that are opposed (Omoweh, 2017). Negotiation can also be defined as communication for persuasion. There are many more ways of defining negotiation, but the last definition is a very broad one and is wide in scope: two or more parties communicate to influence the other's decision. In negotiation, the parties agree to discuss and try to reach an agreement among themselves, or through their representatives. The parties have control of the process and the outcome.

They try to find solutions that will satisfy the most interests of the parties (Moore, 2015). The negotiation process can also be a process of joint problem solving on the disputed or potentially disputed issue.

(v) Mediation:

Mahmud (2015) defined mediation as a process in which an impartial third party encourages and facilitates informally the negotiation between the parties to the dispute. The mediator does not have the power to impose a solution on the parties. The mediator has control over the process, but the decision and outcome are in control of the parties.

(vi) Mixed Processes:

In mediation-arbitration (med-arb), the parties agree in advance to start the mediation process, and if the dispute is not resolved through mediation they will continue with the process of arbitration (usually abiding arbitration). The parties' decide before the mediation process begins who the arbitrator will be (sometimes it is the mediator, and sometimes it is a neutral party) (Mahmud, 2015).

(vii) Early Neutral Evaluation: (ENE)

This process involves an assessment of the case by an experienced lawyer or a retired judge in the area of the dispute (Uwazie, 2011). Objective analysis and assessment of the strengths and weaknesses of the case are given to the parties. The neutral evaluator may tell the parties her/his prediction on the outcome of their case if they decide to go to trial. This process is a combination of mediation and non-binding arbitration. The neutral experienced evaluator will help the parties to identify points of agreement, and hopefully, encourage them to settle their dispute. In some cases, a neutral expert is asked jointly by the parties to decide on technical matters or issues (Uwazie, 2011).

(vii) Consensus building:

Consensus building entails joint problem solving which is concerned with solving problems in ways acceptable to all parties involved. This technique has a sequence of steps that must be followed. These steps, according to Bingham, (2013), include:

a. Developing agreement on how to organize the problem solving effort, individual responsibilities of the participants, the facilitators ground rules and the working agenda.
b. Developing a mutual criteria for the evaluation of options.

c. Brainstorming and development of options including any necessary feasibility analysis.
d. Joint selection and synthesis among the options through application of the evaluation criteria.
e. Problem analysis and definition of concepts.
f. Documentations and final review of the agreement.
g. Consensus building serves dual purposes. First, it spreads the news about the satisfactory conclusion of the conflict resolution process. Secondly, it places an additional obligation on the parties to observe the agreement, which has now become public knowledge.

(ix) Stakeholders:

The stakeholder theory posits that every legitimate person or group involved in the activities of conflict resolution is a stakeholder for the sake of the benefits, and that the priority interest of every legitimate stakeholder is not self-evident (Furneaux, 2016). In an attempt to identify who the stakeholders should be, Dougherty (2012) and Ray (2019) classify them into four groups; enabling publics, functional publics, normative publics and diffused publics. Stephens *et al.* (2015) explain that enabling publics provide leadership for the organization and also control the resources that allow it to exist and among them are regulatory bodies. The functional publics are those who exchange inputs for output such as the employees and unions who provided labour or make use of products and services. Normative publics are those with shared values or similar problems such as trade unions and professional societies. The last group is referred to as the diffused publics, which emerge when external consequences result from institutions activities; these include residents and the community, among others.

2.3 Overview of Farmer-Pastoralist Disputes in Nigeria

Oladele and Oladele (2015) defined farmer-herdsmen dispute as a competition between two agricultural land users, which are farmer and herdsmen, that often turns into serious overt and covert hostilities and social frictions. This definition views farmer-herdsmen dispute as a struggle over scarce resources such as land and water. It underlines the importance of resources in farmer-herdsmen disputes.

Audu (2013), in his submission, posited that farmer-herdsmen disputes are a struggle between crop farming and pastoral groups for land or other resources that are critical for the sustainability and/or development of pastoral and agricultural production systems, such as watering areas, wetlands and fertile lands which can assume violent or non-violent dimensions. This view outlines the importance of land and water resources to pastoral and agricultural production, as well as emphasizing the influence of resource scarcity in farmer - herdsmen disputes.

Other scholars who support this view include Udoh and Chilaka (2012) who believe that resource scarcity is the primary cause of farmer-herdsmen disputes. King (2013), on the other hand, defines farmer-herdsmen disputes as disputes involving farming communities and pastoralist occasioned by the struggle for land resources and socio-cultural dominance in a given environment. The same author postulates that management and resolution of farmer-herdsmen disputes could be enhanced through an in-depth understanding of the socio-cultural and behavioural patterns of herdsmen and farmer. This definition highlights the importance of the socio-cultural perspective as vital to understanding farmer-herdsmen disputes. King's (2013) agrees with the view of scholars such as Moritz (2012) who believed that farmer-herdsmen disputes are influenced by socio-cultural factors such as religion, livelihood practices and other cultural practices.

Disputes between herders and farmer have received clarification from different scholars. Bello (2013) maintained that the competition between these two agricultural land user groups, however, has often turned into serious hostilities and social friction. Writing on disputes between herders–farmer, Davis (2015) distinguished between disputes of interest, competition, and violent disputes. Disputes of interest refer to the fundamental relationship between actors who permanently or temporarily co-habit an area, have different objectives and interests, and use similar local resources such as land, vegetation and water. Disputes of interest over the ownership and use of resources may therefore exist between any resource users (farmer and farmer, herders and herders, herders and farmer), and may be intra-household, inter-personal, intra-group, inter-group or in some cases between local users and outside interests such as corporations and the state.

Davis (2015) presents an image of competitive demand for pastoral resources in contemporary semi-arid Africa as originating from three classes of users: cultivators, other pastoral groups, and new livestock owners. According to the researcher, there has been an increase in competition between herders and farmer owing to factors such as the encroachment of agriculture or pastoralist' lack of influence on the decision-making apparatus of the post-colonial state. However, the degree of competition depends on seasonal and regional factors. For example, there is more competition in the cultivation season and less during the dry season, when it is to the advantage of both parties that livestock grazes on post-harvest stubble so that fields are matured. Competition among herders for access to the stubble may, of course, be intense, and there is also competition among herders and farmer and between herding groups for permanent water resources. Disputes of interest and the resulting competition for resources can lead to a variety of either non-violent or violent outcomes (Gefu, 2016).

While disputes of interest and competition must exist for violent disputes to develop, the latter should be treated as only one of an array of possible outcomes. Some non-violent outcomes are associated with indigenous institutions for local level natural resource management, in particular the management of common property resources. Such institutions are based on the exclusion of some users, the definition of rights of access to resources for different types of users, and the development of rules over natural resource use in a defined area. Gefu (2016) gave examples of their development and functioning. Non violent outcomes also result from avoidance mechanisms. These would include herder groups migrating or retreating from areas of high competition with farmer; the diversification of livelihoods to cope with increasing pressure (e.g. sedentarisation of herders, adoption of mixed farming); adaptation of customary institutions to manage local natural resource use, or alliances between local herders and farmer to counter resource use and extraction by actors external to the local area. Indeed, actors with disputing interests over natural resources can work their way through multiple levels of compromise and negotiation before a violent dispute develops.

Moreover**,** the introduction of the Cattle Tax (Jangali) by some native authorities in Northern Nigeria in 1923 triggered widespread migration of Fulani herdsmen towards the middle belt regions where such taxes were not in force (Ali, 2013). In the process, herdsmen clashed with farmer in communities along their migration routes, as their livestock strayed into farms and destroyed crops. These disputes between farmer and herdsmen were witnessed in several communities including Mambila, Benue / Plateau, Kaduna and Jalingo among others, up to the early post-independence era (Abbass, 2012). This necessitated measures to forestall the disputes to enhance the security of lives and properties.

2.4 Causes of Farmer-Pastoralist Disputes in Nigeria

Scholars and analysts from a variety of analytical prisms have interrogated the herder-farmer disputes in Nigeria. Although, there appears to be no consensus among groups as to the causes of the disputes, yet a good number of scholars have attributed the disputes to the problems associated with the poor implementation of the grazing reserve policy in Nigeria. Tukur (2016) who opined that there are presently 417 grazing reserves that have failed in terms of the objectives for which they were established supports this view. Iro (2014) contends that most grazing reserves are situated on impoverished land, with little agronomic potential. An inspection of the sites and edaphic properties shows that the grazing reserves have inferior fodder, consisting of low-protein Andropogon, Brachiarria, and Lutetia.

The evolution of grazing reserves in Nigeria shows a history of problems in the grazing land development. The lack of legal validation or legislation on stock routes, for example, makes blocking the routes a non-punishable offence. The absence of enforceable penalties discourages herders from suing farmer who extend farms into the cattle thoroughfares. Also, many reserves are in relatively remote areas, isolated from other economic opportunities and established services such as schools and clinics.

Pastoralist communities have been reluctant to abandon their migrations and the related traditional networks and linkages. In addition, there have been difficulties removing agriculturalists already living within some reserves, causing pastoralist to question whether they will have access to some of the best land in the reserve if they settle there (Tukur, 2016). Abbass (2012) contends that the major source of tensions between pastoralist and farmer is economic, with land-related issues accounting for the majority of the disputes. This can then be situated within the broader context of the political economy of land struggle, traceable to burgeoning demography in which there is fierce

competition for fixed space to meet the demands of the growing population (Olabode and Ajibade 2015).

De Haan (2012) opined that while farmer cite the destruction of crops and other property by the pastoralist cattle as the main direct cause of disputes, burning of rangelands and fadama and blockage of stock routes and water points by crop encroachment are major direct reasons cited by the pastoralist. Similarly, inadequate social amenities, like pipe-borne water, was also observed to be the cause of nomads/farmer disputes. Adekunle and Adisa (2010) emphasized information gap concerning stock routes was a major factor contributing to farmer-herdsmen disputes. Depleting soil fertility, inadequate supply of fertilizer, and the need to increase the scale of operation by both groups were also found to indirectly precipitate dispute, as farmer confirmed that they sought virgin lands to farm. By so doing they might moved into stock routes and grazing areas inadvertently.

To Blench (2010), farmer-herder disputes can be attributed to competition over natural resources and access to grazing and water resources and further suggested that, because herders now farm and farmer have herds, competition for the same natural resources has increased. The semi-arid zone has always been more populous than the Middle Belt, and the initial expansion of cultivation was in this zone. As the pressure on arable land in the semi-arid zone increased, soil fertility decreased and farmer were obliged to move to regions of uncleared bush or to increase their holding size. As a consequence, more and more farmer began to settle further and further south in the lightly settled sub-humid zone (Blench, 2015).

Nyong (2015) opined that the expansion of population could be seen as a cause of the herder-farmer disputes in Nigeria. With the expansion of population, the rate of food production must naturally increase and to meet that increasing demand, it is natural for

the farmer to encroach into marginal lands that had been the traditional pasture routes for the cattle. This has therefore heightened the struggle between livestock and agricultural production, which, more often than not, results in the escalation of disputes. Hence, as the population grows, more land is being cultivated and less is available for posture; forcing pastoralist to migrate and tramp on crops cultivated by farmer.

The expansion of both Fadama farming and horticulture also had negative consequences for pastoralist. The Southward dry season movement characteristic of Nigerian pastoralism depended on unimpeded access to river banks, where grass could be found when the surrounding land was largely devoid of vegetation. Agriculture has expanded rapidly and there has been no process of negotiation with herders over migration routes, drinking and grazing access; indeed, farmer preferentially farm where cattle have grazed, because the land is particularly fertile. As a consequence, there have been increasing numbers of conflicts between cultivators and herders in these areas. Okello *et al.* (2014) have attributed the causes of these disputes to increased migration from the North to the South. For example, over the years, the Lake Chad Basin which is considered as one of Africa's largest, covering an average area of 22,000 square kilometres, today represents the 'diminished remains' and a skeletal shadow of itself. This has pushed many migrants to cross the border from Chad, Niger and Cameroon into northern Nigeria, settling in cities such as Plateau, Benue Niger, Nasarawa and Kogi.

Yahaya (2011) also view religion as a cause of dispute between herders and farmer in Nigeria, when pastoralist were confined to the semi-arid zones; they shared common religious practices with the farming communities among which they moved principally the Hausa and Kanuri. The spread of Islamic hegemony was an important factor in encouraging pastoral settlement. As the Jihad pushed towards the ocean, polities such as Borgu, Shaki, Raba (among the Nupe) and Ilorin were established or converted, thereby

providing a non-hostile environment for the herders. The gradual adoption of the Shari'a legal code in many Northern States after 1999 has exacerbated the situation still further.

Ibe *et al*. (2017) reported that the key underlying causes of farmer-herdsmen dispute in Nigeria are:

a. Changing resource access rights, whereby traditional access rights to communal grazing and water resources are being obstructed by the individual tenure ship of arable farmer. This is particularly severe on the traditional trek routes, which become favourite cropping sites because of their better soil fertility resulting from the concentration of animal manure from the trekking herds in these areas. Within the Fadama areas, this is exacerbated by the fragmented nature of the crop plots, which makes prevention of animals straying into the crop plots difficult;

b. Inadequacy of grazing resources, as increasing crop cultivation (and increasing commercialization of crop residues) and poor management of the existing grazing reserves have resulted in a significant reduction in available livestock feed resources particularly in the Northern States. Moreover, the high-value crops introduced by the National Fadama Development Programme (NFDP) (tomatoes and onions) produce almost no crop residues for livestock feeding.

c. Decline in internal discipline and social cohesion, as adherence to the traditional rules regarding grazing periods, and the authority of the traditional rulers are broken down.

The land tenure system is also regarded as a cause of the disputes. In most societies in Nigeria, farmer are regarded as those that own the land, and therefore determine how it is used; while the nomadic cattle herders are regarded as the landless group, who do not own land. Government policies can also be seen as a cause of nomads/farmer disputes. For example, Hoffman *et al.* (2008) explained that the disputes do occur as the size of the

existing grazing reserves shrink due to encroachment and government approved expansion of farmlands. This leads to the conversion of water points and stock routes into farmlands.

Negligence on the part of both groups was also seen as a cause of the disputes. For instance, Yahaya (2014) observed that the cattle herders often leave a large number of cattle in the care of children who do not know the consequences of allowing the cattle to destroy farmers crops. The farmer also do leave their harvested crops on their farm unprotected, while others who had poor yield intentionally leave their crops on the farm un-harvested for cattle to graze so that they could claim heavy compensation. As the state cannot regulate the mutual coexistence of its citizens in the harmonious sharing of the competed resources, the parties may have to resolve to takimg the laws into their hands. The failure of the state, for example, to resolve the settler/ indigene identity and the inherent struggles over resources can be adduced to have brought dangerous dimensions of economic and political elements in the Fulani cattle herders and farmer (Saidu, 2013). Muhammad (2008) maintained that cattle rustling contributes in no small measure to the herders –farmer disputes in Nigeria All these have exacerbated chronic insecurity that has encouraged the disputing parties to take responsibility for their security and to defend themselves, which is a threat to the sustainability of the federation.

Other perceived causes of farmer-herdsmen disputes include inequitable access to land, diminishing land resources, antagonistic values among user groups, policy contradictions, and non-recognition of rights of indigenous people (Adisa, 2015). Tenuche and Ifetimehi (2016) noted that in most parts of the Northern States, violent confrontations between farmer and pastoralist have stemmed from encroachment of farmlands, farming on grazing routes, and struggle over grazing space and cattle rustling. According to him, people tend to move from Northern and Southern Nigeria into the Middle Belt region

where the population is relatively low and where there is the availability of vast arable land. The consequent rapid growth in population has caused the farmer to struggle for land, which is becoming scarce by the day. With this development, grazing areas that were hitherto abundant are being taken over by scattered small farms, making grazing in these areas difficult.

2.5 Effects of Farmer-Pastoralist Disputes on Agricultural Production in Nigeria

The effects of herder - farmer disputes in Nigeria are far-reaching. According to Abba and Usman (2008), food insecurity is one of the effects, in all the States that have experienced these disputes, the majority of those displaced are women and youths who make up a substantial part of the farming community. They have thus become Internally Displaced Persons (IDPs) with a far-reaching impact on farming activities.

The instability caused by the incessant disputes will likely lead to food shortages for the communities that depend on subsistence farming. Their economic well-being is thus threatened because of these disputea as their cash crops production has reduced; their subsistence level also has dropped. Disputes resulting from the use of Fadama land may also jeopardize huge financial investment by the government, Africa Development Bank and World Bank in the Fadama projects nationwide. Abass (2012) maintained that the socio-economic consequences of herders-farmer' disputes are usually eminent.

The disputes between the crop farmer and nomadic farmer or grazers also create some mistrust, tension and open confrontations between the opposing groups. Reduction in income and output of crop farmers also occur as a result of indiscriminate bush burning and destruction of crops by cattle which lead to either partial or total loss of crops by the farmer. The effect on crop yield, therefore, affects the farmer's income. This tends to negatively affect farmers' savings, credit repayment ability, as well the food security and economic welfare of urban dwellers that depend on these farmer for food supply (Okoli

et al., 2014). Okoli and Atelhe (2014) observed that the effects of herders –farmer's disputes for Nigeria's national security cannot be overemphasized.

The humanitarian, economic, and social consequences of disputes have been manifold and telling. The attendant security and livelihood crises threaten the collective subsistence and survival of the affected populations. There are also other externalities, such as diminution of agricultural productivity and decline in household capital, all of which do not augur well for societal and national sustainability. Herders- farmer's disputes according to Ibrahim (2014), also disrupt and threaten the sustainability of pastoral production and agriculture in West Africa (Moritz, 2010). These disputes reinforce circles of extreme poverty and hunger, and destroy social cohesion, food security and affect mostly the most marginalized groups that include women and children. This affects the education of children leading to obstacles in their development and mass displacement. Consequently, this debilitates against the once mutually existing farmer-pastoralist relationships. This awful situation becomes worst, especially when either the farmer or the pastoralist is categorised into a group on the basis of religion, tribe or region. Okoli and Atelhe (2014) further identified three different effects of the herders-farmer dispute in a deeply divided society:

Firstly, cohesion and identity in a contemporary dispute tend to form within increasingly narrower lines than those that encompass national citizenship. In a disputing society, people seek security by identifying with something close to their experience and over which they have control. In today's settings, that unit of identity may be clan, ethnicity, religion, geographic or regional affiliation, or a mixture of these.

Secondly, one of the complexities found in many disputing societies is the multiplicity of groups and collectivities vying for recognition and power, often in the form of armed

movements (Okoli *et al.,* 2014). Thirdly, disputes create a long-term nature of the disputing groups' animosity, perception of enmity, and deep-rooted fear. This is coupled with the immediacy of having the enemy living virtually next door as in many areas of Bosnia, Somalia, Azerbaijan, Rwanda and Colombia.

Other effects of farmer-herder disputes are the destruction of property and environment, loss of lives, displacement of the citizens and migrants in the affected areas. The more visible consequence has been violent clashes in the villages, burnings of churches and mosques and large-scale migration of southern traders back to their home areas or places with a more supportive administration. However, in rural areas, the effect has been to draw natural resource disputes into the politico-religious arena (Yahaya 2011). Yahaya (2014) further noted that the prevalence of the dispute situation has led to the proliferation of small arms. Such arms have often been used to perpetuate violence, armed robbery and other criminality.

Lederach (1997) further identified three different effects of herders-farmer dispute in a deeply divided society: Firstly, cohesion and identity in a contemporary dispute tend to form within increasingly narrower lines than those that encompass national citizenship. In a disputing society, people seek security by identifying with something close to their experience and over which they have control. In today's settings, that unit of identity may be clan, ethnicity, religion, geographic or regional affiliation, or a mixture of these. Secondly, one of the complexities found in many disputing societies is the multiplicity of groups and collectivities vying for recognition and power, often in the form of armed movements.

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living virtually next door as in many areas of Bosnia, Somalia, Azerbaijan, Rwanda and Colombia (Okoli *et al.*, 2014).

Another effect herders-farmer dispute can cause among disputing communities is a possibility of unnecessary competition such as religious competition, power and so on. Among other effects are the destruction of property and environment, loss of lives, displacement of the citizens and migrants in the affected areas. Herders-farmer' disputes have had damaging security implications for Nigeria such as giving the signal to the international community that Nigeria is unsafe for even ordinary visit Statistics released by Global Peace Index, (GPI, 2012) have shown that between 2011 and 2012, there is a significant decline in peace as Nigeria dropped four places to 146th out of 158 countries in global peace ranking.

The widespread insecurity in the North has caused a decline in the development of the country with implications for human, economic, political, security and psychological dimensions. There is a symbiotic relationship between development and security. Expenditures on security are essential components of the development process. The use of resources to improve a country's security system could be more beneficial in others areas. Insecurity is a drain on national resources at the expense of people's well-being. The adverse effects of insecurity on the economic growth and development of a nation are quite enormous (Okoli *et al.*, 2014). Most often when clashes result in loss of human lives and property, the government responds by providing relief materials for the victims of terrorism. The huge amount of money that is released in such circumstances is a drain on the public treasury and the nation's economy. For instance, in the 2012 budget, the federal government allocated 21.91 (US$5.58) billion to security agencies (Ladan, 2015)

2.6 Socioeconomic Effects of Traditional Conflict Resolution Mechanisms

Gauging success is important in any dispute resolution effort. Observation made on the persistence of disputes among farmer and pastoralist in Nigeria entails some cordial relationships. In the years back, peace and order have been observed, farmer and pastoralist live without dispute (Iro, 2015). The understanding has happened to know the dos and the don'ts; improved relationships have led to more participation in economic and developmental activities. The manifested disputes have been resolved. Perceptions that the government was in favour of the farmer and peasants have now gone (Norman, 2013).

Some of the problems may cause discontentment and resolve seem not fair to all parties involved in the dispute. It is a disequilibrium of power at the local level; for example,in meetings that include some pastoralist and farmer, it is likely to find everyone in the room knows that those calling the meeting and setting the rules represent the farmer. Pastoralist are uniquely vulnerable compared with farmer; their cattle can be confiscated and can be seized and only released on payment of a fine which they can pay by selling their stock. Pastoralist organizations look better on paper than in reality, partly because there can be a financial interest for the mediator in resolving, for example, crop damage disputes.

Also, the behaviour of government is reactive; where the level of complaints are relatively low they hold meetings and committees sit and produce sonorous resolutions on which no action is taken. Where the situation is more serious, they send in the military, set up roadblocks for a few days and hope the problem goes away. The heightening pitch of dispute, especially in the Langtang area, strongly suggests that this reactive approach has no long-term effect except to increase public distrust of soldiers (Mallam, 2012). Mediation has been used to manage most of the conflict cases in the respective

communities in Benue State and was found to be effective with a high degree of success in dispute resolution between farmer and pastoralist in Benue State (Anthony, 2013).

Also, traditional courts were found to be effective ranging from the traditional methods of the clan heads within the conflict zones to the state customary court. Under these traditional courts of resolving conflict between the farmer and the pastoralist, it is the responsibility of a clan head with his district heads to summon both the farmer and the pastoralist to the palace for cross-examination.

The leaders of the Fulani group are also invited to be part of the traditional courts during the case. Both parties in the conflict are expected to make their presentation one after the other. After cross-examining the issues at stake, a decision would be made allowing for cooperation among the warring parties. In essence, the case is always a win-win outcome that is African.

It is very important to note here that, before any conflict could be resolved in any community, truth must first be established. It is after this that the judgment could be made. In essence, judgment is principally based on truth and nothing else. However, it may be very difficult to get the truth in some cases, but no matter how difficult, an effort must be made to get it established. In establishing the truth, Benue people believed so much in cross-examination as it is the case in every African society, this method was found effective by the majority of farmer and pastoralist in Benue State (Anthony, 2013).

More so**,** informal discussions have proven vital in settling the conflict between farmer and pastoralist in Nigeria. This entails that individuals within their social context starts discussing an emerging dispute. According to the circumstances, the context can be condensed family or an extended family, immediate neighbours or a distant neighbourhood or even a combination of family and neighbourhood.

It could also be a smaller or larger organisation like a school, an association or a religious group. Since all the people involved are human, they would always have to contend with the temptation to degrade the discussion to ill-disclosed gossip. However, if the social context is indeed taken seriously, this danger might be reduced. Instead of steering the discussion towards the site or apportioning blame, it might be directed towards a solution (Anthony, 2013).

2.7 Perception of Farmer and Pastoralist on Conflicts

Farmer refer to people involved in the cultivation of land for the population of various types of crops. Normally, farmer are differentiated from peasants by the number of acreages. Peasants are considered to cultivate farms for subsistence for enabling them to attain their daily meals but not for trading. Farming means more ability to produce a surplus, hence farmer have large farms compared to peasants. Generally, farmer produce more than peasants do (Norman, 2013). However, disputes involve both farmer and peasants against pastoralist. On the other hand, pastoralism refers to a social and economic system based on the raising and herding of livestock. In Nigeria, ethnic groups that are well known for the raising of huge numbers of livestock are the Fulani (Norman, 2013).

Perception is our sensory experience of the world around us and involves both the recognition of environmental stimuli and actions in response to these stimuli. Through the perceptual process, we gain information about properties and elements of the environment that are critical to our survival (Fournier and Gallimore, 2013).Perception not only create our experience of the world around us; it allows us to act within our environment (Kendra, 2012).

According to Adisa (2015), people respond to the perceived threat, rather than the true threat, facing them. Thus, while perception doesn't become a reality, people's behaviours, feelings and ongoing responses become modified by that evolving sense of the threat they confront. If we can work to understand the true threat (issues) and develop mechanisms (solutions) that manage it (agreement), we are acting constructively to manage the dispute. Participants in disputes tend to respond based on their perceptions of the situation rather than an objective review of it. As such, people filter their perceptions (and reactions) through their values, culture, beliefs, information, experience, gender, and other variable.

Dispute responses are both filled with ideas and feelings that can be very strong and powerful guides to our sense of possible solutions. Farmer and pastoralist dispute has attracted considerable empirical and theoretical analyses. However, there seems to be little or inadequate research literature on the dispute actors' perceptions and coping mechanisms in mutual disputes. Perception of disasters and stressful farm-related situations among farmer and pastoralist has not received adequate analytical discussion in literature, even though farming is among the most stressful occupations (Daniel, 2014).

Perception of a dispute situation by actors is very crucial to its resolution or management. Daniel (2014) described the role of what was referred to as 'meta dispute'-ongoing disagreement as to what the dispute itself is about. She opined that until there is substantial agreement about the cause of the dispute, reaching an agreement on how the divided society reconciles may be almost unattainable. This lack of agreement, according to a study of farmer' and pastoralist' respective perceptions of a mutual dispute concerning their characteristics would be desirable for meaningful dispute management/resolution. The importance of investigating 'stakeholders' perception of agriculture and livestock-related problems have also been underscored (Mwajaide *et al.*, 2015).

Mwajaide *et al.* (2015) added that dispute between farmer and pastoralist goes back to the earliest written records and is mythically symbolized in many cultures. The Chinese emperors built the Great Wall to keep out the raiding of Asian nomads. The association of highly mobile pastoralist with raiding and warfare has been crucial in establishing negative stereotypes throughout history. In West Africa, farmer formerly associated pastoral people with large scale military conquests. But with the coming of colonial regimes and the collapse of indigenous states, the dispute between farmer and pastoralist took on a different colouring, becoming more associated with competition for natural resources. According to De Haan (2012), 'destruction of crops by cattle and other property (irrigation equipment and infrastructure) by pastoralist are the main direct causes of disputes cited by farmer. Damage to crops was the first reported cause of dispute between farmer and herders. Crop damage is not limited to growing crops on the field but also unauthorized livestock grazing of crop residues after harvest (Adisa, 2015).

2.8 Preventive Measures for Averting Dispute between Farmer and Pastoralist in Nigeria

2.8.1 The Nigerian grazing reserve policy framework

The policy framework is an essential consideration in curbing farmer-herdsmen conflict for the nation's overall development. Policy framework refers to the plan of action guiding the use of resources for agricultural activities. Some policies enacted in Nigeria are designed to facilitate equitable access to resources by farmer and herdsmen. However, these policies have often failed to achieve the desired results. For example, the Land Use Act 1978 vested land ownership and administration on State and Local governments, for equitable utilization and distribution of land resources for national development (Oyewole, 2011).

However, land tenure in most rural areas has remained under the control of communities and families. This frustrates the Government's efforts to allocate land for grazing reserves in many parts of the country. The land resource needs of herdsmen are, thus, not adequately addressed, providing a catalyst for farmer-herdsmen conflict thereby undermining the nation's security. In 2001, the Federal Government adopted a National Agriculture Policy which developed a framework for the improvement of livestock management.

The Policy recommended a minimum of 10 per cent of the country's landmass to be legally acquired and constituted into grazing lands and grazing reserves for lease allocation to livestock grazers (Ahmed, 2018). Each state was required to set aside 10 per cent of its land area for the establishment of grazing areas.

To that effect, only three (3) States of Kebbi, Zamfara and the Federal Capital Territory (FCT) have set aside the minimum 10 per cent land area for grazing land development. Significantly also, only Ogun State in the South has set aside land for grazing area. The reluctance by States to implement the policy has hindered efforts to manage resource sharing between farmer and herdsmen, which exacerbates farmer-herdsmen conflicts with grave consequences.The failure to implement policies on land resource sharing has been attributed to the tendency of the government to exclude stakeholders in the formulation of these policies. This has hindered cooperation by some stakeholders and created gaps in policy implementation. Thus, the problem of farmer-herdsmen conflict remains a recurrent dismal, with attendant negative effects on our security.

Secondly, the development of grazing reserves is an area of concern in the farmer-herdsmen conflict in Nigeria. A grazing reserve is a piece of land that government acquires and develops for pastoralist to graze their livestock. Grazing reserves enable the

government to protect pastures for herds, which helps to prevent conflicts between farmer and herdsmen. Thus, as of 1992, the Federal Government had identified and earmarked over 300 areas around the country for the establishment of grazing reserves covering about 28 million hectares (Ahmed, 2018). The issue indicates that only 45 grazing reserves covering about 600,000 hectares had been gazetted. This represents 15 per cent of the proposed grazing reserves around the country. Equally, the inability of the government to implement the plan for grazing reserves development has hindered efforts to curb farmer-herdsmen conflict in the country.

Furthermore, the poor implementation has led to the abandonment of established grazing reserves. For instance, as of 1998, only 350 of the projected 2000 Fulani families earmarked for Phase one of the schemes were using the reserves. However, a gradual abandonment of the reserves was witnessed around 2000 and by 2014, less than 50 pastoral families were using the reserves (Norman, 2013). The decline in the usage of the reserves is attributable to declining pastures due to desertification, which is exacerbated by the absence of necessary facilities required for the sustenance of livestock in the reserves. This has induced herdsmen to move out of the reserves for grazing resources, contributing to the persistence of farmer-herdsmen conflict, which has threatened the nation's security (Norman, 2013).

2.8.2 Ranching and cattle colonies as policy options in Nigeria

A ranch is an area of land, including various structures, given primarily to the practice of ranching, the practise of raising grazing livestock such as cattle or sheep for meat or wool. People who own or operate a ranch are called ranchers, cattlemen, or stock growers (Sayre *et al.,* 2012). Barbieri *et al.* (2008) said that it is also a method used to raise common livestock such as cattle, sheep and goats. Ranches generally consist of large areas but may be of nearly any size. In the western United States, many ranches are a combination of

privately owned land supplemented by grazing leases on land under the control of the Federal Bureau of Land Management.

If the ranch includes arable or irrigated land, the ranch may also engage in a limited amount of farming, raising crops for feeding the animals, such as hay and feed grains. Ranches that cater exclusively to tourists are called guest ranches or, colloquially, “dude ranches.” Most working ranches do not cater to guests, though they may allow private hunters or outfitters on their property to hunt native wildlife. However, in recent years, a few struggling smaller operations have added some dude ranch features, such as horseback rides, cattle drives or guided hunting, in an attempt to bring in additional income (Brunson and Hunt Singer, 2008).

Ranching is the commercial alternative to the various types of nomadism, is carried out on large stretches of land. Most ranches cover several thousand hectares sometimes more than 100,000 and carry large, permanent herds of some 1000 or 10,000 animals. The term ranch is generally used to refer to properties with well-defined boundaries (fenced or unfenced), legally owned, or have a long-term lease, and with certain development present that was affected by the owner or lessee (Miguel *et al.*, 2014).

Ranching according to Food and Agriculture Organization (FAO) (2001), is a modern form of pastoralism that establishes limits of mobility even in an arid land. It is an enclosed (usually fenced) system of extensive livestock production. Under this system, a piece of land, the ranch, is allocated and owned for livestock grazing, and the owner is granted individual rights of use of the land so allocated. Ranching livestock production relies on natural ecological processes of plant and animal production, based on ecosystem services generated and regenerated on-site rather than imported, often nonrenewable inputs ((Miguel *et al.*, 2014)).

Ranching is increasingly being used in parts of Africa such as South Africa, Tanzania, Senegal, Botswana, Ethiopia, Uganda etc. as an adaptive strategy to provide livestock fodder in times of stress (Kimenyi *et al.*, 2014) Accordingly, FAO (2011) classifies ranches based on the following forms:

(a). Group Ranches

In the majority of the range areas, economic and ecological considerations may make it acceptable for the pastoralist to come together based on clans, families, or other groupings and establish ranching units, which might comprise two to twenty families and a stretch of land of between 600 and 12,000 hectares. So far, the individual generally exercises grazing rights over the entire area recognized as the grazing ground of his clan. He thus has, along with other members of the clan or tribe, the freedom to move with his herds over a considerable area but has no specific individual right to a particular portion of it.

The new move would mean the division of the area into self-contained units as far as water is concerned. Only people belonging to a certain group of families would then have the right to graze there. The ownership of the land could go to the group or clan, provided that this could be legalized. Another more realistic approach would be the establishment of group ranches on the land of several individuals.

(b). Cooperative or Company Ranches

Another possibility is the establishment of cooperative or company ranches. These should be run by a manager and raise their funds. The individuals concerned might receive or share the ranch according to their contributions. Under this system, a piece of land, the ranch, is allocated and owned for livestock grazing, and the owners granted rights of use of the land so allocated, which are a combination of privately owned land supplemented by grazing lease on land under the control of the Federal Bureau of land management. If

the ranch includes arable or irrigated land, the ranch may also engage in a limited amount of farming, raising crops for feeding animals, such as hay and feed grains (Hoffman *et al.,* 2008).

(c). Government Ranches

Wherever a grassland is not claimed by pastoralist and it cannot be handed over to a private enterprise, the establishment of government ranches is advisable. To guarantee efficient management, they should be established and ran by autonomous bodies as a profit-making enterprise, where individual subsistence farming may well be incorporated into the enterprise. The allotment of land for cropping to members and workers within a system of shifting cultivation provides cleared land that can be planted with better grasses at low costs. Facilitating arable farming within government ranch will contribute to the reduction and control of bush and to the establishment of better grasses. Following Ibrahim and Eje (2018), two basic requirements must be fulfilled, which include:

(i). Limitation of the number of stock that attempts to graze any area to the number that the area can carry without deterioration over a long period of time.

(ii). Control of the movement of stock within any given area through rotational grazing systems or other such measures designed to maintain or improve the quality of the pasture land.

Government ranching can be operated at all levels overtime through constructive engagement of stakeholders, which in the long run is cost effective, lucrative, healthier and of course, allows the herdsmen to savour good living, like education and access to sound healthcare delivery.

(d). Nucleus Ranches

Another possibility to solve the problems of semi-nomadism is the combination of private or state nucleus ranches with the supervision of shifting herding in surrounding schemes. Such an arrangement has the following characteristics:

1. An area newly opened up by watering-places is declared a scheme area.

2. Herdsmen are allowed to become scheme participants on the condition that they submit their animal-husbandry practices to a clearly defined set of rules, the execution of which is closely supervised.

3. The herdsmen are allowed to join the scheme with a limited number of cattle, the health of which is checked. No other cattle are allowed to graze in the scheme

The scheme management is backed by a neighbouring nucleus ranch, which provides; services, veterinary supervision, and marketing facilities for the scheme cattle. It is instructive that ranching as a policy option in Nigeria has not gained ground in the country. This is clear from some of the prevailing narratives that government at all levels had failed over time to constructively engage stakeholders and persuade them to embrace ranching, which in the long run is cost-effective, lucrative, healthier and of course, allows the herdsmen to savour good living, like education and access to sound healthcare delivery, through orientation and re-orientation but no necessary integration.

This underscores the fact that proper ranching, supported by the government and, in some cases, backed by the private sector as a form of investment with long term projection, the society stands to gain the most. The production of healthier, better and neater products, provision of employment to the teeming herders, who had been kept out of business by rustlers, an added value to the farm products, promotion of peaceful coexistence amongst

the herders, farmer and other villagers and importantly it will help to shift the criminals amongst them from the real farmer doing their legitimate business. In Nigeria, for instance, the Kaduna State Government has been working seriously on the ultra-modern ranch, being modelled after the types in countries like Denmark and Britain.

2.8.3 Cattle colonies

Anthony (2013) reported that the cattle colony is a recent policy proposal by the Federal Ministry of Agriculture to deal with incessant conflict between farmer and herders. A colony is bigger than a reserve, while a reserve is a defined tract of land usually set apart for animals and plants. The colony is a wide expanse of land measuring 5,000 hectares of land. A hectare is about the size of a standard football field, that is what the initiators of this policy proposal want each state of the federation to provide so that Fulani herdsmen can have enough grazing land for their cattle and to enjoy peace in the country. However, the responses it received from stakeholders and the general public have been on the negative side, perhaps due to the improper communication to the public of its functionality and workability.

The cattle colony sounds like an idea that was suddenly stumbled upon by the initiators, but with no clear-cut modus operandi, thus giving an impression that a community or communities are being created or carved out of the existing ones solely for the herders, such that it could further avail them access to land that is not theirs in places where they are already dreaded. Factually, the cattle colony does not holistically address the future of animal husbandry as practised in civilized societies around the world, although, the fundamentals of the crisis are largely about land ownership which, the cattle colony is believed would address, it is still one of the ways to provide the country with the opportunities to distinguish amongst rustlers, terrorists and of course, genuine herdsmen and thereby addressing farmer-herders conflict in Nigeria (Miguel *et al.*, 2014).

2.9 Roles of Institutions in Conflict Resolution

The roles of the institution involved in the resolution of disputes between farmer and pastoralist can never be over-emphasis. The government of Nigeria has constituted a committee called the farmer/nomads committee saddled with the responsibility of preventing the conflict through awareness campaign and other methods of resolving conflict.Traditional institutions, however, form a veritable platform for dispute management in most rural areas of Nigeria. Traditional institutions have consistently bridged gaps created by the absence of government presence in many rural areas.

Traditional institutions are often looked upon for the allocation of resources, maintenance of law and order, societal development and dispute management, among others. For instance, the Miyetti-Allah Cattle Breeders Association successfully mediated disputes between farmer and herdsmen in Bauchi and Gombe States (Ajuwon, 2012). There are concerns, however, that the declining influence of traditional institutions has affected their authority and acceptance. This has hindered their ability to definitively mediate and resolve farmer-herdsmen disputes, with grave consequences for the security of the nation. At times, the Federal Government liaises with the Local Government and the police to discuss the causes and solution to the problem. The leaders of the nomads and farmer go back to their subjects and enlighten them on the implications of the conflict.

According to Iro (2015), policemen have played proactive roles in settling a dispute between crop farmer and cattle herders, the said author further stressed that the law court is responsible for disputes between crop farmer and cattle herders, a large of which is also followed by traditional leaders and farmer association respectively. The researcher reveals that taking the dispute to the police station and law court is not proactive and effective like traditional leaders.

2.9.1 Traditional and religious institutions

Conflict resolution is a process of settling conflicts within a community or between communities and even among warring groups and the process varies from one society to another. Traditional norm may be defined as simply the legacy of the past: including the changes and transformation this past must have gone through. The traditional method of conflict resolution could thus be defined as the indigenous ways and manners in which conflicts were resolved in the past (Oddih, 2010).Traditional institutions, however, form a veritable platform for conflict management in most rural areas of Nigeria.

Traditional institutions arose from the pre-colonial and colonial systems of governance and were subsequently integrated into the modern governance structure although playing an ancillary role (Centre for peace, diplomatic and development studies (CPDDS), University of Maiduguri 2012). State governments and Local government councils both have subsidiary structures incorporating traditional leadership in an advisory capacity. Having been in place for many generations, traditional institutions are recognized locally as being an inherent part of the culture of the community concerned.

Affirming this, Oguntomisin (2004) states that the family which has been considered as the smallest unit of political culture in African society is always a starting point of traditional administration in conflict resolution. The oldest male folk in every family is regarded as the head of the compound. Elders who possess the spirit of the ancestors, meet underneath the tree and talk until they have agreed on a point as a compromise (Olaoba, 2012). Religious institutions include Churches, Mosques, Shrines and their organizations. In Nigeria, there is some overlap between traditional and religious institutions, since in some communities traditional leaders such as emirs are closely linked to their spiritual counterparts. In addition, Africans are regarded as very religious people

who believe in the practice of their religious obligations as the system helps to modify the way of life of practitioners.

The head of each religion, on behalf of his or her worshippers, consult their deity. Criminal issues, land disputes, crises between farmer and pastoralist as well as other conflicting cases are brought to the head of these worshippers to detect and deal with and to resolve it. Oracles are consulted to find a solution to dangerous diseases and help to detect culprits of crises in society. The deity through the worshippers deals with any culprit,s known and unknown which prove stubborn. The belief in these divinities enhances law and order in society. This process creates psychological fear in the people and it helps to reduce disputes and even crime in the society (Nwolise, 2004). Despite its limited constitutional backing, traditional institutions remain the only body that takes preventive measures in the conflict between farmer and pastoralist. They appoint representatives of farmer and pastoralist to agree upon grounding rules that will ensure harmonious coexistence (Ibrahim, 2015).

2.9.2 Agricultural extension

The agricultural extension in Nigeria has not been particularly involved in conflicts resolution and given the vital role of extension in the production activities of farmer, the extension service ought not to be a passive player in finding lasting solutions to farmer and pastoralist' conflicts. What will be the benefit of extension efforts if farmer-pastoralist fail (as a result of conflicts) to get any reasonable output or income from their enterprise after the adoption of improved production practices and technologies? As a major stakeholder in agricultural and rural development, extension should have a clear role in this important matter as it affects the production activities and overall well-being of its clientele (Adisa, 2011).

Ani *et al.* (2015) identified various roles that extension can play in conflict reduction. The following roles of extension according to the authors are; to act as honest brokers between groups; provide information that can reduce conflict; organize training/seminars for peace building purposes; show transparency and accountability in their duties;link farmer to government officials for peace building; act as a facilitator to dialogue, and; provide early warning information on possible conflict issues.

Robertson (2013) opined that extension agents provide information to their clients by either teaching what they know or facilitating farmer and pastoralist access with other specialists who can solve their problems. Extension agents in a conflict or post-conflict situation could be expected to provide access to experts in the different problems that confront such farming communities. The researcher further focused on four specific peacebuilding problems that have natural ties to the work of agricultural extension agents. They are disputes over land and water; conflict over access between pastoralist and farmer; returning Internally Displaced Persons (IDPs) to rural communities, and reintegrating demobilized fighters into farming communities.

The agents would not be expected to step into a dispute and try to resolve it. Instead, they would diagnose the problem and then work with the appropriate experts to develop a solution. Some extension systems have provided services that address chronic problems produced by, or contributed to, conflict. For example, in South Sudan, land disputes between farming and pastoral peoples are endemic. Extension agents have partnered there with land registry specialists to better manage such land disputes. Also, in Kenya, extension agents are responsible for assisting communities in reintegrating the IDPs created during the post-election crisis of 2007 and 2008.

In these places, extension systems have made changes in what they do to address specific problems created by conflict.However, they have not built an extension system that is flexible and responsive enough to the changing problems that emerge from a society exiting a conflict. Although IDPs may be the immediate problem, a year later that society may face a different problem. How to provide extension agents with the capabilities to instigate peacebuilding in a changing conflict environment is the crux of our challenge (Robertson, 2013).

The roles of extension agents in both agriculture and peace building vary greatly depending on the circumstances. In peace building, the local causes of conflict define the issues an extension agent may confront in the same way that local agricultural issues determine the most useful forms of extension services. Conflict issues in which agents may have a role include land disputes, disputes between herders and pastoralist, and reintegration of former combatants and displaced people in communities. Training in conflict analysis was identified as a necessity for peace building work. Extension agents already have a full slate of responsibilities, and adding peace building activities could easily be overwhelming. A role in peace building, therefore, needs to be integrative and not additive.

However, agents should already be engaging in activities that, both directly and indirectly, can serve peace building purposes. They should act as brokers of, and access to. information among groups, between groups and the government. They provide services that increase agricultural productivity, enhance the economic security of agricultural producers and can serve as peace builders through these and other extension activities. In post-conflict environments, extension agents must be highly conscious of the possibility of their exacerbating tensions in the communities they serve by directing extension services and support in ways that exclude groups based on race, ethnic identity, class,

gender, or education. In rural communities, women do much agricultural work. Therefore, extension systems designed to support both agriculture and peace building would show greater promise if programming specifically engaged rural women (Robertson and Steve, 2012).

2.10 Mechanisms of Conflict Resolution in Nigeria

There are several mechanisms for solving and or managing conflicts between farmer and pastoralist in Nigeria. These range from the third party intervention; use of standing committees or ad-hoc groups within the country or States; use of dignified leaders within the region who are perceived as wise and adept of understanding, use of head of police, extension agents, army, traditional rulers ande village heads (Abbass, 2012).

In emphasizing the importance of African solutions from within Africa, Alhassan (2013) reveals that farmer-pastoralist conflicts could be used to arrest or mitigate conflicts in Africa. In other words, Africa is liable for the solvency of her problems, including conflicts. Understanding farmer and pastoralist relations is a key to conflict management and resolution. This will improve understanding of the proximate and underlying causes of conflict, the behavioural patterns that are most conducive to provoking or avoiding conflict and the main mechanisms by which conflict between the groups are resolved or managed (Davis, 2015).

The methods used in resolving conflict depends on the nature and the magnitude of the conflict. In all cases where conflict has been occasioned by crop destruction and where the offending pastoralist admit guilt; the interpersonal agreement may be reached, depending on the extent of the damage, compensation (varying in amount) is often demanded and paid where minimal crops have been destroyed. This is a situation where pastoralist and crop farmer have co-habited for a long time. In such cases, the herdsmen

speak the local language very fluently, thereby enhancing social integration and neighbourhood (Kamla-Raj, 2014).

There are other instances where pastoralist and farmer interpersonal relationship is not very cordial; conflict arises if such situation is not usually resolved by personal intervention. The village head and the head of pastoralist are usually involved in settling the dispute (Kolawole *et al.,* 2013).

Farmers' institutions should also be enhanced and use as media for enlightening farmer to embrace peace, locally-based consultative meetings between farmer and pastoralist should be encouraged to serve as avenues for the resolution of differences and disputes; both pastoralist and farmer should be reminded of the complementary role of their economic activities; issuance of, and use of, transhumance certificate should be promoted.

More so, grassroots community-based activities, good governance, collaborations, negotiation, reconciliation, mediation, arbitration, adjudication and crisis management are all elements of western traditional conflict resolution (Best, 2009). The following are the principles for conflict resolution according to Kehinde (2011) namely: take shared responsibility for the conflict; recognize and appreciate differences among individuals; preserve individual dignity; listen carefully and with empathy, listen to understand, communicate, do not debate; be calm. Do not give to emotional outbursts or reactions; vulnerability is a key to a successful resolution, therefore, open up and share your feelings; do not assume people are being difficult intentionally; choose a safe place or persons with whom you can vent and clarify the issues for yourself; generate solutions find agreement; follow-up to assure resolution and modify as necessary.

2.11 Factors Influencing Adoption of Conflict Resolution Mechanisms

Essentially, the factors influencing farmers-herdsmen conflict resolution according to Okoro (2014) were mostly socio-economic such as education, level of exposure and access to extension services were the factor influencing farmer pastoralist conflict., other factors include damage to crops and attacks on the pastoralists. Jimoh and Olorunfemi (2015) reveals that variable in the farmer-herdsmen conflict are several. This is so because of the need to ensure that all variable are ascribed to a factor, and none is allocated to two or more factors (Okoro, 2014).

McCafferey (2015) reveals in his work that education has an inverse correlation with the adoption of conflict resolution, perhaps implying that farmer education could contribute to a reduction in conflict. The same goes for alternative occupations, which also had negative but significant factor loading. It perhaps implies that increasing the number of alternative occupations among farmer helped to reduce negative conflict experiences. Farm income and family size, influencing farm capital and labour respectively, could determine farm size and consequently, the farmer' conflict experiences. This is consistent with the submission of Miguel *et al.* (2014) that low income could be associated with conflict in developing countries.

2.12 Theoretical Framework

2.12.1 Conflict theory

The mainstream of conflict theory views constant antagonism over scarce resources as a fundamental cause of conflict between farmer and pastoralist (Tonah, 2006). According to Marx, men, in the social production of their existence, inevitably enter into definite relations which are independent of their will, namely relations of production appropriate to a given stage in the development of their material forces of production the totality of which constitutes the economic structure of society (Ritzer and Goodman, 2004).

According to Folarin (2015), conflict theory posits that in a society each participant and or group struggles to maximize certain benefits and this inevitably contributes to social change, which focuses on the idea that personal or groups ability has a role to play in exercising influence and control over others in producing social order. Moreover, conflict theorists believe that there is a continual struggle between different elements of a particular society (Adedoyin and Adeokum, 2014). Conflict theorists view society as an arena where groups contend for power such as between the two major resource users' (farmer and pastoralist).

For conflict to be controlled, one group must be able to at least temporarily suppress its rivals. Conflict theory focuses on the shifting balance of power among competitors in the society rather than the creation of equilibrium through interdependence and cooperation. Farmer and pastoralist conflicts share common qualities. First is that there is a kind of contact between the parties that are involved; secondly, the parties in conflict perceive conflicting views and finally, one of the parties always wants to redress the existing contradiction. Every farming system such as nomadic cattle herding has a boundary, which separates it from the larger system, which makes up the environment. This boundary represents the limit in the larger system. Farmer increasingly compete with nomadic herders for farmland, pastures, water, trees and the use of rangeland in general (Akpaki, 2012). There exist a clear demarcation between different types of conflict in farmer and nomadic relations. A conflict of interest, resources and ethnicity.

(i) A conflict of interest is seen as the adoption of opposing views and concerns by different actors, which usually takes the form of nonviolent competition for control of resources in a given area.

(ii) Farmer and herder differences are also represented as ethnic conflict involving two groups. Since farmer and herder groups have different values, customs, physical and cultural characteristics, disputes between them are frequently characterized as ethnic conflict (Shedrack, 2014).

The feeling of belongingness that is extant among the members of the group is formed around their economic interest and the protection of the values, culture and power of the group. The Fulani nomadic cattle rearers, being a minority in host communities, have a unique culture and strong sense of solidarity. They are often isolated from the farming population. In such cases, the conflict between them and the farming population of the host communities is regarded as having an ethnic colouration. Implicit in this theory conflict between nomadic cattle herders and crop farmer in the North Central States usually leads to huge losses in terms of human, agricultural and material resources. This theory, therefore, elaborates on an understanding of the dynamics of conflict between nomads and farmer in the host communities. As in the conflict theory perspective, change comes about through conflict between competing interests, not consensus or adaptation (Dasam and Ibe, 2018).

Conflict theory is relevant to this study because the competition for access to natural resources between farmer and pastoralist gives rise to conflict. The competition for the available resources always result in conflicts between farmer and pastoralist, this arises as a result of scarcity and domineering in the use of available resources. The conflict often leads to colossal losses of lives and properties if proper measures are not taken. The failures of other conflict resolution methodsto bring an end to conflicts between farmer and pastoralist in Nigeria had brought about traditional conflict resolution which involved the use of mediation, litigation, arbitration and adjudication to a resolved dispute between farmer and pastoralist.

2.12.2 The environmental scarcity theory

This theory is built on complex causes, which could move 'from the most local to the most global' types of causes of dispute. Thomas Homer-Dixon is one of the proponents of this theory, which proposes that environmental scarcity could produce violent disputes. Such disputes range from local environmental degradation to ethnic clashes, to civil strife (insurgencies), scarcity-induced wars out of loss of sources of livelihoods and the negligent behaviour of the state and elite class.

Lending support to the environment and dispute argument, Brunborg and Urdal (2005) specified that demographic factors may, however, also be potential causes of dispute, with factors likes "high population pressure making a negative impact on scarce resources such as arable land and freshwater which could lead to violent disputes. Environmental scarcity has a variety of critical social effects, including declining food production, general economic stagnation or decline, displacement of population, and the disruption of institutions and traditional social relations among people and groups.

In his contribution, Benjaminsen (2008) argues that scarcity is believed to be rapidly increasing in many marginal environments, in particular, owing to ongoing processes of environmental degradation primarily by escalating population growth. Arguing differently but within the environmental scarcity debate, Gleditsch's critique of the literature on the armed dispute and the environment claims that all disputes of interest derive from scarcity.

However, not all resource disputes lead to overt dispute behaviour and even to the use of force. Environmental degradation may exacerbate resource disputes because it reduces the quantity or quality of the resource in question. Implicitly, environmental degradation and the resultant dispute may not at the onset take the physical violent approach, but rather

a structural violent approach such as environmental violence, before becoming an armed and violent dispute.

Consequently, the environmental scarcity theory has three main dimensions: Supply-induced scarcity, demand-induced scarcity, and structural scarcity. Supply–induced scarcity emerges when resources are reduced and degraded faster than they are replenished. Demand–induced scarcity arises out of population growth as against its source of livelihood, while structural scarcity exists because of inequitable distribution of resources due to their concentration in the hands of a few, while the rest of the population suffers from resource inadequacy.

Hauge and Ellingsen (1998) agreed that "increased environmental scarcity caused by one or more of these factors is assumed to have several consequences, which in turn may lead to domestic armed disputes, with intervening variable such as decreased agricultural production, decreased economic activity, migration and a weakened state helping to build up the environmental scarcity and violent disputes. As people's quality of life diminishes due to a decrease in environmental resources such as fertile land, there is the tendency that competition may ensue over the scarce resources; such competition if unchecked could be turned fierce, which may result in a violent dispute.

The environmental scarcity theory on the other hand, emphasized explaining the farmer-pastoralist relationship in Nigeria as predicated on the fact that resource scarcity is the product of an insufficient supply too much demand or unequal distribution as a result of environmental hazards that force some sectors of a society into a condition of violence. This theory provides support to structural dispute theory due to the diverse meanings and explanations it brings to environmentally linked - resource disputes. Environmental scarcity in this case connotes the limited supply of grazing land, farmland, water and

crops. Such environmental scarcity generates severe social stresses within countries, helping to stimulate conflicts, ethnic clashes and unrest.

Thus farming communities who depend mainly on environmental resources such as water, crops and land fight to control the land due to scarcity of the resources (Salau, 2012). However, this theory was criticized for ignoring the more direct linkage between economic and political factors and domestic armed disputes, thereby reducing the understanding of the causal pathway to domestic armed disputes. For instance, 'Structural scarcity, which concerns the unequal distribution of resources (especially land), is mainly a consequence of politics. Again, notwithstanding the initial acceptance given to the theory and its findings, but like other environmental security literature, its 'environmental and resource-related issues are connected to dispute in a state-centric sense.

Furthermore, Salau (2012) argues that while environmental degradation or climate change is certainly not a necessary condition for armed disputes, neither is it a sufficient one, since states play a key role in containing or aggravating violence'. This flaw in the theory has been noted and is complemented by the structural dispute theorys, to build a direct linkage between economic and political factors, and domestic armed dispute. This is one of the reasons why this theory is not adopted as a single theory but as a component of the structural dispute theory.

Like every structural dispute, structural violence creates 'structural conditions for the emergence of serious social disputes' and fuels conditions such as environmental scarcity, the struggle for limited resources, and unhealthy competition within communities. Homer-Dixon and Blitt (1998) argued that large populations in many developing countries are highly dependent on four key environmental resources that are very fundamental to crop production: freshwater, cropland, forests and fish. Scarcity or

shrinking of these resources as a result of misuse, over-use or degradation under certain circumstances will trigger off disputes.

To Homer-Dixon, decreases in the quality and quantity of renewable resources, population growth, and unequal resource access act singly or in various combinations to increase the scarcity of crop land, water, forests, and fish for certain population groups.. This can reduce economic productivity, both for the local groups experiencing the scarcity and for the larger regional and national economies. The affected people may migrate or be expelled to new lands. Migrating groups often trigger ethnic disputes when they move to new areas, while decreases in wealth can cause deprivation disputes (Intergovernmental Panel on Climate Change, 2003).

The fundamental theoretical assumption of the environmental scarcity theory is that resource scarcity is the product of an insufficient supply, too much demand or unequal distribution of a resource as a result of environmental hazards that force some sectors of a society into a condition of deprivation and violence. These four sources of scarcity are in turn caused by variable such as population growth, economic development, pollution and climate change. Thus, environmental resource scarcity will constrain agricultural and economic productivity, further inducing the disruption of economic livelihoods, poverty and migration.

Migration can occur either because the environmental quality of a habitat has become unlivable or, more commonly, because the migrant's economic outcome is likely to be better in areas with greater resource availability. Both constrained productivity and migration are likely to strengthen the segmentation around already existing religious, class, ethnic or linguistic cleavages in society and thus precipitate disputes (Gleditsch and Urdal, 2012). It is fundamental to state that one basic feature of Fulani herdsmen is

migration and at the heart of migration is climate change. Within the context of Fulani herdsmen and farmer dispute, the eco-violence theory is analytically apt to capture and explicate the intricate linkages that can develop between climate change and dispute.

This is because the four environmental resources (freshwater, cropland, forests and fish) are resources that climate change affects. As a result of climate change, seas have dried up leading to a shortage of fish and freshwater. Drought and desertification have also eaten up croplands and forests thereby making these environmental resources that trigger violence in short supply. This in itself engenders dispute. And when they are accepted, the long-run effect will be pressure on land, food shortage, dispute of interests, cultural differences, overpopulation, social disorganization, religious, social, and cultural intolerance which are in themselves dispute triggers. Furthermore, most of the impact of climate change is directly on agriculture, the theory thus helps us to explain the link between environmental resources scarcity and dispute.

This situation has worsened considerably over the years as a result of government insensitivity to climate change adaptation and mitigation and puts more pressure on the populace who suffer more as a result of environmental resources scarcity. As a result of low yield, farmer cultivate more land now than they hitherto do, living little land for grazing of cattle. It is within this context that the link between environmental resources scarcity and herder–farmer disputes in Nigeria can be understood (Gleditsch and Urdal, 2012).

2.12.3 The theory of relative deprivation

Relative deprivation as a theoretical concept has been used to analyse contexts of perceived injustice and inequality and is frequently used within the social sciences (Manzi, 2007). Relative deprivation theory claims that a person would feel relatively

deprived if he or she (i) lacks an object, (ii) desire it, (iii) sees some other person(s) with that object, and (v) thinks it is feasible to obtain that object (Lopez, 2002). Manzi (2007) also argued that relative deprivation is the perceived difference between the material and social conditions that individuals think they should achieve, and the conditions they believe they have achieved which causes relative deprivation.

Relative deprivation can be managed by a gradual elimination of inequality, which causes value expectation and value capability to coverage thus avoiding socio-economic upheavals. Jibrin (2008) attributed the ethno religious conflicts in Kaduna as a feeling of relative deprivation by the southern Kaduna indigenes who are mostly Christians. The decreasing availability of physical, environmental and land resources such as clean water, good agricultural land for arable crop and animal husbandry could create a condition of "simple security", "group identity" and "deprivation" in the area, (Shetima and Usman 2008), which could provoke a violent conflict of high magnitude due to population movement and the scramble for available resources.

The theory of Relative Deprivation is seen as a gap between just wants and the satisfaction of expected wants. Relative deprivation is, therefore, the difference between what we need and what we get. A group of people who fail to get the desired improvement in living conditions, justice, equality, and infrastructural development are deprived. In addition to that, if they are poor, and feel society is morally obliged to provide them with necessities, the gap between a just want, they can generate irritation, anger, frustration and conflict. Thus, the idea of relative deprivation has been used either to measure fairness, inequality, social justice or to explain grievance, social hostility or aggression (Godswill, 2014).

The complaints of the Fulani are a summation of want, aspiration, desire, discontentment, deprivation, and poverty that are prevalent among them compared to farmer. The

grievances that were made clear and know maybe as a result of the increase in the awareness of the nomads through the nomadic education and radio programmes such as the weekly programme (*don makiyya aruga*) dedicated to the enlightenment of the nomads on radio Nigeria, Kaduna. Many nomads have now realized that they are denied their rights. And these rights can be given back to them.

The cattle herders now claim that farmer monopolized the whole land area which was hitherto free with little or no space left for the grazing of their flocks. The most frustrating part of the relationship is that the cattle tracks were neglected by the government and blocked by the crop farmer (Yahaya, 2014). The blockage of the cattle routes has made pastoralist that were historically mobile new prisoners of limited spaces. The modern state system has thus rendered Fulani vulnerable to the vagaries of social and natural land scarcities.

In Misau local government area, Bauchi state, the cattle herders were also reported to be denied rights and access to land. This frustrates the nomads and makes them violently attack the farmer (Adamu, 2014). The high rate of scarcity of resources is seen as the factor responsible for the grievances of cattle herders and subsequent attacks on crop farmer. Essentially, the cattle herders are aggrieved because their demands are not met even though they deserve them as Nigerians. The continued deprivation of the nomads from pasture made them more aggressive and conflict-prone. The provision of grazing reserve and equal distribution of environmental resources will not solve the problem but the relationship between the groups.

Although no theory is considered a hundred percent adequate, the relative deprivation theory gives a better understanding of the cattle herder and crop farmer conflicts in Misau Local government area, Bauchi State. The cattle herders failed to get what they desired

much. (grazing land and access to water points because of path encroachment). And it is the lack of adequate grazing land that may have resulted in their anger and frustration to invade crops to feed their animals and as a result, conflict erupts. However, farmer feel frustrated with the cattle herders, which may consequently result in their loss of crop yields. This might make them attack the cattle herders for rendering them hopeless. The Relative deprivation theory also states that when a group of people compare themselves with another group and realizes that this group is better off than they are, then conflict continues.

The relative deprivation, which leads to conflict, can be reduced or managed by a gradual elimination of inequality, which causes value expectation and value capability to coverage, thus avoiding socio-political upheavals. This shows that, if relatively equal access to pasture was given to both groups as it used to be before the advent of colonialism in Jos, then the symbiotic relationship enjoyed by the groups before would be restored (Yahaya, 2014).

The relative deprivation is seen as a gap between just wants and satisfaction of expected wants which translates into the difference between what we need and what we get. This theory provides an understanding of the conflicts between farmer and pastoralist in Niger and Nasarawa State, especially their causes and management. Relative deprivation theory indicates that, if water or fertile land becomes scarce as a result of an increase in the population of people and cattle and desertification, farmer and pastoralist who relied on the resources as their source of livelihood would probably become increasingly discontented and frustrated by their inability to grasp for their share in the scrabble for available resources. And as such, conflict would erupt between the competing groups because some groups might feel cheated.

2.13 Conceptual Framework

The conceptual framework of this study explains the relationship between antecedents factors, independent, intervening and dependent variable. The antecedent variable is a factor that is manipulated or observed prior to an event. It is something that is thought to influence or predict the outcome of that event. In the context of this study the antecedent variable were the factors or condition that occurs before the traditional conflict resolution mechanisms were employed. This includes the use of jokes, oath-taking, cursing, and spiritual practices.

The independent variable are socio-economic characteristics, traditional conflict resolution mechanisms being used in improving farmer-pastoralist relationship, roles of institutions involved in conflict resolution between farmer and pastoralist and problems associated with the traditional conflict resolution mechanisms. The dependent variable (effectiveness of TCR mechanisms) which is expected to go a long way in increasing peaceful co-existence and the smoothening relationship between farmer and pastoralist, increase in farmer output, enhancing income capacity of farmer and the standard of living and finally livelihood of farmer-pastoralist.

Education creates a better atmosphere for trying new things such as the adoption of alternative conflict resolution mechanisms. Farmer and pastoralist that are educated will be enlightened and more likely ready to make decisions that would enhance their peaceful coexistence.

Experience in farming and herding tend to increase farmers and herders knowledge and create an avenue for peaceful co-existence. The number of years spent on farming might indicate their technical experience. Experience tends to have a positive relationship with farmer-pastoralist in the use of traditional conflict resolution mechanisms; the years spent

in farming might motivate and arouse both parties interest in alternative dispute mechanisms. The household size of the respondent tends to have a positive relationship with respondents adoption of traditional conflict resolution mechanisms.

Respondents with large household sizes tend to have more output, are more likely to experience losses during conflict, and will look for ways of putting an end to such conflicts. The institutions involved in conflicts resolution assist benefit both farmer and pastoralist in finding a lasting solution to the problem of reoccurring conflicts in the study area. The use of alternative dispute mechanisms will go a long way in filling the gaps created by other disputes management mechanisms that is their weaknesses in ending the menace of conflict between farmer and pastoralist.

The effectiveness of TCR mechanisms will go a long way in determining the effect on farmer and pastoralist relationship. An increase in challenges faced in the use of TCR will reduce the effectiveness of the mechanisms. Intervening variable such as government policy, norms and culture affect the effectiveness of TCR mechanisms in reducing farmer-pastoralist conflicts.

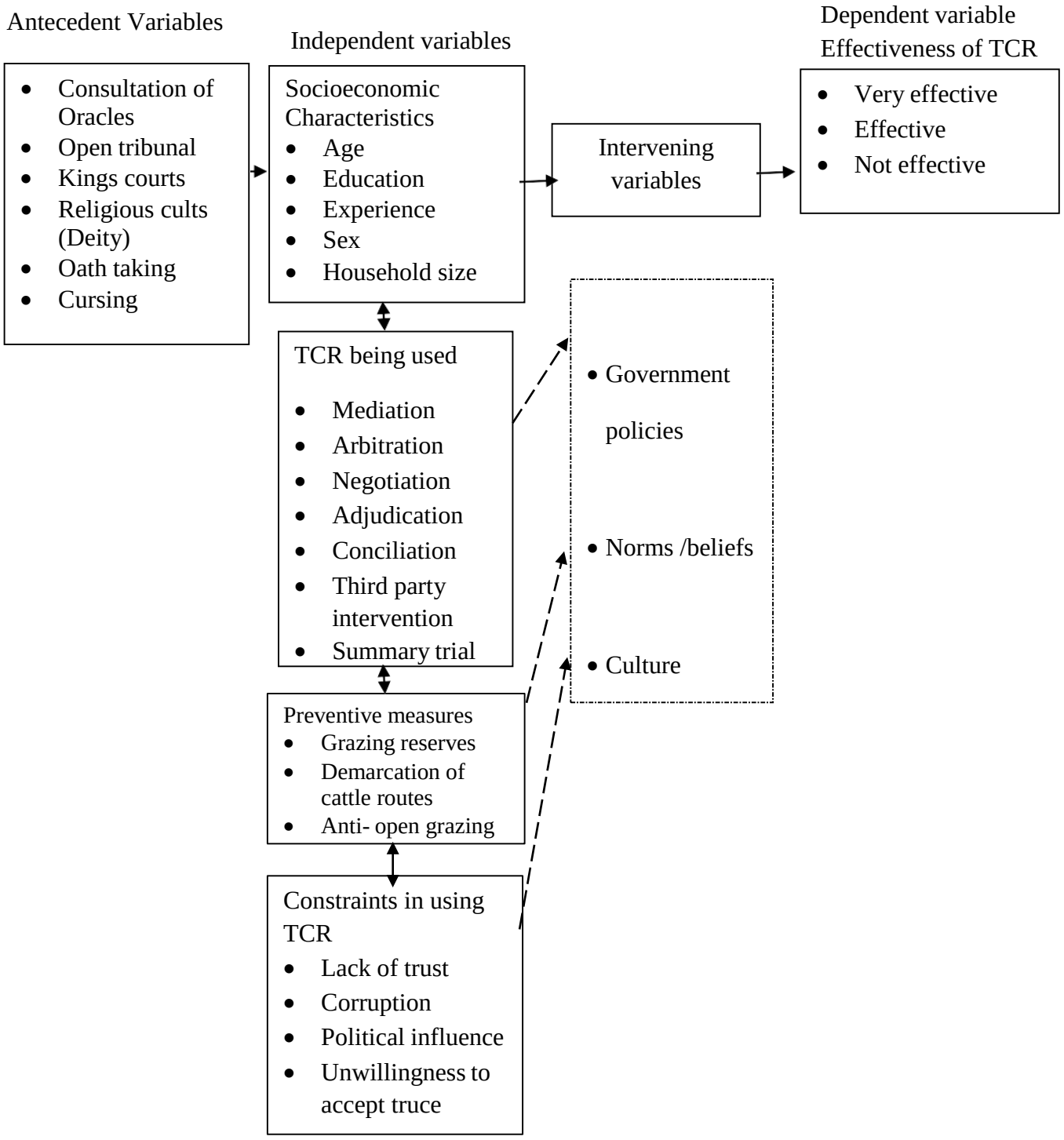

Figure 2.1: Conceptual Model of the Effectiveness of Traditional conflict resolution

Mechanisms in improving Farmer-Pastoralist Relations in Nasarawa and Niger States, Nigeria.

Source: Adapted and Modified from Wakawa (2017)

Keys:

Direct relationship/effect

Indirect relationship/effect

Two way relationship/effect

CHAPTER THREE

3.0 RESEARCH METHODOLOGY

3.1 Study Area

Nasarawa state is one of the States where this research was conducted. Nasarawa State is located between Latitudes 7 º and 9' N and Longitudes 7 º and 10' E. It shares boundaries with Benue State to the South, Kogi State to the West, the Federal Capital Territory (FCT) to the North-West; Kaduna and Plateau States to the North-East, and Taraba State in the South-East. Nasarawa State has a land area of 28,735 square kilometres and is divided into thirteen (13) Local Government Areas (LGAs). The 2006 population census pegs the state's population at 1,863,275 million, the projected population as of 2018 using a 2.5% growth rate is 2,732,422 million (Nasarawa State Ministry of Information (NSMI), 2019).

However, the corresponding influx of people has put enormous pressure on the available social infrastructure. It has about 35 ethnic groups, with Christianity and Islam as the two main religions. The State has vast agricultural resources and is richly endowed with large deposits of solid minerals, such as coal (with good cooking properties), barites, limestone, kaolin, salt, and marble. Expectedly, Nasarawa State is referred to as the "Home of Solid Minerals". Export of agricultural products to other parts of the country is a major activity that has now been broadened with the regular shipment of large quantities of a special breed of yam overseas.

The State's rich natural endowments are complemented by a large reservoir of human resources (Nasarawa State Primary Health Care Development Agency (NSPHCDA), 2015). The major occupation of the people in Nasarawa State includes farming, fishing, dyeing, weaving, carving and blacksmithing. The State lies within the Guinea Savannah eco-geographical zone and has rich soil for agriculture. The major crops produced are cassava, yam, rice, maize, guinea corn, cowpea, soya bean, acha, melon and millet. The

State is also endowed with various mineral resources that offer potentials for economically viable industrial and agricultural development projects which include: salt, tin, marble, coal, semi-precious stones, barites and aquamarine, hence, the slogan Home of Solid Minerals.Nasarawa State experiences moderate to high rainfall varying between 1300-1550 mm per annum. The rainy season lasts from April to November with the peak of rains between July and October.

The landscape is mainly rocky and of undulatinghigh lands reaching an average height of 1,400m above sea level providing a typically tropical climate with temperatures ranging between 26^{o}C and 35^{o}C.Nasarawa State has 13 Local Government Areas (LGAs) with a multiplicity of ethnic groups within the State such as Eggon, Tiv, Alago, Hausa, Fulani, Mada, Rindre, Gwandara, Koro, Gbagyi, Ebira, Agatu, Bassa, Afo, Ake, Mama, Arum and Kanuri(Nasarawa State ADP, 2015).

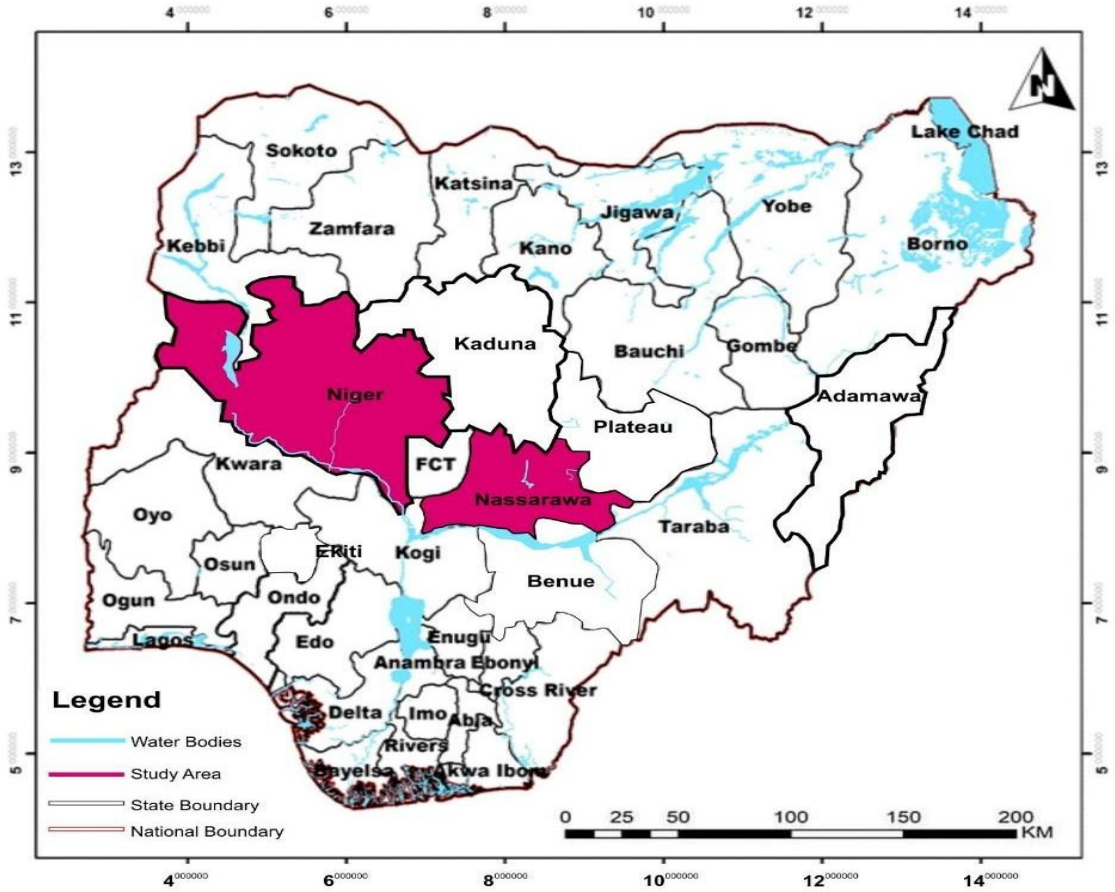

Figure 3.1: Map of Nigeria Showing the Selected States

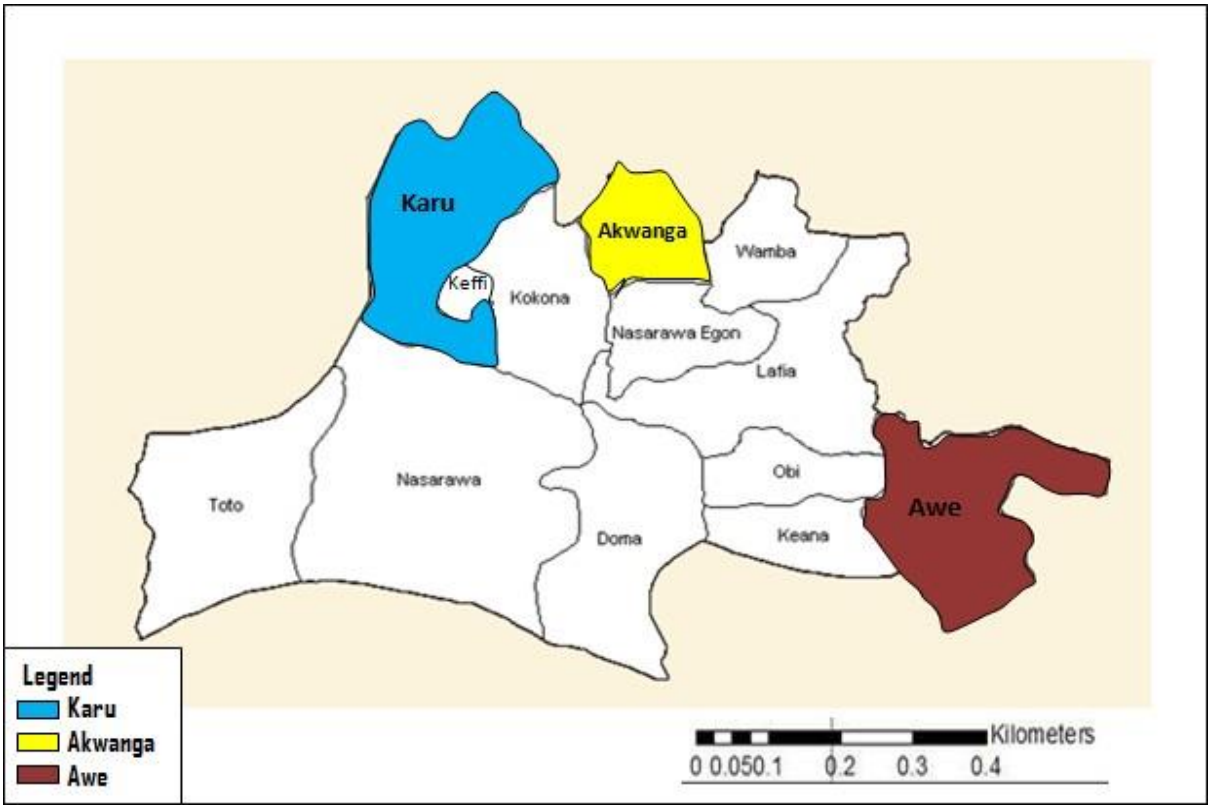

Figure 3.2: Map of Nasarawa State Showing the Selected Local Government Areas

Niger State is another State where this research was conducted. The State can be found in the Guinea Savannah ecological zone of Nigeria. In terms of landmass, it is the largest state in Nigeria. It covers a total land area of 74,224km^2 thus accounting for about eight percent of Nigeria's land area. About 85% of its land area is good for arable crop production (Niger State Geographical information system, 2007). It is located within Longitude 3^o 30' and 7^o 20' East &Latitude 8^o 20' and 11^o 30' North, with a population of about 3,950,249 (NPC, 2006) and with a growth rate of 3.2%, the State has an estimated population of 6,118,008 in 2018 (Niger State Geographical Information System, 2019).

Eighty-five percent of the State's population are farmer. The State is bordered to the north by Zamfara State, to the northwest by Kebbi State, to the south by Kogi State, to the southwest by Kwara State; while Kaduna State and the Federal Capital Territory bordered the State to northwest and southwest respectively. Furthermore, the State shares a common international boundary with the Republic of Benin at Babanna in Borgu Local Government Area (Niger State Ministry of Information, 2015).

Niger State consists of twenty-five (25) Local Government Areas (LGAs) that are grouped into three agricultural zones: i, ii and iii with the zones having eight, nine and eight LGAs, respectively. Nupe, Gwari and Hausa are the major ethnic groups in the State (Adebayo, 2010). There are other minor ethnic groups such as Koro, Kakanda, Kadara, Baraba, Ganagana, Dibo, Kambari, Kamuku, Pangu, Dukawa, Gwada, Ingwai. Igbo, Yoruba and other tribes also settled in the State. The State is one of the richest in the country in terms of its tourism, some of the attractions are Zuma Rock, Gurara falls, Baro empire hill and Lord Lugard colonial run at Zungeru. The most predominant soil type is the ferruginous tropical soil. The soils are fertile, its hydrology permits the cultivation of most of Nigeria staple crops and still allows sufficient opportunities for grazing, freshwater fishing and forestry development. The State is blessed with abundant mineral

resources such as gold, clay, silica, kyanite, marble, copper, iron, feldspars, lead, columbite, kaolin and tantalite (Niger State Ministry of Information (NISMI), 2016).

Niger State experiences distinct dry and wet seasons with annual rainfall varying from 1,100mm in the Northern part to 1,600mm in the Southern parts. The average annual rainfall is about 1,400mm. The duration of the rainy season is approximately 180days. The wet season usually begins in April/May to October, while the dry season starts in November and ends in March. Its maximum temperature is usually not more than 35^{o}C, which can be recorded between December and January.

The mean average temperature is around 32^{o}C. The dry season commences in October (nigerstateonline.com, 2013). Most of the communities in the State are predominantly agrarian. Some of the crops grown in the area are yam, cotton, Shea-butter, maize, sorghum millet, cowpea, soybean, beans, rice and groundnut. Some of the tree crops are Mango, citrus, coconut, cashew, banana, pawpaw. The inhabitants of the State also rear some livestock like goats, sheep, cattle and chicken among others. The Other non-agricultural activities 0engaged in by men include blacksmithing, leatherwork, mat and basket making, trading, while women also engage in technical handicraft and trading.

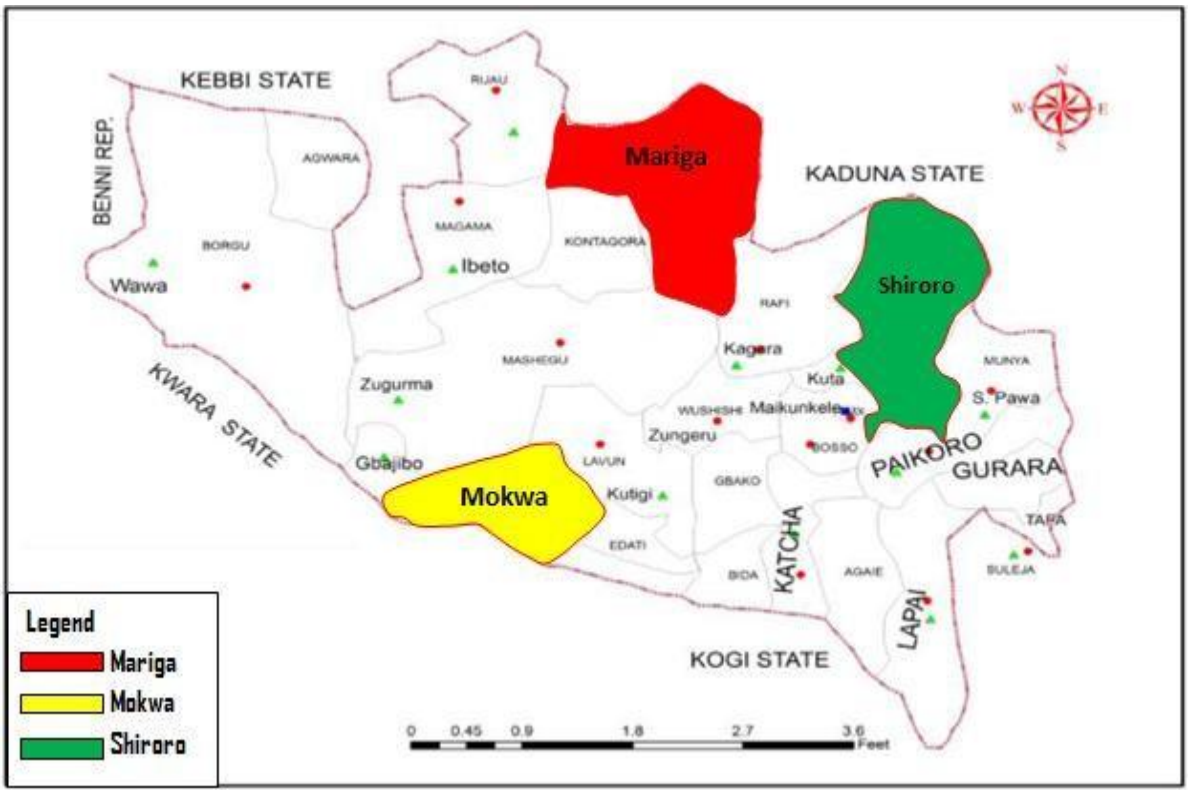

Figure 3.3: Map of Niger State Showing the Selected Local Government Areas

3.2 Sampling Procedure and Sample Size

Three-Stage sampling procedure was used to select farmer and pastoralist from the two study States, Nasarawa and Niger. The first stage involved the purposive selection of three (3) Local Government Areas (LGAs) in each State across the agricultural development project zones. Akwanga, Awe and Karu from Nasarawa State and Mariga, Mokwa and Shiroro from Niger State making a total of six (6) LGAs this was due to preponderance of conflict in that area. The second stage involved the random selection of three (3) villages from each of the selected LGAs making a total of eighteen (18) villages. The third stage involved the use of proportionate sample to select 10% of the sample frame as obtained from the Nassarawa State Agricultural Development Project (NSADP) (2016) and Niger State Agricultural Mechanization and Development Authority (NAMDA) (2016).

For the pastoralist, the Snowball sampling method was used through the help of their umbrella body, the Miyetti Allah Cattle Breeders Association of Nigeria (MACBAN) in each State. The leadership assisted the researcher to select one pastoralist who assisted in locating other pastoralist due to their nature of settlement (*Rugage*). A total of ninety nine (99) pastoralist were selected based on snow balling sampling of six (6) pastoralist per transit camp in the nine (9) villages in Nasarawa State and five (5) pastoralist per transit camp in the nine (9) villages in Niger State, the selection was based on the preponderance of farmer-pastoralist conflicts in Nasarawa State. Although only eighty nine (89) questionnaires were returned. The sample size of three hundred and seventy-nine (379) was used for the study, consisting of two hundred and ninety farmer (290) and eighty-nine pastoralist (89).

Table 3.1: Distribution of the farmer in the study area

State	Zone	LGA	Village	Sample frame	Sample size (10%)
Nassarawa State	Central	Akwanga	Nunku	210	21
			Anjida	173	17
			Aricha	101	10
	Southern	Awe	Tunga	160	16
			Azara	240	24
			Baure	152	15
	Western	Karu	Ankoma	141	14
			Gitata	240	24
			Panda	210	21
Total	**3**	**3**	**9**	**1627**	**160**
Niger State	I	Mokwa	Kudu	124	12
			Dankogi	86	9
			Kpashafu	59	6
	II	Shiroro	Allawa	160	16
			Tegina	61	6
			Kuta	186	19
	III	Mariga	Shadadi	95	10
			Beri	143	14
			Bobi	382	38
Total	**3**	**3**	**9**	**1296**	**130**
Sum total	**6**	**6**	**18**	**2923**	**290**

Source: Agricultural development project in Nasarawa (2016) and Niger State Agricultural Mechanization and Development Authority (2016).

3.3 Method of Data Collection

Primary data were used for this research. Data were collected by the researcher assisted by trained enumerators using a semi-structured questionnaire and interview schedules. Data collection lasted for six (6) months in 2019.

3.3.1 Validation and reliability test

Validity is defined as the degree to which the instrument measures what it is supposed to be measured. The study focused on content validity, which refers to the accuracy with which an instrument measures the objective of the study. Reliability relates to the precision and accuracy of the instrument. Accurate and careful phrasing of each question

to avoid ambiguity and leading respondents to a particular answer ensured the reliability of the tool.

Content validity test was also conducted and used for this study to ensure the validity of the data collection instruments by submitting the instrument to the supervisory committee members to ascertain its validity while test-re-test reliability which is the process of administering the same test twice over some time to a group of individuals in order to get consistency of the instrument. The scores from the first and second time were correlated using the Pearson Product Moment Correlation Coefficient (PPMC) and a score of 0.76 was obtained at 0.05 level of significance which shows that the instrument is very reliable.

3.4 Measurement of variable

3.4.1 Dependent variable: The dependent variable are:

(i). Effectiveness of TCR mechanisms which was measured using a 3–points Likert type rating scale. (very effective = 3, effective = 2 not effective = 1).

$\frac{3+2+1}{3} = 2$ to obtain 2.0 as the decision point. Thus, the following decisions were considered;

Any mean score ≥2.0 was adjudged as 'Effective' while,

Mean score <2.0 was adjudged as 'Not effective'

(ii). Willingness to use and level of TCR usage

These variable were measured as follows:

Step 1: The willingness to use of TCR among the farmer and pastoralist was measured through the use of a dummy variable of (willing=1, and not willing=0) The reference scale was computed based on 5-points Likert type rating scale of: Strongly agreed =5,

Agreed =4, Undecided =3, Disagreed =2 and Strongly Disagree =1. A mean value of 3 was obtained, hence a mean score < 3= not willing to use TCR =0, while mean score >3= willing to use TCR =1.

Step 2: The level of usage highly used and not used were used to measure the level of TCR usage among the farmer and the pastoralist. Thus,the response categories were estimated using frequencies and percentages.

3.4.2 Independent variable

i) **Age: -** This was measured by the actual number of years of the farmer at the time of data collection.

ii) **Sex: -** This was measured as either male or female. Males wer assigned 1 and females 0.

iii) **Farm size:** This was measured in hectares (ha).

iv) **Education level:** This was measured by the number of years in formal schooling.

v) **Experience in conflict:** Experience refers to the number of years a respondent has experienced conflict. It was measured in years.

vi) **Household size:** Household size here refers to the number of people in a household i.e. man (husband) with his wife or wives, their children, grandchildren, and other dependents living with them.

vii) **Annual income:** The total earnings of a respondent from agricultural activities and non-agricultural activities during the previous year. It was measured in Naira.

viii) **Access to extension:** This is the number of times the farmer-pastoralist had access to extension agents during the farming season. It was measured as the number of visits per year.

ix) **Cooperative membership:** It was measured as the number of cooperative societies a respondents belongs to.

x) **Access to credit**: Access to credit was measured in Naira.

xi) **Willingness to use TCR.** This was measured by using 5 point Likert type rating scale of strongly agreed =5, agreed=4, undecided=3, disagreed=2 and strongly disagreed=1. These were summed together that is 5+4+3+2+1 and divided by 5 to arrive at a mean value of 3. The decision: mean score <3=not willing to use TCR=0, mean score >3 = willingness to use TCR=1.

xii) **Roles of institutions involved in dispute resolution between farmer and pastoralist:** The roles of institutions involved in conflict resolution between farmer and pastoralist (traditional institutions, government, extension agent and NGO). These were determined by asking the respondents to indicate the roles played by these institutions in averting conflict between farmer and pastoralist. It was measured is number of roles indicates by respondents.

xiii) **Preventive measures put in place to avert dispute between farmer and pastoralist:** This can be defined as ways in which farmer and pastoralist' conflicts could be curtailed or averted, this includes: (provision of ranches, provision of grazing reserves, demarcation of cattle route, provision of cattle colonies, payment of compensation by the culprit, traditional rulers involvement, avoidance of cattle route by farmer, providing education and civic training for both farmer and pastoralist, avoid contamination of streams by cattle etc). These were measured by asking the respondents to indicate the preventive measures put in place to avert disputes between farmer and pastoralist in the study area. It was measured in number as indicated by a respondent.

xiv) **Problems associated with traditional conflict resolution:** Problems associated with the use of traditional conflict resolution mechanisms were measured using 3 points Likert type scale of very severe=3, severe=2, not severe=1. The score were added together to get 3+2+1=6 and was divided by 3 to get a mean score of 2.0 which served as the mean point. Any mean score less than 2.0 was regarded as not severe while if it was above 2.0 it was regarded as severe.

3.5 Method of Data Analysis

The data collected were analyzed using both descriptive and inferential statistics. The descriptive statistics include; frequency distributions and means. The inferential statistics include, Kendall's coefficient of concordance, Heckman two-step regression, ordered logit regression and factor analysis. Pearson Product Moment Correlation (PPMC) and Chi-Square were used to test the hypotheses of the study.

Objectives i and iv were achieved using descriptive statistics such as frequency distribution, mean and standard deviation.

Objective ii was achieved using Kendall's coefficient of concordance.

Objective iii: Heckman two-step regression was used to determine factors influencing willingness to use TCR and level of use of TCR, while descriptive statistics was used to determine the willingness of farmer and pastoralist to use TCR.

Objective v was achieved using ordered logit regression.

Objective vi: Descriptive statistics was used to determine the roles of institutions while Kendall's coefficient of concordance was used to determine the preventive measures put in place to avert conflict.

Objective vii was achieved using factor analysis.

3.6 Model specification

3.6.1 Heckman two-step selection model

Heckman two-step selection model was used to determine the factors influencing willingness to use TCR and level of usage of TCR among the farmer and pastoralist by estimating the probability of the event's occurrence. This is used to determine the relationship between one or more independent variable and the log odds of the dichotomous outcome by calculating changes in the log odds of the dependent as opposed to the dependent variable itself. The log odds ratio is the ratio of two odds and it is a summary measure of the relationship between two variable (Adepoju and Obayelu, 2013). Both implicit and explicit models are specified below for farmer and pastoralist;

Willingness to use TCR (Y) is a function of =f (X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8X_9 ..... X_n)

$$Y= b_o +b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 +b_5X_5+b_6X_6+b_7X_7+b_8X_8+b_9X_9 + b_{10}X_{10}+b_{11}X_{11+} b_{13} X_{13} + U \quad (3.1)$$

Farmer's model

Y =Willingness to use TCR mechanisms (willingness=1, not willing=0)

X_1 = Years of education (number)

X_2 = Farm size (hectare)

X_3 = Access to extension agent (number of contact)

X_4 = Farming experience (years)

X_5 = Complexity of TCR (dummy)

X_6 = Cooperative membership (yes=1, no=0)

X_7= Relative advantage of TCR (dummy)

X_8 = Income (amount)

X_9 = Compatibility of TCR (number)

X_{10} = Number of conflict witness (number)

X_{12}=Access to credit (access = 1, 0 if otherwise)

X_{12}= Access to government support (yes=1, no=0)

X_{13}= Goal of farming (family=1, sale=2, and both=3)

U= error term

$$Y= b_o +b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 +b_5X_5+b_6X_6+b_7X_7+b_8X_8+b_9X_9 + b_{10}X_{10}+b_{11}X_{11+} b_n X_n+ U \quad (3.2)$$

Y =Level of use of TCR mechanisms (High=1, Low=0)

X_1 = Years of education (number)

X_2 = Farm size (hectare)

X_3 = Access to extension agent (number of visit)

X_4 = Farming experience (years)

X_5 = Complexity of TCR (dummy)

X_6 = Cooperative membership (yes=1, no=0)

X_8= Relative advantage of TCR (number)

X_9 = Income (Naira)

X_{10} = Compatibility of TCR (dummy)

X_{11} = Number of conflict witness (number)

X_{12}=Access to credit (amount received)

X_{13}= Access to government support (yes=1, no=0)

X_{14}= Goal of farming (family=1, sale=2, and both=3)

U= error term

Pastoralist's model

Y =Willingness to use TCR mechanisms (willingness=1, not willing=0)

X_1 = Herd size (number)

X_2 = Years of education (number)

X_3 = Access to extension agent (yes = 1, no=0)

X_4 = Pastoral experience (years)

X_5 = Relative advantage of TCR (number)

X_6 = Complexity of TCR (number)

X_8= Cooperative organization (yes=1, no=0)

X_9 = Income (Naira)

X_{10} = Compatibility of TCR (dummy)

X_{11} = Number of conflict witness (number)

X_{12}=Access to credit (amount of credit assessed)

X_{13}= Access to government support (yes=1, no=0)

X_{14}= Goal of pastoral farming (family=1, sale=2, and both=3)

U= error term

$$Y= b_o +b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 +b_5X_5+b_6X_6+b_7X_7+b_8X_8+b_9X_9 + b_{10}X_{10}+b_{11}X_{11+} b_n X_n+ U \quad (3.3)$$

Y =Level of use of TCR mechanisms (High=1, Low=0)

X_1 = Herd size (number)

X_2 = Years of education (number)

X_3 = Access to extension agent (number of visit)

X_4 = Pastoral experience (years)

X_5 = Relative advantage of TCR (number)

X_6 = Complexity of TCR (dummy)

X_8= Cooperative organization (yes=1, no=0)

X_9 = Income (Naira)

X_{10} = Compatibility of TCR (dummy)

X_{11} = Number of conflict witness (number)

X_{12}=Access to credit (access = 1, 0 if otherwise)

X_{13}= Access to government support (yes=1, no=0)

X_{14}= Goal of pastoral farming (family=1, sale=2, and both=3)

U= error term

3.6.2 Ordered logit regression for farmers

The Ordered Logit Regression is expressed in implicit form as shown in the equation below:

$$Y = f(X_1, X_2, X_3, X_4, X_4, X_5, X_6, X_7, X_8, X_9, X_{10}, X_{11}, X_{12}, X_{13}U) \quad (3.4)$$

Y = Effectiveness of TCR mechanisms (very effective=3,effective=2, not effective=1)

X_1= Sex (male=1, female=0)

X_2=Marital status (married=1, single=0)

X_3= Household size (number)

X_4 = Age (years)

X_5 = Occupation (number)

X_6= Farming experience (years)

X_7 =Education (years of formal schooling)

X_8= Farm size (hectares)

X_9= Extension contact per year(number)

X_{10} = Cooperative membership (number)

X_{11} = Access to credit (Amount received)

X_{12} = Numbers of conflicts witness(number)

X_{13}= Income (Naira)

U = Error term

3.6.3 Ordered logit regression for pastoralists

The Ordered Logit Regressionwas used to achieve the objective (v) is expressed in implicit form as shown in the equation below:

$Y = f(X_1, X_2, X_3, X_4, X_4, X_5, X_6, X_7, X_8, X_9, X_{10}, X_{11}, X_{12}, X_{13}U)$

Y =Effectiveness of TCR mechanisms (very effective=3,effective=2, not effective=1)

X_1= Sex (male=1, female=0)

X_2=Marital status (married=1, single=0)

X_3= Household size (number)

X_4 = Age (years)

X_5 = Occupation (number)

X_6= Farming experience (years)

X_7 =Education (years in formal schooling)

X_8= Herd size (number)

X_9= Extension contact per year (number)

X_{10} = Cooperative membership (number)

X_{11} = Access to credit (Amount received)

X_{12} = Numbers conflicts witness (number)

X_{13}= Income (₦)

U = Error term

3.6.4 Kendall's coefficient of concordance

To examine traditional conflict resolution mechanisms used in improving farmer-pastoralist relationship objective (ii) and preventive measures put in place to avert dispute between farmer and pastoralist (objective vi) Kendall's coefficient of concordance (*W*) as used by Adewumi *et al.* (2019). A lower mean rank indicates the problem is severe and vice versa. The Kendall's *W* was computed as shown below.

$$W=\frac{12\sum R^{-2}i-3N(N-1)^{2}}{N(N-1)} \quad (3.5)$$

Where:

W = Kendall's value,

N = total sample size,

R = mean of the rank.

Kendall's coefficient of concordance (W) is a measure of the extent of agreement or disagreement among the respondents rankings. The value of W is positive and ranges from zero to one where one denotes perfect agreement among respondents rankings and zero denotes maximum disagreement.

3.6.5 Factor analysis varimax (Exploratory factor analysis)

Factor Analysis varimax was used to determined the problems associated with the traditional conflict dispute resolution mechanisms used to avert conflict between farmer and pastoralist. Using exploratory factor analysis procedure, the principal factor model with varimax orthogonal rotation was used. Factor analysis is a data reduction technique used to reduce a large number of variable to a smaller set of underlying factors that summarize the essential information contained in the variable. The constraints were grouped using the principal factor method with the varimax orthogonal rotation method developed by Kaiser as used by Ibrahim (2016) The criterion of Eigen value or characteristic root (Eigenvalue) greater than 1.0 was used for defining the number of the factors that was retained (Chong *et al*., 2013). Model acceptance was based on three criteria: each variable to be included in the variable cluster of a factor, must load to it more than 0.5, each factor must have more than two variable and variable that load in

more than one constraint were discarded (Akinnagbe 2010; Anselm and Taofeeq 2010; Mohammed *et al*. 2013; Ibrahim, 2016).

The model is presented as follows:

$Y_1 = a_{11}X_1$ (3.6)

$+ a_{12}X_2 + *** + a_{1n}X_n$ (3.7)

$a_{21}X_1 + X_n$ (3.8)

$Y_3 = a_{31}X_1 + a_{32}X_2 + *** + a_{3n}X_n$ (3.9)

* *

* *

$Y_n = a_{n1}X_1 + a_{n2}X_2 + *** + a_{nm}X_n$ (3.10)

Where:

$Y_1, Y_2, \ldots\ldots, Y_n$ = Observed variable/ problems associated with the traditional conflict resolution mechanisms

a_1 - a_n = Constraint loading or correlation coefficients;

$X_1, X_2, \ldots\ldots, X_n$ = Unobserved underlyingproblems associated with the traditional conflict resolution mechanisms.

3.6.6 Pearson's Product Moment Correlation (PPMC)

Hypothesis one (i) of the study was tested using correlation analysis. The formula is given below:

$$r_{xy} = \frac{n\Sigma XY - \Sigma X \Sigma Y}{\sqrt{[n(\Sigma X^2) - (\Sigma X)^2][n(\Sigma Y^2) - (\Sigma Y)^2]}} \quad 3.11$$

Where:

r = correlation coefficient

Y = effectiveness of TCR mechanisms

X = independent variable (age, sex, education, experience in farming/herding, household size etc)

N = total number of observations

$\sum$ = summation

3.6.7 Multivariate analysis of variance (MANOVA)

Multivariate Analysis of Variance was used to test hypothesis (ii) (Ho_2) which states that there is no significant relationship between preventive measures put in place to avert disputes between farmer and pastoralist and the effectiveness of traditional conflict resolution mechanisms used. The model is specified as follows:

$$Y_{ij} = \mu + \tau_i + e_{ij} \quad (3.12)$$

Where:

Y_{ij} = effectiveness of traditional conflict dispute resolution mechanisms being used

μ = General mean

τ_i = Vector of the effects of the treatments on all the variable

e_{ij} = Error term

a. Wilks' Lambda (Wilky lamb): This is a statistical test used in multivariate analysis to test the equality of means between groups. It's often used in MANOVA to assess whether there are any statistically significant differences between the means of groups across multiple dependent variable.

b. Pillai's Trace: Pillai's trace is another multivariate statistical test used in MANOVA. It's particularly useful when the assumptions of other tests (like Wilks'

Lambda) are not met. It also assesses the overall effect of the independent variable on the dependent variable.

c. Lawley Hotelling Trace: This is another criterion used in MANOVA. It's based on the Hotelling's T-squared statistic and is employed to test the null hypothesis that the population covariance matrices of the groups are equal.

d. Roy's Largest Root: Roy's Largest Root is yet another criterion used in MANOVA. It focuses on the largest eigenvalue of the ratio of the determinant of the pooled within-group covariance matrix to the determinant of the total covariance matrix. It's used to test whether there are any significant differences between group means.

3.6.8 Chi-square model

Hypothesis three (iii) was tested using Chi-Square

$$X^2 = \sum \frac{(O-E)^2}{E} \qquad (3.13)$$

O= the frequencies observed

E = the frequencies expected

$\sum$ =summation

CHAPTER FOUR

4.0 RESULTS AND DISCUSSION

4.1 Socio-economic Characteristics of the Farmer and Pastoralist

Results on the socio-economic characteristics of the respondents in the study area are presented in Table 4.1.

4.1.1 Sex of the respondents

Results in Table 4.1 shows that majority (95.6%) and (95.4%) of farmer interviewed in Nasarawa and Niger States were male. The pooled result reveals that 95.5% of the farmer were male. This finding reveals that there are more male farmer in the study area. This also might be due to the tedious, difficult and strenuous activities involved in conflicts that could only be handled by men and restrictions of women in conflict zones. This is similar to the findings of Ior *et al*. (2018) who reported that men were dominant in conflict areas. Aliyu *et al.* (2018) reported that the majority of farmer in conflict-prone areas of Bauchi State were male.

On the other hand, Table 4.1 reveals that all (100.0%) of the pastoralist interviewed in Niger were male while 98.1% of the pastoralist in Nasarawa State were male. The pooled result reveals that 98.9% of the pastoralist in the study area were male. This might imply that cattle production was a male-dominated activity given the strength and ruggedness involved in herding that is more suitable for the masculines. This finding is in line with that of Nformi *et al.* (2014) who found that most of those who engaged in grazing of animals were mature males. This result also corroborates Olaniyan and Yahaya (2016) who reported that the pastoral system is patently both masculinised and a youth domain.

Table 4.1: Distribution of respondents according to socio-economic characteristics

Variable	Farmer			Pastoralist		
	Nasarawa State (n=160) Freq (%)	**Niger State (n=130) Freq (%)**	**Pooled (n=290) Freq (%)**	**Nasarawa State (n=51) Freq (%)**	**Niger State (n=38) Freq (%)**	**Pooled (n=89) Freq (%)**
Sex						
Male	153 (95.6)	124 (95.4)	277 (95.5)	50 (98.1)	38 (100.0)	88 (98.9)
Female	7 (4.4)	6 (4.6)	13 (4.5)	1 (1.9)	0	1 (1.1)
Age (years)						
≤30	23 (14.4)	31 (23.9)	54 (18.6)	6 (11.8)	11 (28.9)	17 (19.1)
31-40	59 (36.9)	39 (30.0)	98 (33.8)	20 (39.2)	10 (26.3)	30 (33.7)
41-50	55 (34 .4)	39 (30.0)	94 (32.4)	21 (41.2)	14 (36.8)	35 (39.3)
51-60	20 (12.5)	20 (15.4)	40 (13.8)	4 (7.8)	3 (7.9)	7 (7.9)
>60	3 (1.8)	1 (0.7)	4 (1.4)	0	0	0
Mean	41.7	40.2	41.1	40.4	38.5	39.6
Marital status						
Single	13 (8.8)	10 (7.7)	23 (7.9)	3 (5.9)	1 (2.6)	4 (4.5)
Married	145 (90.6)	117 (90.0)	262 (90.3)	48 (94.1)	37 (97.4)	85 (95.5)
Widow	1 (0.6)	0	1 (0.3)	0	0	0
Widower	0	2 (1.5)	2 (0.7)	0	0	0
Separated	1 (0.6)	1 (0.8)	2 (0.7)	0	0	0
Household size (Person)						
1-5	48 (30.0)	39 (30.0)	87 (30.0)	12 (58.8)	9 (23.7)	21 (23.6)
6-10	66 (41.3)	60 (46.2)	126 (43.5)	25 (49.0)	25 (65.8)	50 (56.2)
11-15	21 (13.1)	19 (14.6)	40 (13.8)	14 (27.5)	4 (10.5)	18 (20.2)
≥16	25 (15.6)	12 (9.2)	37 (12.8)	0	0	0
Mean	9.0	8	9.0	9	8	8
Secondary occupation	**(n=61)**	**(n=49)**	**(n = 110)**	**(n = 35)**	**(n = 33)**	**(n = 88)**
Farming	0	0	0	21 (41.2)	25 (65.8)	46 (51.7)
Trader	43 (26.9)	31 (23.9)	74 (25.5)	14 (27.5)	8(21.1)	22 (24.7)
Tailoring	12 (7.5)	10 (7.7)	22 (7.6)	0	0	0
Artisan	6 (3.8)	8 (6.2)	14 (4.8)	0	1 (2.6)	1 (1.1)

Source: Field survey, 2019

4.1.2 Age of the respondents

Entries in Table 4.1 indicates the mean age of farmer in Nasarawa State as 42 years, slightly higher than that of Niger State that stood at 40 years. The pooled result shows a mean age of 41 years. This implies farmer in the study area were still within the active and productive age, strong, energetic and full of innovative ideas that could be advantageous in seeking the best TCR mechanisms that will enhance peaceful coexistence among the respondents. This finding agreed with Umar *et al.* (2021) who stated that majority of the farmer in Niger State were within the youthful age group regarded as economically active, innovative and productive. Manu *et al.* (2014) and Adelakun *et al.* (2015) also reported that the majority of farmer in conflict-prone areas fall withinthe active ages.

On the other hand, Table 4.1 reveals the mean age of pastoralist in Nasarawa State as 40 years while that of Niger State was 39 years. The pooled mean age of the pastoralist was 40 years. It could therefore be inferred that rearing of animals was predominantly carried out by middle-aged people, who were energetic and productive in the economic sector. Hence, they will be able to withstand the pressure and rigours involved in cattle production activities. This finding is in line with that of Nformi *et al.* (2014) who found that most of those who practice pastoralism in Nigeria were in their middle age. Similar findings by Owolabi *et al.* (2016) reveals that the majority of pastoralist in Kaduna State were in their mid-age. The implication of this is that both young and middle-aged pastoralist could be involved in conflict with farmer. This may be linked to the nature of herding work, which requires much physical exertion of energy (Manu *et al.*, 2015)

4.1.3 Marital status of the respondents

Table 4.1 shows that the majority of farmers in Nasarawa State (90.6%) and Niger State (90.0%) were married. The pooled result indicates that 90.3% were married. This finding reveals that most of the farmer were married. This could imply having family responsibilities and also increase farming families' contacts with pastoralist which could subsequently result in conflict. This is in line with the finding of Adelakun *et al.* (2015) who stressed that a larger percentage of farmer in conflict areas were married. Olabode and Ajibade (2015) also reported that the majority of the farmer in the conflict-prone area were married.

In the same vein, Table 4.1 indicates that majority of farmers (97.4%) and pastoralist (94.1%) in Niger and Nasarawa States were married. The pooled result shows that 95.5% were married. This finding shows that most of the pastoralist were married, this implies responsibilities on individual pastoralist to provide for their families. Married pastoralist could suffer more casualties from conflicts than unmarried folks, as a result of their large family sizes. Mohammed *et al.* (2015) opined that marriage is a sacred institution that is cherished among humanity which increases responsibilities on the individual. This finding tallies with that of Musa *et al*. (2014) who reported that a larger percentage of pastoralist in Benue State were married.

4.1.4 Household size of the respondents

The result in Table 4.1 shows that the mean household size of farmer in Nasarawa State was 9 persons while that of Niger State was 8 persons. The pooled result shows a mean household size of 9 people. This implies that farmer in the study area have large households. This might serve as a source of labour for farming activities and also influence decision making when it comes to the TCR mechanisms to be adopted. This result aligns with that of Adisa (2015) that most families in

conflict-prone areas have an average family size of between 5-10 members. Large households could be disadvantageous when dominated by dependent farming families (Ojeleye, 2015).

Furthermore, Table 4.1 indicates that the mean household size of the pastoralist in Nasarawa State was 9 persons while that of Niger State was 8 persons. The mean pooled household size of the pastoralist in the study area was 8 persons. This implies that the majority of the pastoralist had large households. These are common in rural areas where polygamy and negative attitudes toward family planning increase their family size. Most of the cattle herders believe that it is better to have more children who would help in grazing the herds and also prevent cattle rustling than hiring external labour. This is in tandem with the finding of Aliyu *et al*. (2018) who reported that the majority of pastoralist in Nigeria had a large household size and could also be attributable to the teaching of the Islamic faith which permits four wives per adult man and dependence on their biological children for herding operation (Mutibvu *et al.,* 2012).

4.1.5 Secondary occupation of the respondents

Table 4.1 shows that 26.9% and 7.5% of farmer respectively had trading and tailoring as a secondary occupation in Nasarawa State, while 23.9% and 7.7% respectively had trading and tailoring as a secondary occupationin Niger State. The pooled result shows that 25.5% and 7.6% were into trading and tailoring respectively. The result is consistent with that of Ogunmefun and Achike (2015) who reported that the majority of farmer were involved in alternative occupations as a means of augmenting household income and poverty alleviation or to cushion the effect of losses they may incur during farmer and pastoralist conflicts.

Similarly, Table 4.1 shows that 65.8% and 41.2% of pastoralist in Niger and Nasarawa States respectively were into farming. On the other hand, 27.5% and 21.1% of the pastoralist in Nasarawa and Niger States respectively were into trading. The pooled result shows that 51.7% of the pastoralist engaged in crop farming. This suggests that the majority of the pastoralist had secondary occupations through which they generate more food and income for their family especially during conflicts. This practice puts more presuure on the land as the pastoralists engage in crop production along with the crop farmmers. This is another forms of conflict between the two groups. The result is in agreement with the finding of Baiphethi and Jacobs (2015) who stressed that secondary occupation enables farmer to diversify their sources of income to manage risks associated with pastoralism and farmer-herders conflict in North Central Nigeria.

4.1.6 Farming and herding experience of the respondents

Results in Table 4.2 reveals the mean farming experience of farmer in Niger State was 21 years while the mean farming experience of farmers in Nasarawa State was 17 years. This shows that farmer in Niger State had more experience in farming than those in Nasarawa State. The pooled result indicates a mean farming experience of 19 years. This suggests that farmer in the study area had some experience in farming which could facilitate the application of TCR mechanisms for improved farmer' pastoralist relationships. This result is in consonance with that of Chikaire *et al.* (2016) who observed putting many years in farming tend to expose farmer to conflict. It could however, serve as incentive in managing conflict. This finding conforms with Eniola (2017) who stated that a large percentage of farmer and pastoralist in South Western Nigeria had large years of experience in crop farming and herding.

From Table 4.2, the mean experience in herding in Nasarawa State was 16 years while that of Niger State was 13 years. This shows that pastoralist in Nasarawa State have slightly more experience than those of Niger State. The pooled result shows a mean years of experience of 14 years, which simply indicates some years of herding experience among the pastoralist. The combination from cattle rearing experience with the ability to manage resources efficiently is expected to translate to higher returns for cattle production in the study area. This finding is consistent with Garba *et al*. (2015) who reported that most of the pastoralist in Bauchi State had high experience in herding because of the number of years spent in cattle herding.

4.1.7 Educational level of the respondents

Table 4.2 shows that the mean years spent in formal education by farmers in Nasarawa State was 11 years while that of Niger State was 11 years. The pooled result shows that the mean years spent in formal education was 11 years; signifying a moderate literacy level. Farmer with moderate and high literacy levels are expected to use various TCR mechanisms that will smoothen their relationship with pastoralist. This is in line with the finding of Agada and Igbokwe (2017) who reported that inadequate literacy levels affect farmer' capacity to adapt to change or the ability to deal with conflict incidence. This finding contradicts that of Bolarinwa *et al.* (2013) who reported that greater proportion of farmer in conflict-prone areas were educated.

Furthermore, Table 4.2 indicates that 52.9% and 39.2% of the pastoralist in Nasarawa State had non-formal and Quranic education respectively. Also, 42.1% each of pastoralist in Niger State had non-formal and Quranic education respectively. The pooled result shows that 48.3% and 40.5% of pastoralist had non-formal and Quranic education. This finding indicates a low literacy level among the pastoralist and this will affect the effective use of TCR mechanisms. This aligns with the finding

of Yuguda (2013) who reported that the majority of pastoralist in Taraba State had non-formal education despite the availability of nomadic schools. This finding is contrary to the result of Ibrahim *et al.* (2020) who stated that the majority of pastoralist in Kebbi State were literate.

4.1.8 Farm Size of of the respondents

Findings in Table 4.2 reveal that the mean farm size of farmer in Niger State was 4.8 hectares while that of Nasarawa State was 4.0 hectares. The pooled result shows a mean farm size of 4.4 hectares. This finding contradicts the result of Bolarinwa *et al.* (2013) who stressed that most farmer in conflict-prone areas had farmland of 1-5 ha. Land is the key resource that triggers farmer-pastoralist conflict in Nigeria. Gefu and Kolawole (2005) and Fasona and Omojala (2002) said that conflict between Fulani herdsmen and farmer for the use of agricultural land is becoming fierce and increasingly widespread in Nigeria largely due to the intensification of production activities that are necessitated by increasing human population

Table 4.2: Distribution of respondents according to socio-economic characteristics cont'd

Variable	Farmer			Pastoralist		
	Nasarawa State (n=160) Freq (%)	Niger State (n=130) Freq (%)	Pooled (n=290) Freq (%)	Nasarawa State (n=51) Freq (%)	Niger State (n=38) Freq (%)	Pooled (n=89) Freq (%)
Experience in farming/herding (years)						
1-10	58 (36.3)	48 (36.9)	106 (36.6)	23 (45.1)	21 (55.3)	44 (49.4)
11-20	58 (36.3)	21 (16.2)	79 (27.2)	17 (33.3)	11 (28.9)	28 (31.5)
21-30	32 (20.0)	36 (27.7)	68 (23.5)	5 (9.8)	5 (13.2)	10 (11.2)
31-40	8 (5.0)	16 (12.3)	24 (8.3)	6 (11.8)	1 (2.6)	7 (7.9)
>40	4 (2.5)	9 (6.9)	13 (4.5)	0	0	0
Mean	17.2	20.8	18.8	15.6	12.8	14.4
Educational level						
Adult Education	7 (4.3)	7 (5.4)	14 (4.8)		5 (13.2)	5 (5.6)
Quranic Education	15 (9.4)	22 (16.9)	37 (12.8)	20 (39.2)	16 (42.1)	36 (40.5)
Primary education	26 (16.3)	26 (2.0)	52 (17.9)	2 (3.9)	1 (2.6)	3 (3.4)
Secondary education	54 (33.7)	30 (23.1)	84 (28.9)	2 (3.9)	0	2 (2.3)
OND/NCE	30 (18.8)	22 (16.9)	52 (17.9)	0	0	0
HND/Degree	28 (17.5)	23 (17.7)	51 (17.6)	0	0	0
Non-formal	0	0	0	27 (52.9)	16 (42.1)	43 (48.3)
Years spent in formal education						
1-6	39 (24.5)	48 (36.9)	87 (30.0)	2 (3.9)	1 (2.6)	3 (3.4)
7-12	58 (36.3)	39 (30.0)	97 (33.5)	2 (3.9)	0	2 (2.3)
>12	63 (39.4)	43 (33.1)	106 (36.6)	0	0	0
Mean	11.4	10.8	11.1	0.9	0.2	0.5
Size of farmland						
<1	31 (19.4)	10 (7.7)	41 (14.1)	21(41.1)	25(65.8)	46(51.7)
1.1-1.5	13 (8.1)	4 (3.1)	17 (5.9)	0	0	0
1.6-2.0	34 (21.3)	19 (14.6)	53 (18.3)	0	0	0
2.1-2.5	9 (5.6)	8 (6.2)	17 (5.9)	0	0	0
2.6-3.0	21 (13.1)	37 (28.5)	58 (20.0)	0	0	0
>3.0	52 (32.5)	52 (40.0)	104 (35.9)	0	0	0
Mean	4.0	4.8	4.4	0	0	0

Source:Field survey, 2019

4.1.9 Herd Size of the respondents

The result in Table 4.3 shows that the mean herd size of pastoralist in Nasarawa State was 76, while that of Niger State was 42. This implies that pastoralist in Nasarawa State had larger herd size than those in Niger State. The pooled result shows a mean herd size of 61. This concurs with Soriola (2018) who stated that the majority of pastoralist in Nigeria had more than 50 herds of cattle.

4.1.10 Annual income of the respondents

Result in Table 4.3 reveals that the mean annual income of farmer in Niger State was ₦609,923.10k while that of Nasarawa was ₦567,987:50k. This suggests that farmer in Niger State had relatively more income than those in Nasarawa State. The pooled result shows a mean income of ₦586,786:20k, implying that farmer in the study area had moderate annual income. This may be as a result of the negative effect of conflict on their production. Corps (2015) stressed that the average household affected by farmer-pastoralist conflict would experience more than half a reduction in their annual income. Also, Adisa *et al.* (2010) reported that agricultural production drops more than half per annum in conflict-prone areas.

Similarly, Table 4.3 indicates that the mean annual income of pastoralist in Nasarawa State was ₦642,156:90k while that of Niger State was ₦486,578:90k. This is an indication that pastoralist in Nasarawa State earn relatively more income than those in Niger State probably, because of the higher herd size possessed by pastoralist in Nasarawa State. The pooled result reveals a mean annual income of ₦575,730:30k, implying that pastoralist in the study area were moderate income earners. This is so expected because livestock is regarded as one of the most profitable enterprises in Nigeria.

4.1.11 Source of labour of the respondents

The result in Table 4.20 shows that majority (59.4% and 57.7%)) of the farmer in Nasarawa and Niger State used hired labour for farm operations. The pooled result shows lower that more than half (58.6%) of the farmer relied on hired labour in carrying out their farm operation rather than relying on the use of family labour. This disagrees with the findings of Kimenyi *et al.* (2014) which shows that majority of the respondents depend on family labour to carry out the farm operation as a result of large household size among the farmer.

Also, Table 4.3 reveals that more than half (52.9%) of the pastoralist in Nasarawa State sourced labour for herding from family members while about 47.4% of the pastoralist in Niger State used of hired labour for their grazing activities. The pooled result shows that only about 44.9% of the pastoralist used family labour in carrying out their grazing operations. This agrees with the findings of Olaniyan and Yahaya (2016) which shows that majority of the herders used of hired labour for grazing operations.

4.1.12 Goal for farming and pastoral farming

The results in Table 4.3 show that farmers in the study area actively iengaged in livelihood activities to cater for their household needs since 63.7% and 73.1% of the farmer in Nasarawa and Niger States produced crops for sale and family consumption respectively while only few a produced mainly for family consumption. This is because most of them are married and there is the need to meet up with household food demand. Same was recorded on the pooled result in which about 67.9% of the farmer produced crop for both sale and family consumption. This assertion contradicts the findings of Adisa (2011), which shows that majority of farmer produce food mainly for family consumption in the study area.

In addition, Table 4.3 reveals that majority (68.6% and 76.3%) of the pastoralist in Nasarawa and Niger State produced livestock purposely for sales, only very few of the herders produced for family heritage purposes. However, the pooled results shows that about 71.9% of the pastoralist produced livestock for sale only. This contradicts the findings of Ibrahim *et al.* (2020), which shows that majority of the pastoralist produce livestock for family heritage rather than sale and consumption.

Table 4.3: Distribution of respondents according to herd size and annual income

Variable	Farmer Nasarawa State (n=160) Freq (%)	Niger State (n=130) Freq (%)	Pooled (n=290) Freq (%)	Pastoralist Nasarawa State (n=51) Freq (%)	Niger State (n=38) Freq (%)	Pooled (n=89) Freq (%)
Herd size						
<50	0	0	0	30 (58.8)	31 (81.6)	61 (68.5)
51-100	0	0	0	7 (13.7)	1 (2.6)	8 (8.9)
101-150	0	0	0	4 (7.8)	2 (5.3)	6 (6.7)
151-200	0	0	0	6 (11.8)	2 (5.3)	8 (8.9)
201-250	0	0	0	0	1 (2.6)	1 (1.1)
>250	0	0	0	4 (7.8)	1 (2.6)	5 (5.6)
Mean	0	0	0	75.9	41.8	61.3
Annual income from primary occupation						
≤100,000	10 (6.3)	21 (16.2)	31 (10.7)	1 (1.9)	4 (10.5)	5 (5.6)
101,000-200,000	27 (16.9)	20 (15.4)	47 (16.2)	7 (13.7)	6 (15.8)	13 (14.6)
201,000-300,000	20 (12.5)	20 (15.4)	40 (13.8)	4 (7.8)	4 (10.5)	8 (8.9)
301,000-400,000	21 (13.1)	11 (8.5)	32 (11.0)	7 (13.7)	5 (13.2)	12 (13.5)
>400,000	82 (51.3)	58 (44.6)	140 (48.3)	32 (62.8)	19 (50.0)	51 (57.3)
Mean	567987.5	609923.1	586786.2	642156.9	486578.9	575730.3
Source of labour						
Family labour	46(28.7)	41(31.5)	87(30.0)	27(52.9)	13(34.2)	40(44.9)
Hired labour	95(59.4)	75(57.7)	170(58.6)	18(35.3)	18(47.4)	36(40.4)
Communal labour	19(11.9)	14(10.8)	33(11.4)	6(11.8)	7(18.4)	13(14.6)
Goal of farming/pastoral farming						
Family consumption	7(4.4)	8(6.2)	15(5.2)	12(23.5)	6(15.8)	18(20.2)
Sales	51(31.9)	27(20.8)	78(26.9)	35(68.6)	29(76.3)	64(71.9)
Both sales and family	102(63.7)	95(73.1)	197(67.9)	4(7.8)	3(7.9)	7(7.9)

Source: Field survey, 2019

4.1.13 Institutional services accessed by the farmer and pastoralist

The institutional services accessed by the farmer in the study area include extension contact, cooperative membership and access to credit which are presented in Table 4.4

(i). Access to extension services by the respondents

From Table 4.4, the mean extension contact of farmer in Niger and Nasarawa States were 4 times each per year. The pooled result shows a mean extension contact of 4 times. This result contradicts that of Robertson and Steve (2012) and Kimenyi *et al.* (2014) which stressed that the number of extension contacts with farmer groups were at most 2 times per annum in the severely conflict affected areas.

Also, Table 4.4 reveals that more than half (55.3%) of the pastoralist in Niger State had accessed to extension contact while only 35.3% of the pastoralist in Nasarawa State had accessed to extension contacts. The pooled result shows that 43.8% of the pastoralist on the average accessed extension services. This implies most of the pastoralist did not have adequate access to extension services delivery and this is expected to affect the effectiveness of TCR mechanisms. The mean extension contact of pastoralist in Niger State was 3 times per year while that of Nasarawa was only 1 time per year. The pooled result shows a mean extension contact of 2 times per annum.The result corroborates the finding of Olaniyan and Yahaya (2016) who reported that majority of herdsmen in Nigeria are not visited by extension officers because of the nature of their settlement, occupations and movement.

(ii). Cooperative membership by the respondents

Result in Table 4.4 shows that 71.9% of the farmer in Nasarawa State were members of cooperative societies while only 39.2% of farmer in Niger State belonged to such societies.

The pooled result shows that 57.2% of the farmers belonged to cooperative societies; indicating that more than half of the farmer belong to cooperative societies. Membership of associations creates an avenue for farmer to have access to credit and other incentives that could increase their production. Cooperative membership could also assist farmers with information regarding conflicts and how they could curb them. In a related study, Soriola (2018) found that most of the farmer in Bauchi State, Nigeria belong to an association.

Furthermore, Table 4.4 indicates that 68.6% and 65.8% of pastoralist in Nasarawa and Niger States respectively belonged to cooperative societies. The pooled result shows that 67.4% of the pastoralist belonged to cooperative societies. This is an indication that most pastoralist belonged to cooperative societies. Also, the mean years of membership of cooperative societies for the pastoralist in Nasarawa State was 6.1 years while that of Niger State was 2.5 years. This shows that pastoralist in Nasarawa had more experience in the cooperative societies. Membership of associations can provide an opportunity for timely and speedy information that would assist the pastoralist to avoid conflicts. This finding agrees with that of Sani *et al*. (2020) who stated that most of the pastoralist in Bauchi State were members of the Miyetti Allah Cattle Breeders Association of Nigeria.

(iii). Access to credit by the respondents

Table 4.4 shows that a larger majority 92.3% and 85.6%ofthe farmer in Niger State and Nasarawa State respectively did not access credit. The pooled result shows that 88.6% did not access credit. The result shows that the majority of the farmer from both States did not have access to credit. The result agreed with the finding of Akudugu *et al.* (2012) who stressed that the majority of farmer in Sub-Saharan Africa were constrained by inadequate credit facilities.

In the same vein, Table 4.4 indicates that a larger majority (96.1%) of the pastoralist in Nasarawa State did not access credit while not all the pastoralist in Niger State had access to credit facilities. This finding shows that the majority of the pastoralist in the study area did not access credit. Also, the pooled result reveals that 97.7% of the respondents in the study area did not have access to credit, which implied very low access to credit. This shows that pastoralist did not have much access to credit. This could be attributed to the lack of financial institutions in the remote places where pastoralist reside. This finding is in consonance with that of Sani *et al.* (2020) who reported that the majority of pastoralist in Gombe State of Nigeria were constrainted by credit unavailability.

Table 4.4 reveals that the mean amount of credit received by farmer in Nasarawa State was ₦28, 533.75k while that of Niger State was ₦25,846.15k; suggesting that farmer in Nasarawa State accessed little more credit than those of Niger State. The pooled result indicates a mean of ₦27,328:97k. This result suggests that the amount received was meagre and could have negative implication where farmer are expected to pay for TCR (Akudugu *et al.*, 2012). Furthermore, Table 4.4 shows that the mean amount of credit received by pastoralist in Nasarawa State was ₦11,764.71k while none of the pastoralist received any credit in Niger State.

(iv). Access to government support

Table 4.4 shows that 53.1% and 74.6%of the farmer have access to government support in Niger State and Nasarawa State respectively. The pooled result showes that 68.6% had access to such support, which could be in terms of subsidy, access to production inputs and credit facilities. The result therefore shows that majority of the farmer from both States had access to government support. This may be attributed to frequent farmer-herders conflicts, which

influence government to support the farming households. The result contradicts the finding of Akudugu *et al.* (2012) who stressed that the majority of farmer in Sub-Saharan Africa were constrained by inadequate government policy.

In the same vein, Table 4.4 indicates that 60.8% and 84.2% of the pastoralist in Nasarawa and Niger State did not have access to government support. This finding shows that the majority of the pastoralist in the study area did not have access to government support. In addition, the pooled result reveals that 70.8% of the pastoralist in the study area did not access to government support. This could be attributed to the nature of the remote places where pastoralist reside. This finding is in consonance with that of Sani *et al.* (2020) who reported that the majority of pastoralist in Gombe State of Nigeria were constraint by credit unavailability

Table 4.4: Distribution of respondents according to institutional variable accessed

Variable	Farmer			Pastoralist		
	Nasarawa State (n=160) Freq (%)	Niger State (n=130) Freq (%)	Pooled (n=290) Freq (%)	Nasarawa State (n=51) Freq (%)	Niger State (n=38) Freq (%)	Pooled (n=89) Freq (%)
Access to extension services						
Yes	129 (80.6)	71 (54.6)	200 (68.9)	18 (35.3)	21 (55.3)	39 (43.8)
No	31 (19.4)	59 (45.4)	90 (31.1)	33 (64.7)	17 (44.7)	50 (59.2)
Number of extension contact (years)						
One	28 (17.5)	15 (11.5)	43 (14.8)	7 (13.7)	4 (10.5)	11 (56.2)
Two	57 (35.6)	21 (16.2)	78 (26.9)	10 (19.6)	9 (23.7)	19 (21.4)
Three	44 (27.5)	35 (26.9)	79 (27.2)	1 (1.9)	8 (21.1)	9 (10.1)
Mean	3.6	3.7	3.7	1.0	2.5	1.7
Cooperative membership						
Yes	115 (71.9)	51 (39.2)	166 (57.2)	35 (68.6)	25 (65.8)	60 (67.4)
No	45 (28.1)	79 (60.8)	124 (42.8)	16 (31.4)	13 (34.2)	29 (32.6)
Years in cooperative						
1-10	85 (53.1)	41 (31.5)	126 (43.5)	25 (49.0)	24 (63.2)	49 (55.1)
11-20	27 (16.9)	6 (4.6)	33 (11.4)	8 (15.7)	1 (2.6)	9 (10.1)
>20	3 (1.9)	4 (3.1)	7 (2.4)	2 (3.9)	0	2 (2.3)
Mean	6.4	3.3	5.0	6.1	2.5	4.6
Access to credit						
Yes	23 (14.4)	10 (7.7)	33 (11.4)	2 (3.9)	0	2 (2.3)
No	137 (85.6)	120 (92.3)	257 (88.6)	49 (96.1)	38 (100.0)	87 (97.7)
Amount received (₦)						
<100000	11 (6.9)	4 (3.1)	15 (5.2)	0	0	0
101000-200000	7 (4.4)	0	7 (2.4)	2 (3.9)	0	2 (2.3)
201000-300000	1 (0.6)	1 (0.8)	2 (0.7)	0	0	0
>300000	4 (2.5)	5 (3.9)	9 (3.1)	0	0	0
Mean	28533.75	25846.15	27328.97	11764.71	0	6741.573
Access to government support						
Yes	85(53.1)	97(74.6)	199(68.6)	20(39.2)	6(15.8)	26(29.2)
No	75(46.9)	33(25.4)	91(31.4)	31(60.8)	32(84.2)	63(70.8)

Source:Fieldsurvey,(2019)

4.1.14 Number of conflicts witnessed by the respondents between 2015-2018

Table 4.5 reveals that the mean number of conflicts witnessed by farmer in Nasarawa State was about 7 while that of Niger State was about 6. This shows that farmer in Nasarawa State witnessed slightly more conflict. But pooled result shows that the mean number farmer-pastoralist conflict witnessed in the study area was 6. Doorly (2016) and Haldun and Odukoya (2016) have similarly observed that, in recent years, farmer had witnessed series of conflicts across several States in Nigeria including Benue, Enugu, Adamawa and the Nasarawa States. UNDP (2017) also reported that the frequency of occurrence of conflict is often, which is a daily occurrence in some areas.

Furthermore, Table 4.5 indicates that 68.4% and 47.1% of the pastoralist in Niger and Nasarawa States respectively witnessed between 1-3 farmer - pastoralist conflicts in the 3 years. Furthermore, 35.3% and 18.4% of the pastoralist witnessed between 4-6 conflicts in Nasarawa and Niger States respectively in the period. The pooled result however, showes that 56.2% of the pastoralist had witnessed between 1-3 these conflicts in the period. This implies that conflict between farmer and pastoralist are common in the study area. This could worsen the livelihood of the pastoralist and farmers as well as those that depend on the produce from these people. Baca (2015) reported between 1-5 incidence of conflicts among farmer and pastoralist in North Central.

Table 4.5: Distribution of respondents according to conflict witnessed between 2015-2018

Variable	Farmer			Pastoralist		
	Nasarawa State (n=160) Freq (%)	Niger State (n=130) Freq (%)	Pooled (n=290) Freq (%)	Nasarawa State (n=51) Freq (%)	Niger State (n=38) Freq (%)	Pooled (n=89) Freq (%)
Numbers of farmer pastoralist conflicts						
1-3	67 (41.9)	45 (34.6)	112 (38.6)	24 (47.1)	26 (68.4)	50 (56.2)
4-6	25 (15.6)	30 (23.1)	55 (18.9)	18 (35.3)	7 (18.4)	25 (28.1)
7-9	20 (12.5)	27 (20.8)	47 (16.2)	7 (13.7)	1 (2.6)	8 (8.9)
>10	47 (29.4)	25 (19.2)	72 (24.8)	0	0	0
None	1 (0.6)	3 (2.3)	4 (1.4)	2 (3.9)	4 (10.5)	6 (6.7)
Mean	6.7	5.6	6.2	2.3	2.5	2.4

Source: Field survey, (2019)

4.1.15 Social and economic losses from conflicts in the period 2015-2018

Table 4.6 shows that mean value of crop losses incurred by farmer in Nasarawa State was ₦435,000 compared to ₦408,230 for farmer in Niger State. This is an indication that farmer in Nasarawa State suffered more crop losses during conflicts than their counterparts in Niger State. The pooled result reveals that mean value of crop losses for the farmers was ₦ 421,615.

Table 4.6 reveals that the mean monetary value of livestock losses incurred by the pastoralist in Nasarawa and Niger States was ₦465,630.0 and ₦443,675 respectively. This finding also points to the fact pastoralist in Nasarawa State experienced more livestock losses than in Niger State. On the whole, the mean value of livestock losses during conflicts for the pastoralist was ₦454,652. The farmer in Niger and Nasarawa States reported ₦145,783 and ₦123,006 as the value of livestock they lost to the conflicts respectively. The pooled results shows ₦134,394.5 as the value of of livestock lost as a result of conflicts.

Table 4.6 further indicates that the mean value of losses of other social assets incurred the by farmer in Niger and Nasarawa States were ₦348,654.00k and ₦342,078.00k respectively. The pooled result shows a mean of ₦345,366.00k. The pastoralist in Nasarawa and Niger State however reported ₦234,001.00k and ₦212,738.00k as the

value of other social assets lost of respectively. The pooled result shows a mean value of ₦223,369.50K.This result implied that farmer in areas prone to conflicts in Nasarawa State suffered more losses in terms of social assets than their counterparts in Niger State. This maybe attributed to the frequency of occurrence of conflicts in Nasarawa State.

The results above suggests that respondents incurred more losses in terms of crop and social assets less than in livestock. This finding collaborates that of Chukwuma and Atelhe (2014) and Mercy Corps (2015) who reported that conflicts have resulted in dire humanitarian, social, economic, and socio-economic consequences with agriculture including crop farming, livestock rearing and trade sectors experiencing heavy losses. Adelakun *et al.* (2015) similarly reported that farm products and other properties worth millions of Naira were destroyed during communal conflicts including looting of properties left behind during displacement.

Table 4.6: Distribution of respondents according to social and economic losses (2015-2018)

Variable	Farmer			Pastoralist		
	Nasarawa State (n=160) Freq (%)	Niger State (n=130) Freq (%)	Pooled (n=290) Freq (%)	Nasarawa State (n=51) Freq (%)	Niger State (n=38) Freq (%)	Pooled (n=89) Freq (%)

Crop Losses value (₦)						
1-99	34 (21.3)	12 (9.2)	46 (15.9)	0	0	0
100-199	42 (26.3)	26 (2.0)	68 (23.4)	0	0	0
200-299	16 (10.0)	41 (31.5)	57 (19.7)	0	0	0
300-399	21 (13.1)	17 (13.1)	38 13.0()	0	0	0
400-499	30 (18.9)	18 (13.8)	48 (16.6)	0	0	0
500-599	13 (8.1)	4 (3.1)	17 (5.9)	0	0	0
≥600	4 (2.5)	12 (9.2)	16 (5.5)	0	0	0
Mean	435,000	408,230	421,615	0	0	0
Livestock Losses value (₦)						
1-99	3 (1.9)	17 (13.1)	20 (39.2)	2 (5.3)	0	2 (2.2)
100-199	4 (2.5)	6 (4.6)	10 (3.4)	3 (5.9)	0	3 (3.4)
200-299	8 (5.0)	6 (4.6)	14 (4.8)	2 (5.2)	2 (1.5)	4 (4.5)
300-399	5 (3.1)	9 (6.9)	14 (4.8)	6 (11.7)	9 (23.7)	15 (16.9)
400-499	0	0	0	12 (23.5)	15 (39.5)	27 (30.3)
500-599	0	0	0	15 (29.4)	6 (15.8)	21 (23.5)
≥600	0	0	0	10 (19.6)	6 (15.8)	16 (17.9)
Mean	123,006	145,783	134,394.5	465,630.0	443,675	454,652.5
Other Social Assets (₦)						
1-99	37 (23.1)	14 (10.8)	51 (17.6)	12 (23.5)	7 (18.4)	19 (20.2)
100-199	40 (25.0)	19 (14.6)	59 (20.3)	3 (5.9)	7 (18.4)	10 (11.2)
200-299	22 (13.8)	35 (26.9)	57 (19.7)	4 (7.8)	5 (13.2)	9 (10.1)
300-399	16 (10.0)	23 (17.7)	39 (13.4)	5 (9.8)	3 (7.9)	8 (8.9)
400-499	10 (6.3)	16 (12.3)	26 (8.9)	10 (19.6)	1 (2.6)	11 (12.4)
500-599	28 (17.5)	9 (6.9)	37 (9.3)	7 (13.7)	4 (10.5)	11 (12.4)
≥600	7 (4.4)	14 (10..8)	21 (7.2)	9 (17.6)	11 (28.9)	20 (22.5)
Mean	342,078.0	348,654.	345,366	234,001	212,738	223,369.5

Source: Field survey, (2019)

4.1.16 Season of occurrence of conflicts

Table 4.7 reveals that 64.6% of farmer in Niger State experienced conflict in the raining season as compared to 43.8% in Nasarawa State. The pooled result shows that 53.9% of farmer experienced conflict during the rainy season. This might be attributed to the season in which farming activities are at peak which exposes farmer and pastoralist to competition for available resources. Olayoku (2014) has however, reported that the conflicts do not end after the rainy season that violence occurrence of communal conflicts was not restricted to specific periods of the year as they occurred during all months. On the other hand, 60.5% and 53.9% of the pastoralist in Nasarawa and Niger State respectively experienced conflict in the raining season. The pooled result shows that 53.9% experienced conflict during raining season. This finding agreed with Fasona and Omojola (2002) who indicates rainy season and the on-set of rainy season contribute to conflict.

4.1.17 Time of occurrence of the conflicts

Table 4.7 indicates that most (60.8%) of the farmer in conflict prone areas of Niger State indicates that the conflicts occur mostly in the night. On the contrary, 54.4% of the farmer in Nasarawa State said they experienced the conflicts in the night time. The pooled result shows that most (58.4%) of the farmer in the study area indicates that the conflicts occurred in the night time.This suggests that the occurrence of the conflicts was mostly in the night. This has been the practice of operation of pastoralist that carried out reprisal attacks in the night and leave unnoticed. The result agreed with that of Olayoku (2014) who reported that attacks during communal conflicts were mostly carried out during the night or at dawn in order to wreak havoc to the communities with minimal resistance.

On the other hand, 58.8% and 57.9% of the pastoralist in Nasarawa and Niger States respectively reported that conflict with farmer always took place in the night. The pooled result indicates that 58.4% reported that conflict with farmer took place mostly at night times. This might be due to precision attack carried out by pastoralist when they are least expected. This finding agrees with Ior *et al.* (2018) who reported that conflict in Nasarawa State occurred mostly in the night.

4.1.18 Category of people affected by the conflicts

Table 4.7 reveals that 50.0% and 43.8% of farmer in Nasarawa and Niger States believed adults were more affected in the conflict. While 26.3% and 24.6% of farmers in Nasarawa and Niger States respectively believed pastoralist were more affected. The pooled result shows that 47.2% and 25.5% believed adults and elders were affected. On the other hand, 55.3% and 47.2% of pastoralist in Niger and Nasarawa States respectively stated that adults were mostly affected. This result suggests that elders and adults were more affected by conflicts in the study area. Farinde and Alabi. (2015) however, who stated that the impact of armed conflict and terrorism on children, youth and their families can be

catastrophic and long lasting resulting in long term psychological trauma, poverty, high rate of school dropout and increasingly violent behaviour.

4.1.19 Sex of people affected most by the conflicts

Table 4.7 indicates that majority (76.3%) and (76.2%) of the farmer in Nasarawa and Niger States stated that males were most affected. The pooled result shows that 76.2% of the farmers said males were affected most. Also, 84.3% and 81.6% of pastoralist in Nasarawa and Niger States respectively stated that male were most affected. The pooled results showes that 83.1% of the pastoralist believed that male were most affected. This finding suggest that majority of respondents affected by conflicts in the study area were men. The responsibilities of men from both group in search of sustainable livelihood for their families could result to frequent contacts and conflicts.

4.1.20 Length of displacement of the conflict victims

The result further reveals that the mean, number of months that victims of the conflicts in Nasarawa and Niger States are displaced were 4.92 and 4.54 months respectively. The pooled results shows a mean number of month of 4.72 months. On the other hand, the mean number months for the pastoralist in Nasarawa and Niger States was 3.51 and 3.26 months respectively. The pooled result shows that the mean months of displaced by pastoralist in the study area was 3.39 months. This implies that farmer-pastoralist conflict had strong negative effects on farmer and pastoralist in the study area.

This finding is in consonance with Ior *et al.* (2018) who stated that periods of displacement lasted for about one year and during the period, some community members took refuge under trees in the absence of IDP camps and government assistance. Some of them claimed to visit their farmlands from the IDP camps or wherever they were taking refuge since assistance given by government in most cases was not enough to sustain them.

Table 4.7: Distribution of respondents according to pattern of conflicts

Variable	Farmer Nasarawa State (n=160) Freq (%)	Niger State (n=130) Freq (%)	Pooled (n=290) Freq (%)	Pastoralist Nasarawa State (n=51) Freq (%)	Niger State (n=38) Freq (%)	Pooled (n=89) Freq (%)
Season of occurrence of conflict						
Dry season	56 (35.0)	42 (32.3)	98 (32.1)	23 45.1	11 (28.9)	34 (38.2)
Raining season	70 (43.8)	84 (64.6)	154 (53.1)	25 (49.0)	23 (60.5)	48 (53.9)
Both	34 (21.2)	4 (3.1)	38 (13.1)	3 (5.9)	4 (10.5)	7 (7.9)
Time of occurrence of conflict						
Day	45 (28.1)	47 (36.2)	92 (31.7)	21 (41.2)	15 (39.5)	36 (40.4)
Night	87 (54.4)	79 (60.8)	166 (57.2)	30 (58.8)	22 (57.9	52 (58.4)
Both	28 (17.5)	4 (3.1)	32 (11.0)	0	1 (2.6)	1 (1.1)
Category of people affected						
Young	28 (17.5)	29 (22.3)	57 (19.6)	5 (7.5)	7 (18.4)	12 (13.5)
Elderly	42 (26.3)	32 (24.6)	74 (25.5)	19 (37.3)	9 (23.7)	28 (31.5)
Adults	80 (50.0)	57 (43.8)	137 (47.2)	21 (41.2)	21 (55.3)	42 (47.2)
Others	10 (6.3)	12 (9.2)	22 (7.8)	6 (11.8)	1 (2.6)	7 (7.9)
Sex affected most						
Male	122 (76.3)	99 (76.2)	221 (42.1)	43 (84.3)	31 (81.6)	74 (83.1)
Female	38 (23.8)	31 (23.8)	69 (23.8)	8 (15.7)	7 (18.4)	15 (16.9)
Numbers of months displace						
1-3	60 (37.5)	34 (26.2)	94 (32.4)	20 (39.2)	13 (34.2)	33 (37.1)
4-6	78 (48.8)	70 (53.8)	148 (51.0)	16 (5.5)	20 (52.6)	36 (40.4)
>6	22 (13.8)	26 (20.0)	48 (16.5)	15 (5.2)	5 (13.2)	20 (22.5)
Mean	4.92	4.54	4.72	3.51	3.26	3.39

Source: Field survey, (2019)

4.2 TCR Mechanisms Used

4.2.1 TCR mechanisms used in improving farmer-pastoralist relationship as reported by farmers

Table 4.8 shows the distribution of farmer according to TCR mechanisms used in improving relationships with pastoralist.The findings in Nasarawa State indicates a Kendall's coefficient of concordance of 19.6% level of probability while that of Niger State was 20.9%. The pooled result shows that the Kendall's coefficient of concordance obtained in the analysis was 0.155 and it was significant at a 1% level of probability, suggesting that only 15.5% of the farmer agreedwith the outcome of the ranking. The finding shows a weak agreement among the mechanisms. The low Kendall value recorded might be due to error term or low agreement by farmer on the outcome among the variable included in the model.

The findings in Niger State reveals that compensation and punishment ($\bar{X}$=14.82), use of agents to monitor conflicts ($\bar{X}$=14.34), imposing curfew in the area ($\bar{X}$=13.31), check and balances ($\bar{X}$=12.89), reward ($\bar{X}$=12.62), good governance ($\bar{X}$=12.28), mediation by elders ($\bar{X}$=12.07), effective communication ($\bar{X}$=12.00), setting of the judicial committee ($\bar{X}$=11.93), dialogue/convening a meeting ($\bar{X}$=11.86), informal settlement ($\bar{X}$=11.86), reconciling both parties ($\bar{X}$=11.86) and interfaith dialogue ($\bar{X}$=11.73), were the TCR mechanisms used in improving farmer-pastoralist relationship.

Entries for Nasarawa State shows that dialogue/convening a meeting ($\bar{X}$=15.43), mediation by elders ($\bar{X}$=14.58), tendering apology ($\bar{X}$=14.16), reconciling both parties ($\bar{X}$=14.16), inter-faith dialogue ($\bar{X}$=13.99), effective communication ($\bar{X}$=12.80), informal settlement ($\bar{X}$=12.47), use of agents to monitor conflict ($\bar{X}$=12.47), check and balances ($\bar{X}$=12.30), setting of the judicial committees ($\bar{X}$=11.96), compensation and punishment ($\bar{X}$=11.70), peace education/teaching ($\bar{X}$ =11.37), traditional oath-taking ($\bar{X}$ =11.20), use of marriage ($\bar{X}$=11.03), imposing a curfew on the area ($\bar{X}$=10.94), good governance ($\bar{X}$=10.27), reward ($\bar{X}$=10.01) and use of sanction ($\bar{X}$=9.59) were the TCR mechanisms used in improving farmer-pastoralist relationship. The result further indicates that use of agents to monitor the conflict ($\bar{X}$=13.50), dialogue/convening a meeting ($\bar{X}$=13.46), compensation and punishment ($\bar{X}$=13.42) were the most TCR mechanisms used in improving farmer-pastoralist relationship. This finding implies that enforcing culprits to pay mandatory ransom to the victims and conveying a meeting are better ways of resolving conflicts between famers and pastoralist.

The above finding aligns with that of Ior *et al.* (2018) who reported that compensation and punishment were the major mechanisms employed for communal conflict resolution in Benue State. More so, mediation by elders ($\bar{X}$ =13.19) is another TCR used.This involves the intervention of traditional rulers to restore peace and orderliness in the area

engulfed by conflicts. This finding is also in line with that of Urama *et al*. (2018) who reported that mediation by elders was the major mechanisms for conflict resolution in Enugu State, Nigeria.

Further findings from the study shows reconciling both parties ($\bar{X}$=12.89) and inter-faith dialogue ($\bar{X}$=12.78), checks and balances ($\bar{X}$=12.63), effective communication ($\bar{X}$=12.36) and imposing a curfew on the area ($\bar{X}$=12.25) were the TCR mechanisms used in improving farmer-pastoralist relationship. It is assumed that dialogues between the spiritual heads of faiths religious and the use of effective communication for both parties to purge their grievances are very vital in resolving conflicts between farmer and pastoralist. Also, restricting movement in the affected area and effective communication can restore normalcy in the conflict zones and checking the activities of farmer-pastoralist can reduce conflicts. This finding confirms the report of Ior *et al.* (2018) who reported that the use of police and imposing curfew could ease tension in conflict-affected areas.

Other findings reveals that informal settlement ($\bar{X}$=12.13), tendering apology ($\bar{X}$=12.02), setting of the judicial committee ($\bar{X}$=11.94), peace education/teaching ($\bar{X}$=11.53), reward ($\bar{X}$=11.45), good governance ($\bar{X}$=11.53) and use of marriage ($\bar{X}$=11.18) were the mechanisms used in resolving conflict between farmer and pastoralist in the study area. This finding agrees with Urama *et al.* (2018) who reported that tendering of apology, peace education/teaching and marriage were major mechanisms for conflict resolution.

Table 4.8: Distribution of TCR Mechanisms used by the farmer

Variable	Nasarawa State (n=160) Mean ($\bar{x}$)	Rank	Niger State (n=130) Mean ($\bar{x}$)	Rank	Pooled (n=290) Mean ($\bar{x}$)	Rank
Use of agents to monitor conflict	12.47	7th	14.34	2nd	13.50	1st
Dialogue/convening a meeting	15.43	1st	11.86	11th	13.46	2nd
Compensation and punishment	11.70	11th	14.82	1st	13.42	3rd
Mediation by elders	14.58	2nd	12.07	7th	13.19	4th
Reconciling both parties	14.16	3rd	11.86	11th	12.89	5th
Inter-faith dialogue	13.99	5th	11.79	10th	12.78	6th
Check and balances	12.30	9th	12.89	4th	12.63	7th
Effective communication	12.80	6th	12.00	8th	12.36	8th

Imposing a curfew on the area	10.94	15th	13.31	3rd	12.25	9th
Informal settlement	12.47	7th	11.86	11th	12.13	10th
Tendering apology	14.16	3rd	10.28	19th	12.02	11th
Setting of judicial committee	11.96	10th	11.93	9th	11.94	12th
Peace education/teaching	11.37	12th	11.66	14th	11.53	13th
Reward	10.01	17th	12.62	5th	11.45	14th
Good governance	10.27	16th	12.28	6th	11.37	15th
Use of marriage	11.03	14th	11.31	15th	11.18	16th
Traditional oath taking	11.20	13th	10.83	16th	10.99	17th
Use of sanction	9.59	18th	10.42	18th	10.05	18th
Persuasion of actors	8.91	19th	10.56	17th	9.82	19th
Use of propaganda	8.15	20th	8.49	20th	8.34	20th
Inculcation of myths	7.81	21st	7.88	22nd	7.85	21st
Ritual treaties/blood covenant	7.73	22nd	7.94	21st	7.85	21st
Kendall's W	0.196		0.209		0.551	
Chi-Squared	657.190***		569.795***		943.764***	
Degree	21		21		21	
Asymptotic significant	1%		1%		1%	

Source: Field survey, 2019

4.2.2 TCR mechanisms used in improving farmer-pastoralist relationship as reported by the pastoralist

The report of pastoralist in Table 4.9 indicates a Kendall value of 19.7% level of probability in Nasarawa State while that of Niger State was 18.9%. These findings show weak agreement among the mechanisms.The pooled result shows that the Kendall's coefficient of concordance obtained in the analysis was 0.174 and it was significant at a 1% level of probability, suggesting that only 17.4.% of pastoralist agreed with the outcome of the ranking.The result for Nasarawa State shows that compensation and punishment ($\bar{X}$=17.22), tendering apology/use of negotiation ($\bar{X}$=13.76), dialogue/conveying meeting ($\bar{X}$=12.69), use of agents to monitor conflict ($\bar{X}$=12.47), mediation by elders ($\bar{X}$=12.04), reconciling both parties ($\bar{X}$=12.04), effective communication ($\bar{X}$=11.82), informal settlement ($\bar{X}$=11.61), interfaith dialogue ($\bar{X}$=11.39) and use of marriage ($\bar{X}$=11.39) were the mechanisms used in improving farmer-pastoralist relationship.

The findings for Niger State reveal that tendering apology/use of negotiation ($\bar{X}$=15.89), compensation and punishment ($\bar{X}$=15.03), dialogue/conveying meeting ($\bar{X}$=11.84), reconciling both parties ($\bar{X}$=11.84), mediation by elders ($\bar{X}$=11.55), good governance

($\bar{X}$=11.55), peace education/teaching ($\bar{X}$=11.55), checks and balances ($\bar{X}$=11.55), setting of judicial committee ($\bar{X}$=11.26), use of agents to monitor conflict ($\bar{X}$=11.26), traditional oath-taking ($\bar{X}$=11.26), use of sanction ($\bar{X}$=11.26) and use of marriage ($\bar{X}$=11.26) were the TCR mechanisms used in improving farmer-pastoralist relationship.

The pooled result reveals that compensation and punishment ($\bar{X}$=16.28) was the commonest mechanisms used in improving farmer-pastoralist relationship. This implies that forcing culprits to pay ransom to serve as a deterrent to others and prevent future conflicts was used in the study area. This is consistent with Ior *et al.* (2018) who reported that payment of compensation and punishment are the major mechanisms used for conflict resolution.

Also, tendering of apology/use of negotiation ($\bar{X}$=14.47) and dialogue/conveying meeting ($\bar{X}$=12.33) were one of the most frequently used TCR mechanisms in improving farmer-pastoralist relationship. This aligns with the finding of Akinpeloye *et al.* (2020) who stated that the use of negotiation, dialoguing and use of monitoring agents were major mechanisms used by pastoralist for conflict resolution. Further findings of the study show that use of agents to monitor conflict ($\bar{X}$=11.96) and reconciling both parties ($\bar{X}$=11.96), mediation by elders ($\bar{X}$=11.83), effective communication ($\bar{X}$=11.46) and interfaith dialogue ($\bar{X}$=11.46) were also some of the TCR mechanisms more frequently used for conflict resolution. This implies the use of mediation agents, respectful elders and use of religious heads to prevent further escalation of the conflict. This finding concurs with that of the International Crisis Group (2017) report that TCR mechanisms have proved efficient in conflict resolution. The findings further shows that use of marriage ($\bar{X}$=11.34) and peace education/teaching ($\bar{X}$=11.34) were the other TCR mechanisms used in resolving conflicts in the study area. This result suggest that inter-tribal marriage in

addition to other mechanisms can be an effective means of reducing conflicts between farmer and herders.

Table 4.9: Distribution of TCR Mechanisms used by the pastoralist

Variable	Nasarawa State(n=51)Mean ($\bar{x}$)	Rank	Niger State (n=38) Mean ($\bar{x}$)	Rank	Pooled (n=89)Mean ($\bar{x}$)	Rank
Compensation and punishment	17.22	1st	15.03	2nd	16.28	1st
Tendering apology	13.76	2nd	15.89	1st	14.67	2nd
Dialogue/convening a meeting	12.69	3rd	11.84	3rd	12.33	3rd
Reconciling both parties	12.04	5th	11.84	3rd	11.96	4th
Use of agents to monitor conflict	12.47	4th	11.26	10th	11.96	4th
Mediation by elders	12.04	5th	11.55	5th	11.83	6th
Effective communication	11.82	7th	10.97	15th	11.46	7th
Inter-faith dialogue	11.39	9th	11.55	5th	11.46	7th
Use of marriage	11.39	9th	11.26	10th	11.34	9th
Peace education/teaching	11.18	11th	11.55	5th	11.34	9th
Check and balances	10.96	13th	11.55	5th	11.21	11th
Informal settlement	11.61	8th	10.39	20th	11.09	12th
Setting of judicial committee	10.96	13th	11.26	10th	11.09	12th
Good governance	10.75	15th	11.55	5th	11.09	12th
Traditional oath taking	10.53	16th	11.26	10th	10.84	15th
Persuasion of actors	10.53	16th	10.97	15th	10.72	16th
Use of sanction	10.31	18th	11.26	10th	10.72	16th
Reward	11.18	11th	9.82	21st	10.60	18th
Imposing a curfew on the area	10.31	18th	10.68	18th	10.47	19th
Inculcation of myths	9.88	21st	10.97	15th	10.35	20th
Ritual treaties/blood covenant	10.10	20th	10.68	18th	10.35	20th
Use of propaganda	9.88	21st	9.82	21st	9.85	22nd
Kendall's W	0.197		0.189		0.174	
Chi-Squared	210.551***		150.523***		324.749***	
Degree	21		21		21	
Asymptotic significant	1%		1%		1%	

Source: Field survey, 2019

4.2.3 Causes of conflict between farmer and pastoralist

Table 4.10 shows the distribution of farmer according to farmer-pastoralist causes of conflict. The respondent in Nasarawa State indicate that damage to crops (93.1%), attacking cattle by farmer (49.1%), stealing of crops (45.6%), lack of respect of both parties (41.9%), competition for land and water (41.3%), lack of compliance between farmer and pastoralist (41.3%), indiscriminate bush burning (40.6%), overgrazing of farmland (39.4%) and drug abuse (37.9%) and illegal incursion of farmland by pastoralist (35.6%) were the frequent causes of conflict. As for respondents from Niger State, damage to crops (80.0%), stealing of crops/cattle (52.3%), lack of compliance (49.2%), lack of respect of both parties (46.2%), attack on cattle by farmer (43.1%), illegal

incursion of farmland by pastoralist (42.3%), indiscriminate bush burning (40.8%), overgrazing of farmland (38.5%), competition for land and water (37.7%) and drunkenness (34.6%) were the causes of conflict between farmer and pastoralist.

The pooled result in Table 4.10 indicates that crop damage (87.2%) was the major cause of conflict. This is mostly due to the careless attitude of pastoralist. The cattle tresspassed on farmer crop fields for grazing and caused destruction to the crops. This concurs with the result of Ofem and Inyang (2014) who reported that illegal incursion of farmland was one of the factors responsible for farmer-pastoralist conflicts in Nigeria. Stealing of crops (48.6%) and attack of cattle by farmer (46.6%) were other prominent causes of the conflict in the study area.This is common when pastoralist engaged in pilfering of farmer crops which usually farmer to led take the law into their hands by attacking them which could later lead to reprisal attacks. Urama *et al.* (2018) also reported destruction of crops as the major cause of conflict between farmer and pastoralist in Enugu State, Nigeria.

Other findings of the study shows that competition for land and water (39.7%) and overgrazing (38.9%) were other causes of conflict. This problem often renders land useless and increases land fragmentation and desertification.This finding is in agreement with that of Garba *et al.* (2015) which reveals that competition for land and overgrazing were the major causes of farmer pastoralist conflict in Nigeria. Other causes of the conflicts include illegal incursion of farmland by pastoralist (38.6%), drug abuse (33.5%), drunkenness (33.1%), hostilities between one another (32.4%), low awareness of stock (27.9%), rivalry between both parties (26.9%), government attitude (21.7%) and farm fragmentation (16.9%).This finding tallies with that of Urama *et al*. (2018) who submitted that illegal incursion of farmland, drug abuse and bitter rivalry all contributed to farmer and pastoralist conflicts in Nigeria.

Table 4.10: Distribution of farmers according to causes of farmer-pastoralist conflicts

Causes of conflicts	**Nasarawa State (n=160) Freq (%)**	**Rank**	**Niger State (n=130) Freq (%)**	**Rank**	**Pooled (n=290) Freq (%)**	**Rank**
Damage to crops	149 (93.1)	1st	104 (80.0)	1st	253 (87.2)	1st
Stealing of crops/cattle	73 (45.6)	3rd	68 (52.3)	2nd	141 (48.6)	2nd
Attack on cattle by farmer	79 (49.4)	2nd	56 (43.1)	5th	135 (46.6)	3rd
Lack of compliance between farmer and pastoralist	66 (41.3)	5th	64 (49.2)	3rd	130 (44.8)	4th
Lack of respect between farmer and pastoralist	67 (41.9)	4th	60 (46.2)	4th	127 (43.8)	5th
Indiscriminate bush burning	65 (40.6)	7th	53 (40.8)	7th	118 (40.7)	6th
Competition for land and water	66 (41.3)	5th	49 (37.7)	9th	115 (39.7)	7th
Overgrazing on farm land	63 (39.4)	8th	50 (38.5)	8th	113 (38.9)	8th
Illegal incursion of farmland by pastoralist	57 (35.6)	10th	55 (42.3)	6th	112 (38.6)	9th
Drug abuse	60 (37.9)	9th	37 (28.5)	12th	97 (33.5)	10th
Drunkenness	51 (31.9)	12th	45 (34.6)	10th	96 (33.1)	11th
Hostilities to one another	53 (33.1)	11th	41 (31.5)	11th	94 (32.4)	12th
Low awareness of stock routes	49 (30.6)	13th	32 (24.6)	14th	81 (27.9)	13th
Rivalry between both parties	44 (27.5)	15th	34 (26.2)	13th	78 (26.9)	14th
Government attitude towards conflict	45 (28.1)	14th	18 (13.9)	15th	63 (21.7)	15th
Farm fragmentation	36 (22.5)	16th	13 (10.0)	16th	49 (16.9)	16th

Source: Field survey, 2019

The pastoralist however shows that damage to crop (66.7%), low awareness of stock (43.1%), attack on cattle by farmer (41.2%), competition for land and water (41.2%),

stealing of crops/cattle (29.4%) and lack of compliance between farmer and pastoralist (29.4%), lack of respect between farmer and pastoralist (25.5%), overgrazing on farmland (21.6%) were the causes of conflicts in Nasarawa State Table 4.11. The pastoralist in Niger State on the other hand, indicates that damage to crops (52.6%), overgrazing on farmland (44.7%), lack of compliance between farmer and pastoralist (34.2%), illegal incursion of farmland by pastoralist (26.3%), competition for land and water (26.3%),low awareness of stock (26.3%) and attack on cattle by farmer (18.4%) were the common causes of conflict.

The pooled result indicates that damage to crops (60.7%) was the commonest cause of conflict as reveals by the result. This signifies that illegal incursion into farmland by herders triggered the crises in most cases. Garba *et al.* (2015) posited that damages to farm produce was the main cause of farmer and pastoralist conflicts.Also, competition for land and water (34.8%) and low awareness of stock route (33.7%) were other causes of conflicts. This finding is in agreement with that of Ofem and Inyang (2014) who stressed that attack on cattle by farmer and competition for land and water were some of the major causes of farmer' pastoralist conflicts in Nigeria. This is also in tandem with the finding of Schama (2016) who reported that competition for land, damage to crops and rustling of cattle were the major causes of farmer pastoralist conflict in Nigeria.

Further findings show that overgrazing on farmland (31.5%), lack of compliance to stock route (31.5%) and attack on cattle by farmer (31.5%) were causes of conflict. Overgrazing of farm land can result in the loss of important fauna and flora species and worsen the problem of soil fertility. Ofem and Inyang (2014) further reported that overgrazing of farmland often escalates the conflict between farmer and pastoralist. On the other hand, Haro and Dayo (2015) observed that conflicts between farmer and herdsmen arose as a result of the destruction of crops by herders, contamination of streams by cattle, overgrazing of farmland, which lead to soil degradation.

Table 4.11: Distribution of pastoralists according to causes of farmer-pastoralist conflicts

Cause of conflicts	Nasarawa State (n=51) Mean	R	Niger State (n=38) Mean	R	Pooled (n=89) Mean	R
Damage to crops	34 (66.7)	1st	20 (52.6)	1st	54 (60.7)	1st
Competition for land and water	21 (41.2)	3rd	10 (26.3)	4th	31 (34.8)	2nd
Low awareness of stock	22 (43.1)	2nd	8 (21.1)	6th	30 (33.7)	3rd
Attack on cattle by farmer	21 (41.2)	3rd	7 (18.4)	7th	28 (31.5)	4th
Overgrazing on farm land	11 (21.6)	8th	17 (44.7)	2nd	28 (31.5)	4th
Lack of compliance between farmer and pastoralist	15 (29.4)	5th	13 (34.2)	3rd	28 (31.5)	4th
Lack of respect between farmer and pastoralist	13 (25.5)	7th	7 (18.4)	7th	20 (22.5)	7th
Stealing of crops/cattle	15 (29.4)	5th	4 (10.5)	13th	19 (21.4)	8th
Illegal incursion of farmland by pastoralist	9 (17.7)	9th	10 (26.3)	4th	19 (21.4)	8th
Drunkenness	8 (15.7)	10th	6 (15.8)	9th	14 (15.7)	10th
Hostilities to one another	8 (15.7)	10th	5 (13.2)	10th	13 (14.6)	11th
Indiscriminate bush burning	6 (11.8)	12th	5 (13.2)	10th	11 (12.4)	12th
Drug abuse	6 (11.8)	12th	3 (7.9)	14th	9 (10.1)	13th
Rivalry between both parties	3 (5.9)	16th	5 (13.2)	10th	8 (8.9)	14th
Farm fragmentation	4 (7.8)	14th	3 (7.9)	14th	7 (7.9)	15th
Government attitude towards conflict	4 (7.8)	14th	0	16th	4 (4.5)	16th

Source: Field survey, 2019

4.2.4 Agents used for conflict resolution between farmer and pastoralist

Result in Table 4.12 reveals that more than half of farmer (58.5%) in Niger State indicates that traditional rulers were the agents mostly used in conflict resolution. Also, (34.4%) of the farmer in Nasarawa State indicates that traditional rulers were the agents mostly used in conflict resolution. Similarly, the pooled result in Table 4.12 shows that 45.2% of the farmer indicates that traditional rulers were the agents commonly used in conflict resolution. This might be due to the respect accorded to traditional rulers in the rural areas.This finding is in agreement with that of Baca (2015) who posited that traditional rulers were the agents used for conflict resolution between farmer and pastoralist in Benue

State, Nigeria. The use of traditional rulers such as village heads, opinion leaders, kings and chiefs could be attributed to their closeness to people at the grass-root.

The pooled result shows that 33.7% of the pastoralist reported that the police were the common agents used for conflicts resolution. This finding suggests that the police were also important agents for conflicts resolution in the study area. This finding corroborates that of Oguntolu (2018) who reported that police were the commonly used agents for conflict resolution between farmer and pastoralist in Benue State, Nigeria.

Table 4.12: Distribution of respondents based on the agents used in conflict resolution

Conflict resolution agent	**Farmer**			**Pastoralist**		
	Nasarawa State (n=160) Freq (%)	**Niger State (n=130) Freq (%)**	**Pooled (n=290) Freq (%)**	**Nasarawa State (n=51) Freq (%)**	**Niger State (n=38) Freq (%)**	**Pooled (n=89) Freq (%)**
Police	35 (21.9)	3 (2.3)	38 (13.1)	19 (37.3)	11 (28.9)	30 (33.7)
Law court	7 (4.4)	4 (3.1)	11 (3.8)	1 (1.9)	0	1 (1.1)
Traditional rulers	55 (34.4)	76 (58.5)	131 (45.2)	11 (21.6)	5 (13.2)	16 (17.9)
Farmer association/MACBAN	19 (11.9)	6 (4.6)	25 (8.6)	1 (1.9)	0	1 (1.1)

Source: Field survey, 2019

4.2.5 Success of the agents used in conflict resolution

Table 4.13 indicates that the majority (76.9%) and (76.3%) of the farmer in Niger and Nasarawa States respectively reveals that their efforts were successful. The pooled result shows that majprity (76.6%) of the respondents reported that the efforts of traditional rulers were successful. This is an indication that the efforts of the traditional rulers at ensuring peaceful coexistence between farmer and pastoralist are producing good results. This result is similar to the finding of Tyabo *et al.* (2016) who stated that major methods of resolving conflicts between farmer and herdsmen in Orelope Local Government Area of Oyo State, is via the instrumentality of traditional councils.

Table 4.13 shows that 62.8% of the pastoralist in Nasarawa State indicates that the efforts of conflicts resolution agents were successful, while only 39.5% of the respondents in Niger State reported their efforts were successful. This is an indication that the pastoralist in Nasarawa State were more satisfied with the agents than those in Niger State. The pooled result shows that slightly above half (52.8%) of the pastoralist agreed that the efforts of the agents were successful. This is an indication that most of the pastoralist believe in the agents for finding solution to the re-current conflicts with farmer.

Table 4.13: Distribution of respondents according to success of resolution agents

	Farmer			Pastoralist		
Variable	**Nasarawa State (n=160) Freq (%)**	**Niger State (n=130) Freq (%)**	**Pooled (n=290) Freq (%)**	**Nasarawa State (n=51) Freq (%)**	**Niger State (n=38) Freq (%)**	**Pooled (n=89) Freq (%)**
Successful	122 (76.3)	100 (76.9)	222 (76.6)	32 (62.8)	15 (39.5)	47 (52.8)
Not successful	38 (23.8)	30 (23.1)	68 (23.5)	19 (37.3)	23 (60.5)	42 (47.2)

Source: Field survey, 2019

4.3.1 Willingness of farmer and pastoralist to use TCR

From Table 4.14, the result for Niger State reveals that farmer were willing to use TCR because it preserves relationship ($\bar{X}$=4.58), TCR focus is on understanding issues better ($\bar{X}$ =4.44), TCR maintains a cooperative approach ($\bar{X}$ =4.23), the panellists involved in TCR are highly experienced ($\bar{X}$ =4.21), TCR provides strict confidentiality ($\bar{X}$ =4.18), TCR provide flexible means of resolving conflict ($\bar{X}$=4.15), TCR is easily accessible to the poor and vulnerable ($\bar{X}$ =4.13), no language barrier in TCR ($\bar{X}$ =4.12), TCR is expected to provide a model for quick dispute resolution ($\bar{X}$ =4.09), parties involved in the conflict have control over the process ($\bar{X}$ =4.05), TCR is a less restrictive form of dispute resolution ($\bar{X}$=4.04) and TCR is democratic in nature ($\bar{X}$=3.98).

Furthermore, the findings for Nasarawa State indicates that the farmer were willing to use TCR because TCR is restorative ($\bar{X}$=4.13), TCR is easily accessible to the poor and

vulnerable ($\bar{X}$ =4.05), the panellists involved in TCR is highly experienced ($\bar{X}$ =4.01), TCR focusses on understanding issues better ($\bar{X}$=4.01), TCR provides flexible means of resolving conflict ($\bar{X}$ =3.84), TCR is expected to provide a model for quick dispute resolution, TCR is a cheaper means of resolving conflict ($\bar{X}$ =3.8), TCR provides strict confidentiality ($\bar{X}$ =3.68), parties have equal control over the outcome ($\bar{X}$ =3.65), TCR encourages parties to agree on fair settlement ($\bar{X}$=3.61), TCR is a less restrictive form of dispute resolution ($\bar{X}$=3.58) and TCR preserve relationship ($\bar{X}$=3.48).

The pooled result indicates that farmer were willing to use TCR because TCR's focus is on understanding issues better ($\bar{X}$ =4.15) and panelists involved in TCR are highly experienced ($\bar{X}$ =4.11). This is signifying that TCR dwells more on understanding the issues that cause conflict and also engaged the services of highly experience panelists in conflicts resolution. This finding concurs with that of Oguntolu (2018) who reported that conflict could be effectively managed by used of agents that are experienced in handling of conflicts.

More so, the farmers agreed that TCR is easily accessible to the poor and vulnerable ($\bar{X}$ =4.08). This denotes that both the rich and poor can access TCR because it is cost-effective and it entails the use of diplomacy in solving problems. This also implies that TCR do not segregate between the rich and the poor. This finding is in agreement with that of Adisa (2015) who reported that effective dispute resolution involved full participation of parties in conflicts without any forms of segregation, sectionalism or favoritism.

Further findings reveals that TCR is restorative ($\bar{X}$ =4.05) and TCR provides flexible means of resolving conflict ($\bar{X}$=3.98). This signifies that TCR has a tendency of restoring

peace between farmer and pastoralist and also creates a peaceful atmosphere for their harmonious co-existence.

This also denotes that TCR is not rigid coercive but rather flexible in its approaches and always gives fair hearing. This finding is in line with Omoweh (2017) who reported that TCR is more of negotiation and uses flexible approaches. Moreover, farmer in the study area believed that TCR preserves relationship ($\bar{X}$=3.97), TCR is expected to provide a model for quick dispute resolution ($\bar{X}$=3.94), TCR provides strict confidentiality ($\bar{X}$ =3.90) and TCR is a less restrictive form of dispute resolution ($\bar{X}$=3.79). This implies the ability of TCR to cement relationship between farmer and pastoralist by preventing further conflicts. Also, TCR does not waste time like a court of law before reaching settlement and is not partial in its dealings, suggesting that TCR proceedings are mostly handled with high confidentiality.

Table 4.14: Distribution of farmers according to willingness to use TCR

	Nasarawa State			Niger state			Pooled		
Variable	**WS (n=160)**	**WM ($\bar{x}$)**	**R**	**WS (n=130)**	**WM ($\bar{x}$)**	**R**	**WS (290)**	**Mean ($\bar{x}$)**	**R**
The focus is on understanding issues better	626	3.91	4th	577	4.44	2nd	1204	4.15	1st
The panelists involved in TCR are highly experienced	642	4.01	3rd	547	4.21	4th	1192	4.11	2nd
TCR are easily accessible to the poor and vulnerable	648	4.05	2nd	537	4.13	7th	1183	4.08	3rd
TCR is restorative	661	4.13	1st	515	3.96	13th	1175	4.05	4th
TCR will provide flexible means of resolving conflict	614	3.84	5th	540	4.15	6th	1154	3.98	5th
TCR will preserve relationship	557	3.48	12th	595	4.58	1st	1151	3.97	6th
TCR is expected to provide a model for quick dispute resolution	613	3.83	6th	532	4.09	9th	1143	3.94	7th
TCR provides strict confidentiality	589	3.68	8th	543	4.18	5th	1131	3.90	8th
TCR is a less restrictive form of dispute resolution	573	3.58	11th	525	4.04	11th	1099	3.79	9th
TCR is a cheaper means of resolving conflict	613	3.83	6th	482	3.71	17th	1096	3.78	10th
TCR encourages parties to agree on a fair settlement	578	3.61	10th	497	3.82	14th	1073	3.70	11th
Parties have equal control over the outcome	584	3.65	9th	486	3.74	15th	1070	3.69	12th
No language barrier	526	3.29	15th	536	4.12	8th	1061	3.66	13th
Pasrties involved in the conflict have control over the process	531	3.32	14th	527	4.05	10th	1059	3.65	14th
TCR maintains a cooperative approach	506	3.16	16th	550	4.23	3rd	1056	3.64	15th
TCR is non-partisan in nature	550	3.44	13th	445	3.42	19th	995	3.43	16th
TCR is democratic in nature	467	2.92	19th	517	3.98	12th	983	3.39	17th
TCR does not require adherence to rules and evidence	498	3.11	17th	475	3.65	18th	972	3.35	18th
TCR eases tension between disputants	483	3.02	18th	484	3.72	16th	966	3.33	19th
TCR is a win-win situation	421	2.63	20th	419	3.22	20th	838	2.89	20th

Source: Field survey, 2019

R=Ranking

The result in Table 4.15 reveals that the pastoralists in Niger State are willing to use TCR because TCR preserves relationship ($\bar{X}$ =4.47), TCR is expected to provide a model for quick dispute resolution ($\bar{X}$=4.28), TCR provides flexible means of resolving conflict ($\bar{X}$

=4.26). TCR focus is on understanding issues better ($\bar{X}$ =4.18), TCR maintains a cooperative approach ($\bar{X}$=4.10), TCR is easily accessible to the poor and vulnerable, the panelists involved in TCR are highly experienced ($\bar{X}$ =3.79), TCR does not require adherence to rules and evidence ($\bar{X}$=3.74), parties have equal control over the outcome ($\bar{X}$=3.76) and no language barrier ($\bar{X}$=3.71).

The result for Nasarawa State indicates that the pastoralist are willing to use TCR because; TCR provides a model for quick dispute resolution ($\bar{X}$ =4.29), TCR provides flexible means of resolving conflict ($\bar{X}$=4.23), TCR focus is on understanding issues better ($\bar{X}$ =4.18), TCR preserve relationship ($\bar{X}$ =4.16), TCR is easily accessible to the poor and vulnerable ($\bar{X}$ =4.09), the panelists involved in TCR are highly experienced ($\bar{X}$ =4.04), TCR maintains a cooperative approach ($\bar{X}$ =3.98) and TCR is a cheaper means of resolving conflict ($\bar{X}$=3.94).

The pooled result shows that the pastoralist are willing to use TCR because it preserves relationships ($\bar{X}$=4.32) and TCR is expected to provide a model for quick dispute resolution ($\bar{X}$ =4.29). This signifies the ability of TCR to ensure smooth relationship between farmer and pastoralist and also halt conflict within a short period of time. This concurs with the finding of Uwazie (2011) who stated that better relationship between farmer and pastoralist are guaranteed with the involvement of agents in conflict resolution. In addition, the pastoralist further agreed that TCR provides flexible means of resolving conflict ($\bar{X}$=4.24), its focus is on understanding issues better ($\bar{X}$=4.18) and TCR is easily accessible to the poor and vulnerable ($\bar{X}$ =4.07). This implies that the application of TCR is not forceful and its principles are simple. Also, TCR is affordable for both the rich and the poor and does not discriminate or show preference for the rich in society. Moreover, pastoralist reported that TCR maintains a cooperative approach ($\bar{X}$

=4.03), the panelists involved in TCR are highly experienced ($\bar{X}$=4.01), TCR is a cheaper means of resolving conflict ($\bar{X}$ =3.81). This signifies that TCR use highly experienced and well-trained personnel and cheaper compared to other means of conflict resolution. Furthermore, the pastoralist also believed that TCR is restorative ($\bar{X}$=3.80), parties have equal control over the outcome ($\bar{X}$ =3.76), democratic in nature ($\bar{X}$ =3.75), is a less restrictive form of dispute resolution ($\bar{X}$=3.61), TCR does not require adherence to rules and evidence ($\bar{X}$=3.57) and no language barrier ($\bar{X}$=3.45).

Table 4.15: Distribution of pastoralists according to willingness to use TCR

	Nasarawa State			Niger State			Pooled		
Variable	**WS (n=51)**	**WM ($\bar{x}$)**	**R**	**WS (n=38)**	**WM ($\bar{x}$)**	**R**	**WS (n=89)**	**WM ($\bar{x}$)**	R
TCR will preserve relationship	212	4.16	4th	170	4.47	1st	384	4.32	1st
TCR is expected to provide a model for quick dispute resolution	219	4.29	1st	163	4.28	2nd	382	4.29	2nd
TCR will provide flexible means of resolving conflict	216	4.23	2nd	162	4.26	3rd	377	4.24	3rd
The focus is on understanding issues better	213	4.18	3rd	159	4.18	4th	372	4.18	4th
TCR are easily accessible to the poor and vulnerable	209	4.09	5th	154	4.05	6th	362	4.07	5th
TCR maintains a cooperative approach	203	3.98	7th	156	4.10	5th	359	4.03	6th
The panelists involved in TCR are highly experienced	206	4.04	6th	151	3.97	7th	357	4.01	7th
TCR is a cheaper means ofresolving conflict	201	3.94	8th	138	3.63	13th	339	3.81	8th
TCR is restorative	200	3.92	9th	139	3.66	12th	338	3.80	9th
TCR is democratic in nature	193	3.78	10th	141	3.71	10th	334	3.75	10th
Parties have equal control over the outcome	193	3.78	10th	143	3.76	8th	335	3.76	11th
TCR is a less restrictive form of dispute resolution	189	3.70	12th	132	3.47	14th	321	3.61	12th
TCR does not require adherence to rules and evidence	176	3.45	14th	142	3.74	9th	318	3.57	13th
No language barrier	166	3.25	17th	141	3.71	11th	307	3.45	14th
TCR provides strict confidentiality	180	3.53	13th	124	3.26	16th	304	3.42	15th
TCR is non-partisan in nature	165	3.45	14th	123	3.24	17th	298	3.35	16th
Pasrties involved in the conflict have control over the process	173	3.23	18th	129	3.39	15th	294	3.30	17th
TCR encourage parties to agree on a fair settlement	156	3.45	14th	116	3.05	18th	289	3.25	18th
TCR eases tension between disputants	149	3.18	19th	111	2.92	19th	271	3.05	19th
TCR is a win-win situation	128	2.76	20th	95	2.50	20th	234	2.63	20th

Source: Field survey, 2019. R=Ranking

The above finding denotes that TCR restorse relationship, by ensuring farmer and pastoralist have equal right to judgment. Also, the outcome of TCR is always communicated in the common language understood by the pastoralist and the mechanisms allows both farmer and pastoralist involved to contribute their inputs without partiality, favoritism, sentimentalism and other vices that could disrupt peace in the study area (Uwazie, 2011).

4.3.2 Factors influencing willingness to use TCR and level of TCR usage among farmers

Tables 4.16 and 4.17 shows the result of the Heckman probit model. This study employed Heckman's 2-step procedure model to examine the factors influencing willingness to use TCR and level of usage of TCR by the farmer. The model seeks to estimate parameters of the study in order to avoid sample selection bias. To start with, the model was tested for its appropriateness in the study by comparing the dependence of the error terms in the outcome and selection equations.The results shows evidence of a sample selection problem since *rho* was significantly different from zero and lambda is statistically significant at 10%.

It was therefore justified to use the Heckman 2-step selection model. Besides, the likelihood function of the Heckman 2-step selection model (Wald chi^2=66.32 and 72.86) for Nasarawa and Niger States respectively were also found to be statistically significant at 5%, meaning that the model had a strong explanatory power. The Prob>Chi^2 was found to be significant at 1% level of probability indicating the goodness of fit of the model for the study in both Nasarawa and Niger States respectively.

In relation to the coefficient of years of education of the farmer in Niger State, the study established a significant positive relationship at 5% level of probability. Implying that the higher the educational attainment of a farmer the higher his/her willingness to use TCR.

As education is a function of exposure, farmer with formal educational background will tend to explore more of the opportunities in the use of TCR than non-literate farmer in the study area. The reverse was found in Nasarawa State where years of education does not influence farmer willingness to use and level of usage of TCR. However, the pooled result, which shows significant positive relationship between the level of education of the farmer and their willingness to use TCR. This result is in agreement with Sani *et al.* (2020) who reported that the higher the level of education of a stakehplder, the higher his/her the likelihood of engaging in peaceful conflict resolution.

However, the study established an inverse relationship between farm size and level of usage by the farmer in Nasarawa State, as the coefficient was negatively and significant at 1% level of probability. Implying that farmer in Nasarawa State with larger farm size had less chances of using TCR in conflict resolution than farmer with smaller farm size. This is because farmer with large farm size tend to claim ownership over land in order to have higher productivity and hence neglect resolution with herders.

Similar result was obtained from the pooled data which shows that the higher the farm size of the farmer the lower their level of usage of TCR for conflict resolution. This disagrees with the assertion of Adekunle and Adisa (2010) who reported that farm size plays significant roles in farmer – herder conflict resolution in North-central Nigeria. The coefficient access to extension agent was positive and significant at 5% level of probability in the pooled result. This implies that an increase in contact with extension agents will lead to increase in the level of usage of TCR by the farmer. This was probably because extension agents provide the farmer with vital information regarding their farming practices as well as equipping the farmer with mechanisms towards conflict resolution with the herders.

Furthermore, the coefficient of farming experience for the farmer in Niger State was negative but significant at 5% level of probability. This implies that a unit increase in experience of the farmer may lead to a decrease in their willingness to use TCR by the farmer. This is because many years in farming could imply more contact with pastoralist that might have resulted in conflict. However, the result from the pooled further shows a positive and significant relationship between farming experience and level of usage of TCR at 5% probability level indicating that an increase in the experience of the farmer will lead to increase in the level of usage of TCR in conflict resolution among the farmer. Owolabi *et al.* (2016) had reported that most highly experienced farmer in Kaduna State, Nigeria have witnessed one or more conflicts between farmer and pastoralist.

The coefficient of complexity of TCR was sueprisely positive and significant at 1% level of probability for the farmer in Nasarawa State. Thus, implying that the more complex or hard the TCR seems the higher the level of its usage by the farmer for resolving conflict with herders. This is probably because simple and straight techniques for settling conflict might be underrated and rejected by the farmer in handling conflict with herders in the study area. However, the pooled result shows that the higher the complexity of the TCR the lower the willingness to use the TCR among the farmer in the study area but reverse is case in terms of level of usage which shows that the more complex the TCR the more the level of its usage settling conflict with herders.This result is in consonance with Akinpeloye *et al.* (2020) who reported that the more complex the TCR mechanisms the more unlikely to adopt such mechanism for conflict resolution in Oyo State Nigeria. The coefficient of cooperative organization for the farmer in Nasarawa State was positive and significant at 1% level of probability.

This implies that a unit increase in participation in cooperative by farmer may increase the willingness to use TCR by the farmer. This is because cooperatives can play a

valuable role in farmer – pastoralist's conflicts by promoting cooperation, resource sharing and proving a forum for farmer and pastoralist to advocate for their interests and work together to use TCR to address their common challenges. The farmer in Nasarawa and Niger States respectively shows similar response at pooled result, which also shows a positive and significant relationship between membership of cooperative organization and willingness to use TCR and level of usage of TCR in conflict resolution,. This is similar to the view of Ajibo *et al.* (2018) who opined that membership of association is one of the best ways to combat farmer-pastoralist conflict.

Table 4.16: Factors influencing willingness to use TCR and level of TCR usage among farmers

Variable	Nasarawa state		Niger state	
	Willingness model	**Level of usage**	**Willingness model**	**Level of usage**
Years of education	-.0010681	.0054806	.0195924	.0197178
	(-0.11)	(0.17)	(1.66*)	(0.63)
Farm size	-.0694724	-.2654691	-.0579829	.1868249
	(-1.00)	(-2.64***)	(-1.07)	(1.18)
Access to	-.0086646	-.0572549	.007961	.053387
extension agent	(-0.34)	(-1.09)	(0.30)	(0.93)
Farming	-.1160636	-.0868514	-.2555015	.0141578
experience	(-1.25)	(-0.31)	(-2.26**)	(0.05)
Complexibility of	.2878474	.8411961	.1630208	.249415
TCR	(1.43)	(2.50***)	(1.29)	(0.82)
Cooperative	.2830436	-.0333351	.1442505	.1348202
organization	(2.85***)	(-0.10)	(1.10)	(0.41)
Labour	.0003272	.0359899	-.0056569	-.073469
	(0.02)	(1.05)	(-0.22))	(-2.05**)
Relative advantage	.0333147	-.0414865	.0403475	.1283061
of TCR	(1.66*)	(-0.83)	(0.88)	(2.24**)
Income	-.0223677	.0843351	-.3003703	-.2265993
	(-0.16)	(0.19)	(-2.00**)	(-0.58)
Compatibility of	.0995073	.2837494	.2896817	.6235434
TCR	(0.87)	(0.93)	(1.16)	(1.78*)
Number of conflict	.055644	.0883334	.0521958	-.1652164
	(1.45)	(0.96)	(0.89)	(-1.75*)
Access to credit	-.0001661	-.0008989	-.0000604	.0000938
	(-0.72)	(-3.11***)	(-0.60)	(0.32)
Access to	.0415058	-.0725418	-.0163949	-.1243034
government	(1.67*)	(-0.80)	(-0.26)	(-1.39)
support				
Goal of farming	-.4871883	-1.701448	.14488	-.18216
	(-0.75)	(-1.39)	(0.32)	(-0.15)
Constant	.1375667	2.069412	-.5005759	-.2149247
	(0.36)	(1.91*)	(-0.68)	(-0.17)
Diagnostics				
Rho	0.73823		0.13693	
Lambda	.0333147		-.1652164	
	(1.66*)		(-1.75*)	
Wald chi^2	66.32**		72.86**	
Prob>chi^2	0.0000***		0.0000***	
Number of obs	160		130	
Censored obs	42		55	
Uncensored obs	118		75	

Source: Field survey, 2019.

The coefficient for labour for farmers in Niger State was negative and significant at 5% level of probability. This implies that an increase in the quality of labour used by farmer in Niger state will resulte in a decrease in the level of use of TCR in conflict resolution by the farmer. High level of labour tends to encourage the farmer-herders conflict since there is enough labour force to fight for the farmer in the study area. However, the pooled

result shows dissimilar trend as the higher the level of labour the higher the willingness to use TCR among the farmer in Nasarawa and Niger States respectively.

Table 4.17: Factors influencing willingness to use TCR and level of TCR usage among farmers (Pooled)

Factors influencing farmer	**Willingness to use model**		**Level of usage model**	
Explanatory Variable	**Coefficient**	**Z-value**	**Coefficient**	**Z-value**
Years of education	0.0763	1.93*	-0.0178	-0.56
Farm size	0.0617	0.58	-0.2553	-2.69***
Access to extension agent	-0.0486	-0.15	0.1525	2.51**
Farming experience	0.1782	0.47	0.5834	2.27**
Complexibility of TCR	-0.9762	-4.34***	1.0125	4.73***
Cooperative organization	2.0853	4.19***	0.8263	3.13***
Labour	0.0928	2.20**	-0.0021	-0.06
Relative advantage of TCR	-0.0197	-0.30	0.0586	1.24
Income	0.6354	0.97	-0.2798	-0.78
Compatibility of TCR	-0.0607	-0.16	0.2650	1.00
Number of conflict	0.0014	0.01	0.1873	2.27**
Access to credit	0.0819	1.59	-0.0046	-0.11
Access to government support	0.0347	0.33	0.4239	3.38***
Goal of farming	-2.5641	-2.46**	0.2547	0.35
Constant	2.7231	1.15	-3.0413	-3.22***
Diagnostics				
Rho	-0.24070			
Lambda	-0.503775	-1.92*		
Wald chi^2	90.14**			
Prob>chi^2	0.0000***			
Number of obs	290			
Censored obs	202			
Uncensored obs	88			

Source; Field survey, 2019.

The above findings agrees with that of Shettima and Tar (2018) which shows that an increase in quantityof labour used by the farmers lead to increase in the use of TCR for conflict resolution by the farmer. More so, the coefficient of relative advantage was significant at 10% and 5% level of probability and shows a positive relationship with the willingness to use TCR and level of usage of TCR among the farmer in Nasarawa and Niger States respectively. This indicates that the higher the relative advantage of the TCR

the higher the willingness to use it and level of it usage among the farming households in both States.

The result also shows that the coefficient of income was negative and significant at 5% level of probability among the farmer in Niger State.This indicates that the higher the income of the farmers, the lower their willingness to use TCR to resolve conflict. This is in line with the study of Ajibo *et al.* (2018) who opined that income influences the ways to resolve farmer-pastoralist conflict.

The coefficient for compatibility and number of conflicts witnessed were positive and negative respectively but both of them were significant at 10% level of probability for the farmer in Niger State. This indicates that the more compatible the TCR startegies with the farmer's norms and values the more the level of usage of the TCR by the farmer. However, a unit increase in thre number of conflict witnessed by the farmer may decrease the level of use of TCR by the farmer. This is because farmer might have suffered lots of economic and social damage as a result of the conflicts. But, dissimilar result was noted from the pooled data, which shows that an increase in the number of conflict witnessed by the farmer will result to an increase in the use of TCR mechanisms to reduce the farmer-herders conflict. This finding is in agreement with the study of Shedrack *et al.* (2015) who asserted that as the conflict between farmer and pastoralist's increases, the use of conflict resolution mechanisms increases.

The coefficient of access to credit for the farmers in Nasarawa State, at the level of usage was negative and significant at 1% level of probability indicating that an increase in access to funds by the farmer may lead to decrease in the level of usage of TCR for conflict resolution. However, access to government support shows a positive and significant relationship at 10% level of probability, implying that the higher the government intervention on matters regarding farmer-herder conflict the higher the

willingness to use TCR among the farmer in Nasarawa State. This is in line with Adekunle and Adisa (2010) who reported that access to government support plays a significant role in farmer – herder conflict resolution.

However, the pooled result shows that the coefficient of goal of farming of the farmer was negative and significant at 5% level of probability. This implies that farmer producing for sale and family consumption tend not to be less willing to use TCR than farmer producing solely for either family consumption or sales in the study area. This finding concurs with that of Olaniyan and Yahaya (2016) who reported that an increase in production of crops for sale tend to reduce farmer-herders conflicts in Nigeria.

4.3.3 Factors influencing willingness to use TCR and level of TCR usage among pastoralist

The likelihood function of the Heckman 2-step selection model (Wald chi^2=91.13 and 57.29) of Nasarawa and Niger States was also found to be statistically significant at 5% ,meaning that the model had a strong explanatory power. The Prob>chi^2 was also found to be significant at 1% level of probability indicating the goodness of fit of the model among the pastoralist of Nasarawa and Niger States respectively.

The coefficient for herd size of the pastoralist in Nasarawa State was negative and significant at 5% level of probability. This implies that higher herd size among the pastoralist in Nasarawa State will lead to a decrease in the willingness to use TCR in conflict resolution among the pastoralist. The reverse is the case for pastoralist in Niger State, where positive and significant relationship at 10% level of probability was recorded. This implies that a unit increase in herd size of pastoralist may increase the likelihood of willingness to use TCR by the pastoralist. This is because pastoralist may likely adopt the most suitable TCR to protect their herds, which is more valuable to them. This conform similarly at pooled result with the result of Niger State showing a positive

and significant relationship between herd size of the pastoralist and willingness to use TRC. This is similar to the assertion of Adekunle and Adisa (2010) who reported that herd size plays a significant role in farmer – herder conflict resolution. The study added that herders with large herds size tends to minizing conflict to avoid their herds been attacked in returned

The coefficient for years of education for the herder in Niger State was positive and statistically significant at 5% probability. This implies that a unit increase in educational status of pastoralist may increase the willingness to use TCR by the pastoralist.This is because education promotes critical thinking skills, understanding, cooperation and improving the economic and social conditions of the pastoral communities, which helps in conflict resolution. However, this findings is differing from the result obtained in Nasarawa State which shows an inverse relationship between education and willingness to use TCR among the herders. This result is in agreement with Sani *et al*. (2020) who reported that the higher the level of education, the higher the likelihood of engaging in peaceful conflict resolution.

Table 4.18: Factors influencing willingness to use TCR and level of TCR usage among pastoralists

Variable	Nasarawa		Niger	
	Willingness model	**Level of usage**	**Willingness model**	**Level of usage**
Herd size	-.0476246	.11014	.07765	-.03171
	(-2.41**)	(1.29)	(1.85*)	(-0.33)
Years of education	-.0722	-.1679	.18079	3.55203
	(-1.68**)	(-0.60)	(0.46)	(1.99**)
Access to extension agent	-.0280	-.23533	.008235	.17743
	(-0.79)	(-1.18)	(0.11)	(0.68)
Pastoral experience	.33868	-1.7580	-.76286	.84246
	(-1.71*)	(-1.71)	(-2.67***)	(0.68)
Relative advantage of TCR	.2878	-.011774	.126393	-1.75740
	(2.69)	(-0.02)	(0.43)	(-1.44)
Complexibility of TCR	-.5204	2.1827	1.04255	4.93211
	(-1.45)	(1.20)	(2.52**)	(2.15**)
Labour	.03651	.02471	-.11190	-.002287
	(2.07**)	(0.26)	(-2.65***)	(-0.02)
Cooperative organization	.02045	.10986	.23771	-.028478
	(0.35)	(0.77)	(2.49**)	(-0.13)
Income	.42679	-.2071	-.350288	4.63304
	(0.68)	(0.15)	(-0.82)	(1.57)
Compatibility of TCR	-.32731	.39118	1.1345	-1.94720
	(-2.16**)	(0.55)	(1.90*)	(1.90*)
Number of conflict	.11458	-.17582	-.44217	-1.35561
	(1.95**)	(-1.04)	(-1.66*)	(-1.91*)
Access to credit	-.0001198	.0003646	-.000339	.0009168
	(-1.03)	(0.52)	(-1.44)	(0.92)
Access to government support	.11598	-1.8976	.05290	-.35898
	(0.55)	(-2.59***)	(0.44)	(-1.02)
Goal of pastoral farming	1.4009	-8.62014	1.43149	23.0713
	(1.13)	(-1.95**)	(0.72)	(2.08**)
Constant	.1333	7.9837	-1.202609	-17.5253
	(0.11)	(2.07**)	(-0.49)	(-1.95*)
Diagnostics				
Rho	-0.92698		1.00000	
Lambda	.3386838		.2964271	
	(1.71*)		(-1.75*)	
Wald chi^2	91.13		57.29	
Prob>chi^2	0.0000***		0.0000***	
Number of obs	51		38	
Censored obs	22		19	
Uncensored obs	29		19	

Source; Field survey, 2019.

The coefficient for pastoral experience was negative and statistically significant at 10% and 1% probability level for herders in Nasarawa and Niger States respectively. This implies that a unit increase in experience of the herders may decrease the willingness to use TCR by the pastoralist in the study area. This is because spending many years in cattle rearing and grazing could imply more contact with farmer that might have resulted to conflict. In addition, similar observation was noted at the pooled result, which shows a negative but significant relationship between pastoral experience and the level of usage of TCR in conflict resolution. This finding is in consonance with that of Owolabi *et al*. (2016) who indicates that most highly experienced herders in Kaduna State, Nigeria have witnessed one or more conflicts between farmer and pastoralist.

The coefficient of complexity of TCR for the herders in Niger State was positive and significant at 5% level of probability. This implies that the more complex or hard the TCR seems, the higher the willingness to use it and thr level of it usage by the pastoralist in Niger State for setting conflict resolution with the farmer as simple and straight techniques might be under rated and rejected by the herders in handling conflict resolution with the farmer in the study area. However, the pooled result shows that the higher the complexity of the TCR the higher the willingness to use and the level of usage of TCR among the pastoralist in the study area. This result is at variance to the study of Akinpeloye *et al.* (2020) who reported that the more complex the conflict resolution mechanism among the respondents the more unlikely to adopt that mechanism for conflict resolution in Oyo State, Nigeria.

The coefficient for labour was negative but significant at 1% level of probability among the herders in Niger State. This implies that an increase in the unit of labour used by herders in Niger State will result in a decrease in the level of use of TCR in conflict resolution by the pastoralist in the state. High number of labour tends to encourage the

farmer-herders conflict since there is enough labour force to fight the farmer in the study area. However, the result of Nasarawa State shows dissimilar observation in which the higher the number of labour the higher the willingness to use TCR among the pastoralist at 5% level of probability in Nasarawa State.

Table 4.19: Factors influencing willingness to use TCR and level of TCR usage among pastoralists pooled

Factors influencing farmers0'	**Willingness to use model**		**Level of model usage**	
Explanatory Variable	**Coefficient**	**Z-value**	**Coefficient**	**Z-value**
Herd size	0.02428	2.20**	0.01866	0.28
Years of education	-0.0081	-0.27	-0.0816	-0.33
Access to extension agent	0.0490	1.91*	0.0617	0.13
Pastoral experience	-0.1048	-0.92	-1.4789	-2.68***
Relative advantage of TCR	-0.0804	-0.80	1.2833	2.45**
Complexibility of TCR	0.5295	1.89*	0.3777	2.37**
Labour	-0.0093	-0.78	-0.0928	-1.17
Cooperative organization	0.0196	0.89	-0.0270	-0.21
Income	0.1171	0.62	-1.2719	-1.28
Compatibility of TCR	-0.0620	-0.52	1.8510	2.77***
Number of conflict	-0.0696	-2.43**	0.0814	0.53
Access to credit	.0000791	0.94	0.000642	1.86*
Access to government support	-0.0539	-1.65*	-0.2644	-1.81*
Goal of pastoral farming	-0.92062	-1.84*	-1.7424	-0.83
Constant	0.6698	1.49	0.1959	0.10
Diagnostics				
Rho	0.38516			
Lambda	0.1152	2.33**		
Wald chi^2	34.00			
Prob>chi^2	0.0021***			
Number of obs	89			
Censored obs	62			
Uncensored obs	27			

Source; Field survey, 2019.

The coefficient of cooperative organization for the pastoralists in Niger State was positive and significant at 5% level of probability. This implies that a unit increaseparticipation in cooperative organization by the herders may increase the willingness to use TCR by the herders. This is because cooperatives can play a valuable role in farmer – pastoralist

conflicts by promoting cooperation, resource sharing and proding a forum for farmer and pastoralist to advocate for their interests and work together to use TCR to address their common challenges.This is similar to the study of Ajibo *et al.* (2018) who opined that membership of association is one of the best ways to combat farmer-pastoralist conflict.

Then coefficient for compatibility and number of conflict witnesses were positive and significant at 10% level of probability in the level of usage of TCR among the pastoralist in Niger State. However, the coefficient for compatibility was negative but significant at 5% level of probability for willingness to use TCR by the patoralist in Nasarawa State. This indicate implies that the more compatible the TCR mechanisms are to the norms and values in Niger State the higher the level of their usage by the pastoralist but it was inversely related to the willingness to use TCR. Also, a unit increase in number of conflict witnessed by the herders may decrease the willingness to use and level of usage of TCR by the pastoralist in Niger State. This is because herders might have experienced lots of economic and social damage because of the conflicts. Similar result was noted for the pooled data, which shows that an increase in the number of conflicts witnessed by the herders will result in a decrease in the willingness to use of TCR mechanisms to reduce the farmer-herder conflict. However, the reverse was observed among the herders in Nasarawa State, which shows a positive relationship in willingness to use TCR by the pastoralist. This finding is in agreement with the study of Shedrack *et al.* (2015) who asserted that as the conflict between farmer and pastoralist's increases, the use of conflict resolution mechanisms increases.

Furthermore, access to credit shows a positive significant relationship at 10% level of probability for the pooled result, showing that an increase in the herders' access to funds will lead to a decrease in the level of usage of TCR by the pastoralist. More so, access to government support shows a negative but significant relationship at 1% level of

probability among the herders in Nasarawa State. This implies that the higher the level of government intervention on matters related to farmer-herder conflict, the lower the willingness to use TCR among the pastoralist in Nasarawa State. More so, the pooled result shows same observation among the pastoralist in Nasarawa and Niger States. This is similar to the assertion of Adekunle and Adisa (2010) who reported that access to government support plays a significant role in farmer – herder conflict resolution.

However, the coefficient of goal of pastoral farming of the herders was negative but significant at 5% level of probability among the pastoralist in Nasarawa State. This implies that herders that own their cattle tends to be more willing to use TCR in conflict resolution with farmer than those rearing cattle as hired labour. Similarly, the pooled result shows negative but significant relationship between the goal of rearing cattle among the herders in Nasarawa and Niger States respectively.However, the reverse is the case for herders in Niger State. This finding concurs with that of Olaniyan and Yahaya (2016) who reported that an increase in production of livestock for family hereditary lineage tends to reduce farmer-herders conflicts in Nigeria.

4.4.1 Effectiveness of TCR mechanisms as perceived by the farmers

Table 4.20 shows the farmers perceived effectiveness of TCR mechanisms in resolving conflict between farmer and pastoralist in Nasarawa State. The findings reveals that the most effective TCR mechanisms were dialogue/convening a meeting and use of agents to monitor conflict occurrences ($\bar{X}$=2.62), rewards ($\bar{X}$=2.59) and mediation by elders ($\bar{X}$ =2.53).

In Niger State, the following mechanisms were reported to be most effectively used by the farmer include; mediation by elders ($\bar{X}$ =2.62), peace education/teaching ($\bar{X}$ =2.53), compensation and punishment ($\bar{X}$=2.52).

The pooled result reveals that the following mechanisms were effective in resolving conflict as perceived by farmer in the study area: mediation by elders ($\bar{X}$ =2.57) and dialogue/convening a meeting ($\bar{X}$ =2.54), implying that organizing meetings between parties involved in conflicts could prevent further conflicts and ensure peace in the study area. This finding is in consonance with that of Oladele and Oladele (2015) who stated that mediation by elders is highly effective in conflict management in Oyo State of Nigeria.

Also, compensation and punishment ($\bar{X}$ = 2.52), use of agents to monitor conflicts occurrence ($\bar{X}$=2.45), informal settlement ($\bar{X}$=2.42) and rewards ($\bar{X}$=2.38) were found to be effective as perceived by farmer. This is an indication that rewarding the party that embraces peace, placing strong punishment on peace brakers and use of conflict resolution agents to monitor conflict will bring peace in the study area. This concurs with Oyedokun and Lawal (2017) who stated that compensation is the most effective way of managing conflicts among rural dwellers in Oyo State, Nigeria.

Table 4.20 Distribution of farmer according to the effectiveness of TCR mechanisms

Variable	Nasarawa State				Niger State				Pooled			
	WS (n=160)	WM ($\bar{x}$)	Rank	Decision	WS (n=130)	WM ($\bar{x}$)	Rank	Decision	WS (n=290)	WM ($\bar{x}$)	Rank	Decision
Mediation by elders	405	2.53	4th	Effective	341	2.62	1st	Effective	745	2.57	1st	Effective
Dialogue/convening a meeting	419	2.62	1st	Effective	317	2.44	5th	Effective	737	2.54	2nd	Effective
Compensation and punishment	403	2.52	5th	Effective	328	2.52	3rd	Effective	731	2.52	3rd	Effective
Use of agents to monitor conflict occurrence	419	2.62	1st	Effective	294	2.26	8th	Effective	711	2.45	4th	Effective
Informal settlement	394	2.46	7th	Effective	307	2.36	6th	Effective	702	2.42	5th	Effective
Rewards	414	2.59	3rd	Effective	274	2.11	13th	Effective	690	2.38	6th	Effective
Use of marriage	398	2.49	6th	Effective	293	2.25	9th	Effective	690	2.38	6th	Effective
Peace education/teaching	338	2.11	12th	Effective	329	2.53	2nd	Effective	667	2.30	8th	Effective
Reconciling both parties	342	2.14	11th	Effective	319	2.45	4th	Effective	661	2.28	9th	Effective
Inter-faith dialogue	394	2.46	7th	Effective	254	1.95	16th	Not effective	647	2.23	10th	Effective
Setting of judicial committee of enquiry	390	2.44	10th	Effective	255	1.96	15th	Not effective	644	2.22	11th	Effective
Traditional oath-taking	394	2.46	7th	Effective	250	1.92	17th	Not effective	644	2.22	11th	Effective
Good governance	322	2.01	14th	Effective	306	2.35	7th	Effective	624	2.15	13th	Effective
Effective communication	326	2.04	13th	Effective	287	2.21	10th	Effective	615	2.12	14th	Effective
Check and balances	320	2.00	15th	Effective	276	2.12	12th	Effective	597	2.06	15th	Effective
Tendering apology/use of negotiation	317	1.98	16th	Not effective	280	2.15	11th	Effective	595	2.05	16th	Effective
Persuasion of actors	291	1.82	17th	Not effective	264	2.03	14th	Effective	557	1.92	17th	Not effective
Use of propaganda	282	1.76	18th	Not effective	216	1.66	20th	Not effective	496	1.71	18th	Not effective
Use of sanction	226	1.41	20th	Not effective	246	1.89	18th	Not effective	473	1.63	19th	Not effective
Imposing a curfew on the area	222	1.39	22nd	Not effective	241	1.85	19th	Not effective	461	1.59	20th	Not effective
Ritual treaties/blood covenant	405	1.49	19th	Not effective	341	1.60	21st	Not effective	745	1.54	21st	Not effective
Inculcation of myths	419	1.35	21st	Not effective	317	1.31	22nd	Not effective	737	1.33	22nd	Not effective

Source: Field survey, 2019.

4.4.2 Effectiveness of TCR mechanisms as perceived by the pastoralists

Result in Table 4.21 reveals the effectiveness of TCR mechanisms in resolving pastoralist farmer conflicts. The most effective TCR mechanisms as alluded by the pastoralist in Niger State were; mediation by elders ($\bar{X}$=2.71), peace education/teaching ($\bar{X}$=2.32) and compensation and punishment ($\bar{X}$=2.29). Also, the pastoralist in Nasarawa State indicates that the following mechanisms were most effective namely; mediation by elders ($\bar{X}$=2.52), informal settlement ($\bar{X}$=2.37) andrewards ($\bar{X}$=2.35).

The pooled result shows that the following mechanisms were effective in resolving conflicts in the study area; mediation by elders ($\bar{X}$=2.61) and compensation and punishment ($\bar{X}$=2.31). This shows that intervention of elders of both groups could reduce conflict. Also, offering compensation to the aggrieved parties and imposing serious punishment on the culprits or those promoting conflicts could reduce conflict.This finding is in agreement with that of Adelakun *et al.* (2015) who stated that mediation by elders, dialogue between the parties involved and payment of compensation to victims were among the major conflict resolution measures used by farmer in Nigeria.

Other effective mechanisms were informal settlement ($\bar{X}$ =2.30), peace education/teaching ($\bar{X}$=2.28) and use of agents to monitor conflict occurrence ($\bar{X}$=2.28). This implies that educating farmer and pastoralist will expose them tp conflict resolution. In the same vain, the least effective TCR mechanisms used by the pastoralist in the study area was inter-faith dialogue ($\bar{X}$=2.01).

Table 4.21: Distribution of pastoralist according to the effectiveness of TCR mechanisms

Variable	Nasarawa State				Niger State (n=38)				Pooled (n=89)		
	WS (n=51)	WM ($\bar{x}$)	Rank	Decision	WS	WM ($\bar{x}$)	Rank	Decision	Mean ($\bar{x}$)	Rank	Decision
Mediation by elders	129	2.52	1st	Effective	103	2.71	1st	Effective	2.61	1st	Effective
Compensation and punishment	119	2.33	4th	Effective	87	2.29	3rd	Effective	2.31	2nd	Effective
Informal settlement	121	2.37	2nd	Effective	84	2.21	5th	Effective	2.30	3rd	Effective
Use of agents to monitor conflict occurrence	115	2.25	6th	Effective	82	2.16	6th	Effective	2.28	4th	Effective
Peace education/teaching	115	2.25	6th	Effective	88	2.32	2nd	Effective	2.28	4th	Effective
Rewards	120	2.35	3rd	Effective	82	2.16	6th	Effective	2.27	6th	Effective
Effective communication	110	2.15	8th	Effective	82	2.16	6th	Effective	2.15	7th	Effective
Good governance	118	2.06	12th	Effective	85	2.23	4th	Effective	2.13	8th	Effective
Dialogue/convening a meeting	105	2.31	5th	Effective	72	1.89	15th	Not effective	2.13	8th	Effective
Setting of judicial committee of enquiry	118	2.03	13th	Effective	76	2.00	10th	Effective	2.09	10th	Effective
Tendering apology/use of negotiation	104	2.09	11th	Effective	78	2.05	9th	Effective	2.07	11th	Effective
Reconciling both parties	107	2.13	10th	Effective	72	1.89	15th	Not effective	2.03	12th	Effective
Inter-faith dialogue	109	2.14	9th	Effective	70	1.84	18th	Not effective	2.01	13th	Effective
Use of marriage	101	1.98	14th	Not effective	76	2.00	10th	Effective	1.99	14th	Not effective
Check and balances	97	1.90	15th	Not effective	74	1.95	13th	Not effective	1.92	15th	Not effective
Use of propaganda	92	1.80	17th	Not effective	74	1.95	14th	Not effective	1.89	16th	Not effective
Use of sanction	92	1.80	17th	Not effective	75	1.97	12th	Not effective	1.88	17th	Not effective
Persuasion of actors	95	1.86	16th	Not effective	72	1.89	15th	Not effective	1.87	18th	Not effective
Traditional oath taking	92	1.80	17th	Not effective	87	1.76	19th	Not effective	1.79	19th	Not effective
Imposing a curfew on the area	79	1.55	20th	Not effective	38	1.00	22nd	Not effective	1.72	20th	Not effective
Ritual treaties/blood covenant	69	1.35	21st	Not effective	49	1.29	20th	Not effective	1.32	21st	Not effective
Inculcation of myths	57	1.12	22nd	Not effective	44	1.16	21st	Not effective	1.13	22nd	Not effective

Source: Field survey, 2019

4.5.1 Factors influencing the opinion of farmers on the effectiveness of TCR mechanisms

Ordered logit regression model was used to examine the factors influencing the opinion of farmer on the effectiveness of TCR mechanisms in the study area.Thus, the result from Table 4.22 shows the Pseudo R^2 of (0.2049 and 0.2557) among the farmer in Nasarawa and Niger States respectively. This implies that only about 21% and 26% of variations that occur in the dependent variable were explained by the independent variable included in the model, while the remaining (79% and 74%) might be due to the non-inclusion of some important variable or error terms.. The Prob>chi^2 is significant at 1% level of probability. This implies the model is fit for the data.

The coefficient of sex was positive and significant at a 10% level of probability for the farmers in Nasarawa and Niger States respectively. This implies that male farmer tend to understood the effectiveness of TCR as compared to their female counterpart because they are mostly affected by the conflict. This could also signify that male farmer dominated the study area than the female farmer and as such the farmer may encounter several conflicts with the herders, which tends to influence the opinion of the male farmer on the effectiveness of the use of TCR in conflict resolution. However, the pooled result shows same observation that male farmer have perceived increase in the effectiveness of TCR used in the study area.

However, the coefficient for age of the farmer in Niger State shows a positive and significant relationship at 5% level of probability indicating that a unit increase in the age of the farmer will lead to an increase in the opinion of the farmer on the perceived effectiveness of TCR in conflict resolution among the farming households. In the same vein, the pooled result, also shows a positive and significant relationship between age of the farmer and opinion of the

farmer on the perceived effectiveness of TCR. This agrees with the findings of Adekunle and Adisa (2010) who reported that age of the farmer could increase the perceived effectiveness of conflict prevention measures between farmer and pastoralist. Furthermore, the coefficient of marital status for the farmer in both Nasarawa and Niger States was negative and significant at 5% level of probability. This implies that rspondents with other marital status such as single, divorced or widow(er) tend to have higher opinion on the perceived effectiveness of the use of TCR than married farmer in the study area. This corroborates the pooled result, which shows a negative relationship between farmer' marital status and opinion of the farmers perceived effectiveness of TCR in settling farmer-herder conflict.

Table 4.22 Ordered logit regression on effectiveness of TCR of the farmer

Factors influencing farmer effectiveness of TCR	**Nasarawa state**		**Niger state**	
Explanatory Variable	**Coefficient**	**Z-value**	**Coefficient**	**Z-value**
Sex	0.9991	1.88*	1.1021	1.77*
Age	0.0638	1.23	0.1256	2.15**
Years of education	0.0647	0.76	0.1132	1.16
Marital status	-1.2111	-2.04**	-1.3795	-2.09**
Farm size	-0.4713	-1.05	-0.0557	-0.11
Access to extension agent	-0.6917	-1.36	-1.2068	-2.04**
Farming experience	-0.0369	-0.72	-0.0832	-1.47
Complexibility of TCR	0.2206	2.30**	0.1145	1.10
Cooperative organization	-0.0255	-0.04	-0.0991	-0.14
Labour	-1.4845	-2.82***	-1.1800	-1.88**
Relative advantage of TCR	1.2434	2.09**	-0.1665	-1.11
Income	.0000466	0.13	-.0001067	-0.26
Compatibility of TCR	0.0370	0.29	-0.1669	-1.13
Number of conflict	-7.3561	-3.29***	-7.2898	-3.06***
Constant	0.6698	1.49	0.1959	0.10
Number of observation	160		130	
LR $chi^2(14)$	47.47		50.10	
Prob>chi^2	0.0000***		0.0000***	
Pseudo R^2	0.2049		0.2557	

Source: Field survey, 2019.

The result for farmers in Niger State shows a negative relationship at 5% level of probability beteween access to extension agent and opinion of the farmer on the effectiveness of TCR in the study area. This implies that the farmer from Niger State had limited access to extension services, which tends to make more farmer without access to the extension services to underate the effectiveness of TCR. This also shows same result for the pooled data where higher access to extension agents will lead to lower opinion of the farmer on the effectiveness of TCR by the farmer in the study area. This finding disagrees with that of Akinpeloye *et al.* (2020) who reported that access to extension services will increase the perceived effectiveness of TCR mechanisms for conflict reduction among farmer and pastoralist.

Furthermore, the coefficient of complexity of the TCR was positive and significant at 5% level of probability. This implies that the higher the complexity of the TCR mechanisms the higher the opinion of the farmer on the perceived effectiveness of TCR in resolving farmer-herder conflict for the farmer in Nasarawa State. The pooled result recorded similar observation at 1% level of probability on complexity of the use of TCR to reduce farmer-pastoralist conflict in the study area.

The coefficient of labour was negative and significant at 5% probability level among the farmer in Nasarawa and Niger States respectively, indicating that the higher the labour use by the farmer in farming operations the lower their opinion on the perceived effectiveness of TCR in resolving farmer-pastoralist conflict. Also, similar result wsas obtained for the pooled data with a negative significant relationship between labour and opinion of the farmer on the effectiveness of the use of TCR in the study area.

The coefficient of relative advantage of TCR for the farmer in Nasarawa State was positive and significant at 5% probability level. This implies that the higher the relative advantage of TCR the higher theopinion of the farmer on the perceived effectiveness of the use of TCR to resolve farmer-herder conflicts. Adekunle and Adisa (2010) also reported that high relative advantage of the mechanisms assists in effective conflict management in North Central Nigeria.

Table 4.23: Ordered logit regression of Nasarawa and Niger States farmer pooled

Variable	Coefficient	Standard error	Z-value	p>|T|
Sex	0.8435	0.3905	2.16**	0.031
Age	0.0921	0.0372	2.47**	0.013
Years of education	0.0712	0.0625	1.14	0.255
Marital status	-0.9324	0.4153	-2.24**	0.025
Farm size	-0.2764	0.3599	-0.77	0.442
Access to extension agent	-0.8342	0.3767	-2.21**	0.027
Farming experience	-0.0566	0.0381	-1.49	0.137
Complexibility of TCR	0.2155	0.0717	3.01***	0.003
Cooperative organization	0.3344	0.5057	0.66	0.508
Labour	-1.2721	0.3786	-3.36***	0.001
Relative advantage of TCR	-0.0100	0.1007	-0.10	0.921
Income	-0.0000193	.0002927	-0.07	0.947
Compatibility of TCR	-0.0730	0.0989	-0.74	0.460
Number of conflict	-5.6632	1.6856	-3.36***	0.001
Constant	-0.1616	0.2673	-0.60	0.547
Number of observation	290			
LR $chi^2(14)$	83.26			
Prob > F	0.0000***			
Pseudo R^2	0.2009			

Source: Field survey, 2019. Note: *, **, *** siginificant at 10%, 5% and 1% respectively

The coefficient of number of conflicts witnessed was negative and significant at 1% level of probability for the farmer in Nasarawa and Niger States respectively. This implies that the higher the number of conflict witnessed by the farmer in the two states, the lower the opinion of the farmer on the effectiveness of the use of TCR in farmer-pastoralist conflict. Similar result was found from the pooled data showing a negative relationship between number of

conflicts and opinion of farmer on the effectiveness of the use of TCR. This tallies with the finding of Enna and Ugwu (2015) who reported that persistent increase in conflicts paved ways for conflict resolution in Nigeria.

The result of the marginal effects estimates of the significant variable of farmer is presented in Table 4.24. It reveals that the probability of sex, age and complexity influencing the perceived effectiveness of TCR mechanisms increases by the coefficient of 0.1297, 0.0141and 0.0331 respectively. This implies that for every unit increase in the sex, age and complexity of TCR mechanisms by the farmer, there is approximately13%, 1.4% and 3.3% increase in the perceived effectiveness of TCR mechanisms. The coefficient for marital status, access to extension agent, labour and number of conflicts were -0.1434, -0.1283,-0.1956 and -0.7002 respectively, implying that for every unit increase in marital status, access to extension agent, labour and number of conflicts, there is a decrease in the probability of the perceived effectiveness of the TCR mechanisms by about 14%, 13%, 20% and 70%, respectively.

Table 4.24: Estimates of marginal effect of the significant variables of the farmers

Variable	Dy/dx	Z-value
Sex	0.1297	2.20**
Age	0.0141	2.55**
Marital status	-0.1434	-2.31**
Access to extension agent	-0.1283	-2.28**
Complexibility of TCR	0.0331	3.14***
Labour	-0.1956	-3.58***
Number of conflict	-0.7002	-3.54***

Source, Field survey, 2019

4.5.2 Factors influencing the opinion of pastoralists on the effectiveness of TCR mechanisms

Ordered logit regression model was used to examine the factors influencing the opinions of pastoralists on the effectiveness of TCR mechanisms in the study area.Thus, the result from Table 4.25 shows the Pseudo R^2 value of 0.4363 and 0.3471 for the pastoralists in Nasarawa and Niger States respectively. This implies that about 44% and 35% of variations that occurred in the model were explained by the opinion of the pastoralist on the effectiveness of TCR mechanisms included in the models while the remaining 56% and 65% might be due to the non-inclusion of some important variable or error terms.. The Prob>chi^2 was significant at 1% level of probability. This implies that the model is fit for the data.

The coefficient of the age of the pastoralist in Niger State shows a positive and significant relationship at 5% level of probability, indicating that a unit increase in the age of the pastoralist will lead to increase in the opinion of the herders in the perceived effectiveness of the TCR used in conflict resolution among the cattle rearing households. The pooled result similarly shows a positive and significant relationship betwen the age of the farmer and pastoralist in Nasarawa and Niger States and opinion of the herders on the perceived effectiveness of the use of TCR. This agrees with the findings of Adekunle and Adisa (2010) who reported that increase in age of the pastoralist could increase the perceived effectiveness of conflict prevention measures between farmer and pastoralist.

However, the coefficient of the years of education for the pastoralist in Nasarawa State shows a negative but significant relationship at 1% level of probability. This implies that a unit increase in the years of education of the pastoralist will lead to a decrease in the opinion of the herders in the perceived effectiveness of the use of TCR in conflict resolution. This shows

that majority of the pastoralist in Nasarawa State were non-literate with no formal education and this could affect their level of dispute resolution skills with the farmer.. Inverse with the case for the pooled result, which show a positive and significant relationship between the years of education of the pastoralist in both Nasarawa and Niger States on their perceived opinions of the effectiveness of the use of TCR. This finding agrees with Ajibo *et al.* (2018) who reported that the more pastoralist are educated the more they enjoy the benefits attached to TCR mechanisms in Kano State, Nigeria.

The coefficient of herd size was negative but significant at a 10% level of probability for pastoralist in Nasarawa State. This suggests that as the herd size of pastoralist increases by one unit, the probability of perceiving the effectiveness of the use of TCR decreases. This could also imply that an increase in herd size tends to increase more contact with farmer, thereby increasing conflicts. This is in agreement with Garba *et al.* (2015) who reported that increase in herd size is one of the causes of conflicts.

The result further shows that the coefficient of access to extension service was positive and significant at 10% level of probability for the pastoralist in Niger State. This implies that an increase in contact with extension agents by the pastoralist in Niger State will lead to more perceived effectiveness of the use of TCR by the pastoralist in reducing conflict with the farmer in the study area. Same was noted at the pooled result, which shows a positive and significant relationship between access to extension agents and the opinion of the pastoralist on the effectiveness of the use of TCR in conflict resolution in the study area. This finding is consistent with Ajayi (2014) who reported that access to extension services increases the effectiveness of the mechanism of conflict resolution in Nigeria.

Table 4.25: Ordered logit regression on effectiveness of TCR by the pastoralist

Factors influencing pastoralist effectiveness of TCR among pastoralist	Nasarawa state		Niger state	
Explanatory Variable	**Coefficient**	**Z-value**	**Coefficient**	**Z-value**
Sex	1.7039	1.59	1.5208	1.27
Age	-0.0090	-0.08	0.2931	2.15**
Years of education	-0.6687	-2.61***	0.0387	0.30
Marital status	0.3463	0.36	1.7950	1.24
Herd size	-1.6676	-1.68*	1.9783	1.24
Access to extension agent	0.3691	0.34	3.6068	1.98*
Pastoral experience	0.2751	2.06**	0.2870	1.86*
Complexibility of TCR	-0.3754	-1.62	0.2372	0.97
Cooperative organization	-2.3775	-0.90	-0.3699	-0.22
Labour	-3.0241	-2.89***	-3.7439	-2.08**
Relative advantage of TCR	1.2948	3.23***	2.1096	2.81***
Income	-0.00053	-0.71	0.00258	1.87*
Compatibility of TCR	-0.5132	-1.44	0.1196	0.49
Number of conflict	-12.0344	-1.91**	-0.6680	-0.10
Constant	0.6698	1.49	0.7129	0.86
Number of observation	51		38	
LR chi^2 (14)	47.22		28.62	
Prob>chi^2	0.0000***		0.0007***	
Pseudo R^2	0.4363		0.3471	

Source; Field survey, 2019.

The coefficient for pastoral experience was positive and statistically significant at 5% and 10% probability level for herders in Nasarawa and Niger States respectively. This implies that a unit increase in experience of the herders may decrease their level of opinion on the effectiveness of the use of TCR by the pastoralist in the study area. This is because many years in cattle rearing and grazing could imply more contact with farmer that might have resulted in conflicts and less interest in the use of TCR.

However, the pooled result shows a negative but significant relationship on pastoral experience and the opinion of the pastoralist on the effectiveness of the use of TCR in conflict

resolution. This finding is in consonance with that of Owolabi *et al*. (2016) who indicates that most highly experienced pastoralist in Kaduna State, Nigeria have witnessed one or more conflicts between farmer and pastoralist.

The coefficient of labour was also negative but significant at 1% and 5% probability level for the pastoralist in Nasarawa and Niger States respectively. This indicates that the higher the labour use by the herders in the two states for cattle rearing, the lower their opinion on the effectiveness of the use of TCR to resolved farmer-pastoralist conflict. This finding collaborates that of Ior *et al.* (2018) who reported that an increase in the number of conflicts triggered the use of TCR and their effectiveness in Benue State of Nigeria.

Table 4.26: Ordered logit regression of Nasarawa and Niger States pastoralist pooled

Variable	Coefficient	Standard error	Z-value	p>|T|
Sex	0.9111	0.8515	1.07	0.285
Age	0.1874	0.0767	2.44**	0.015
Years of education	0.1427	0.0621	2.30**	0.022
Marital status	-0.7271	0.7262	-1.00	0.317
Herd size	0.3173	0.7412	0.43	0.669
Access to extension agent	1.3366	0.7611	1.76*	0.079
Pastoral experience	-0.1223	0.0618	-1.98**	0.048
Complexibility of TCR	0.4134	0.1810	2.28**	0.023
Cooperative organization	2.2127	1.7561	1.26	0.208
Labour	-0.8335	0.7047	-1.18	0.237
Relative advantage of TCR	0.1134	0.0575	1.97**	0.049
Income	-.000255	.000581	-0.44	0.661
Compatibility of TCR	-0.4456	0.2240	-1.99**	0.047
Number of conflict	-0.4040	3.7516	-0.11	0.914
Constant	-0.1616	0.2673	-0.60	0.547
Number of observation	89			
LR $chi^2(14)$	50.08			
Prob > F	0.0000***			
Pseudo R^2	0.3502			

Source: Field survey, 2019

Furthermore, the coefficient of relative advantage of TCR was positive and significant at 1% level of probability for the pastoralist in Nasarawa and Niger States. This implies that the

higher the relative advantage of TCR, the higher the opinion of the herders on the effectiveness of the use of TCR in farmer-pastoralist conflict. This similar for the result at pooled data which shows a positive and significant relationship between the relative advantage of the TCR and the opinion of the pastoralist on the effectiveness of the use of TCR in conflict resolution in the study area.

Lastly, the coefficient of income was positive and significant at 10% probability level for the pastoralist in Niger State. This implies that the higher the income of the pastoralist the higher the opinion of the perceived effectiveness of the use of TCR in conflict resolution. Furthermore, the coefficient of number of conflicts witnessed was negative and significant at 5% level of probability. This points to the fact that as the number of conflicts witnessed by a pastoralist increases by one unit, the probability of perceiving high effectiveness of TCR decreases of farmer-herder by the pastoralist. This finding disagrees with that of Ior *et al.* (2018) who reported that an increase in the number of conflicts triggered the use of TCR and their effectiveness in Benue State of Nigeria.

The result of the marginal effects estimates of the significant variable for the pastoralist is presented in Table 4.24. It reveals that the probability of age, years of education, access to extension agent, complexity and relative advantage influencing the perceived effectiveness of TCR mechanisms increases by the coefficient of 0.0242, 0.0178, 0.1274, 0.0535 and 0.0151 respectively. This implies that for every unit increase in the age, years of education, access to extension agent, complexity and relative advantage of TCR mechanisms of the pastoralist, there is approximately 2.4%, 1.8%, 12.7%, 5.4% and 1.5% increase in the perceived effectiveness of TCR mechanisms. The coefficient for pastoral experience and compatibility of TCR were -0.0153 and -0.0576, implying that for every unit increase in

pastoral experience and compatibility of TCR, there is a decreased the probability of the perceived effectiveness of the TCR mechanisms by about 1.5% and 5.8% respectively.

Table 4.27: Estimates of marginal effects of the significant variable for the pastoralist

Variable	Dy/dx	Z-value
Age	0.0242	2.70***
Years of education	0.0178	2.52**
Access to extension agent	0.1274	1.87*
Pastoral experience	-0.0153	-1.70*
Complexibility of TCR	0.0535	2.44**
Relative advantage of TCR	0.0151	1.69*
Compatibility of TCR	-0.0576	-2.06**

Source, Field survey, 2019

4.6.1 Role of institutions in conflict resolution

a. Traditional leaders

Table 4.28 shows the roles played by traditional leaders in resolution of conflict between farmer and pastoralist in Nasarawa State. Cracking of jokes to quench tension (97.5%), cursing to normalize farmer and pastoralist' behaviours (93.1%) and check and balances (90.3%) were the major roles played by traditional rulers in Nasarawa State. The findings for Niger State indicates that rewards for law-abiding citizens (96.9%), provision of vigilante groups for mediating conflict (90.7%) and provision of communal solidarity (88.5%) were the major roles played. The pooled result shows that reward for law abiding citizen (96.9%) and provision of vigilante groups for mediating conflict (90.2%) were the major roles played by traditional leaders in conflict resolution. Reward involves offering handsome monetary or non-monetary rewards to law-abiding citizens in order to encourage others. Also, vigilante groups are vital in conflict resolution in the study area. This finding agrees with that of Ibrahim (2015) who said that reward for law-abiding citizens and provision of vigilante groups are effective ways of mediating conflict.

On the other hand, the result in Table 4.29 reveals that the pastoralist in Niger State reported that rewards for law abiding citizen (86.8%) and use of coercion to quench tension between both parties (78.9%) were the major roles played by traditional leaders in conflict resolution. The pastoralist in Nasarawa State however, reported use of coercion to quench tension between both parties (86.3%), provision of communal solidarity (78.4%) and rewards for law abiding citizens as major roles of traditional leaders in conflict resolution. The pooled results shows that rewards for law-abiding citizens (83.1%) and use of coercion to quench tension between both parties (82.0%) were the major roles of traditional institutions in conflict resolution.

Table 4.28: Distribution of farmer according to roles of traditional leaders, police/military and deities/ancestors in conflict resolution

Roles of institutions	Nasarawa State (n=160)	Niger State (n=130)	Pooled (n=290)
	Freq (%) Rank	Freq (%) Rank	Freq (%) Rank
Traditional leaders (Kings and chiefs)			
Rewards for law abiding citizen	130 (81.3) 6th	126 (96.9) 1st	256 (88.3) 1st
Checks and balances	145 (90.6) 3rd	110 (84.6) 4th	255 (87.9) 2nd
Use of cursing to normalize farmer and pastoralist behaviours	149 (93.1) 2nd	106 (81.5) 5th	255 (87.9) 2nd
Use of coercion to quench tension between both parties	152 (95.0) 4th	102 (78.6) 6th	254 (87.6) 4th
Provision of communal solidarity	130 (81.2) 7th	115 (88.5) 3rd	245 (84.5) 5th
Provision of vigilante groups for mediating conflict	125 (78.1) 8th	118 (90.7) 2nd	243 (83.8) 6th
Cracking of jokes to quench tension	156 (97.5) 1st	84 (64.6) 8th	240 (82.8) 7th
Provision of traditional oath taking	134 (83.8) 5th	97 (74.6) 7th	231(79.7) 8th
Carrot and stick (reward and punishment) for parties involved in conflict	102 (63.8) 9th	100 (62.5) 9th	202 (69.7) 9th
Use of police/military			
Arrest and prosecution of culprits to serve as a deterrent to others	155 (96.9) 1st	124 (95.4) 1st	279 (96.2) 1st
Use of police to enforce law and order	149 (93.1) 2nd	117 (90.0) 3rd	266 (91.7) 2nd
Curfew enforcement in order to calm tensions in conflict zones	145 (90.6) 3rd	113 (86.9) 4th	258 (88.9) 3rd
Road blocks to checkmate further spread of conflict and also avoid the use of ammunitions	141 (88.1) 4th	109 (83.8) 5th	250 (86.2) 4th
Enforcement of law and restoring peace in conflict areas	132 (82.5) 5th	116 (89.2) 2nd	248 (85.5) 5th
Deities and ancestors			
Invisible reconciliators of conflict	140 (87.5) 1st	119 (91.5) 1st	259 (89.3) 1st
Initiators of the dynamics of conflict resolution	136 (85.0) 2nd	106 (81.5) 5th	242 (83.4) 2nd
Watchdogs of morality, discipline and proximity	118 (73.8) 4th	116 (89.2) 2nd	234 (80.7) 3rd
Arbiters of difficult conflict for resolution	123 (76.9) 3rd	111 (85.4) 4th	234 (80.7) 3rd
Custodians of the knowledge and wisdom of conflict resolution	112 (70.0) 5th	116 (89.2) 2nd	228 (78.6) 5th

Source: Field survey, 2019.

The above findings stressed the need to offer cash and material rewards to law-abiding pastoralist to encourage others to embrace peace and the need to use force to restore peace and orderl in the State. This finding is in consonance with that of Akinpeloye *et al.* (2020) who reported that use of force and reward for law-abiding citizens for conflict resolution in Oyo State.

b. Use of police/military

Similarly, Table 4.28 indicates the roles played by police/military in addressing conflict resolution between farmer and pastoralist. The roles played by police/military in Niger State as reported by farmer includes arrest and prosecution of culprits to serve as a deterrent to others (96.9%), use of police to enforce law and order (93.1%) and curfew enforcement in order to calm tensions in conflict zones (90.6%). The farmer from Nasarawa State reported that arrest and prosecution of culprits to serve as a deterrent to others (95.2%), enforcement of law and order to restore peace in conflict area (89.2%) and use of police to enforce law and order (90.0%) were the major roles played by police/military in conflict resolution. Similarly, the pooled result shows that arrest and prosecution of culprits to serve as a deterrent to others (96.2%) and use of police to enforce law and order (91.7%) were the major roles played by police/military in conflict resolution. This implies that arresting the culprits in farmer-herder conflict will serve as a deterrent to others. Also, availability of police officers in all nooks and crannies of the rural areas could help in the enforcement of law and order. This finding agrees with that of Aliyu *et al.* (2018) who opined that the police and military ensure peaceful conflict resolution by arresting the culprits and people involved in the conflicts.

In the same vein, the result in Table 4.29 indicates that the pastoralist for Nasarawa State reported that arrest and prosecution of culprits to serve as a deterrent to others (90.1%), use of police to enforce law and order (84.3%) and curfew enforcement in order to calm tensions in conflict zones (74.5%) were the major roles played by police/military in conflict resolution. The pastoralists from Niger State however, reported that arrest and prosecution of culprits to serve as a deterrent to others (89.5%), use of police to enforce law and order (81.2%) and curfew enforcement in order to calm tensions in conflict zones (71.2%) were the major roles played by the police/military in conflict resolution. The pooled result shows that arrest and prosecution of culprits to serve as a deterrent to others (89.9%) and use of police to enforce law and order (83.1%) were the most important roles played by police/military in conflict resolution. This finding agrees with Aliyu *et al.* (2018) who reported that the police and military ensured peaceful resolution by arresting the culprits and people involved in the conflicts.

c. Deities and ancestors

Table 4.28 reveals the roles of deities and ancestors in conflict resolution. The farmer from Niger State stated that the following were the roles of deities and ancestors in conflict resolution; invisible reconciliators of conflict (91.5%), custodians of the knowledge and wisdom of conflict resolution (89.2%) and watchdogs of morality discipline and proximity (89.2%) were the most important roles played by deities and ancestors in conflict resolution. The result for farmers from Nasarawa State reveals that reconciliators of conflict (87.5%), initiators of the dynamics of conflict resolution (85.0%) and arbiters of difficult conflict for resolution (76.9%) were the commonest roles of deities and ancestors in conflict resolution. The pooled result indicates that invisible reconciliators of conflict (89.3%) and initiators of

the dynamics of conflict resolution (83.4%) were the most important roles played by deities and ancestors in conflict resolution. This denotes that the use of terrestrial power associated with deities and ancestors can settle conflict invisibly.

Furthermore, the result presented in Table 4.29 shows that the pastoralist from Nasarawa State reported that watchdogs of morality discipline and proximity (92.2%), arbiters of difficult conflict for resolution (78.4%) and initiators of the dynamics of conflict resolution (70.6%) were the most important role of deities and ancestors in conflict resolution. The pastoralist in Niger State reported that invisible reconciliators of conflict (86.8%), watchdogs of morality discipline and proximity (73.7%) and arbiters of difficult conflict for resolution (65.8%) were the most vital roles of deities and ancestors in conflict resolution.

The pooled result shows that watchdogs of morality, discipline and proximity (84.3%) and arbiters of difficult conflict for resolution (73.0%) were the commonest roles of deities and ancestors in conflict resolution in the study area. This is in line with Tekena (2014) who reported that the main pillars in peace maintenance in traditional society were many and varied including shrines, ancestors and oracles; a deft combination of measures of this kind made justice through the prevailing institutions of social control that are cheap, convincing and quick.

Table 4.29: Distribution of pastoralist according to roles of traditional leaders, police/military and deities/ancestors in conflict resolution

Variable	Nasarawa State (n=51)	Niger State (n=38)	Pooled (n=89)
	Freq (%) Rank	Freq (%) Rank	Freq (%) Rank
Traditional leaders (Kings and chiefs)			
Rewards for law abiding citizen	41 (80.4) 3rd	33 (86.8) 1st	74 (83.1) 1st
Use of coercion to quench tension between both parties	44 (86.3) 1st	30 (78.9) 2nd	73 (82.0) 2nd
Provision of communal solidarity	40 (78.4) 2nd	28 (73.7) 3rd	68 (76.4) 3rd
Use of cursing to normalize farmer and pastoralist behaviours	33 (64.7) 6th	25 (65.8) 4th	58 (65.2) 4th
Checks and balances	35 (68.6) 5th	22 (57.9) 5th	57 (64.0) 5th
Cracking of jokes to quench tension	38 (74.5) 4th	12 (31.6) 9th	50 (56.2) 6th
Provision of vigilante groups for mediating conflict	30 (58.8) 7th	15 (39.5) 7th	45 (50.6) 7th
Provision of traditional oath taking	26 (50.9) 8th	15 (39.5) 7th	41 (46.1) 8th
Carrot and stick (reward and punishment) for parties involved in conflict	22 (43.1) 9th	19 (50.0) 6th	41 (46.1) 8th
Use of police/military			
Arrest and prosecution culprits to serve as a deterrent to others	46 (90.1) 1st	34 (89.5) 1st	80 (89.9) 1st
Use of police to enforce law and order	43 (84.3) 2nd	31 (81.6) 2nd	74 (83.1) 2nd
Curfew enforcement in order to calm tensions in conflict zones	38 (74.5) 3rd	27 (71.2) 3rd	65 (73.0) 3rd
Roadblocks to checkmate further spread of conflict and also eliminate the use of ammunitions	35 (68.6) 4th	25 (65.8) 4th	60 (67.4) 4th
Enforcement law and restore and peace in conflict areas	31 (60.7) 5th	19 (50.0) 5th	50 (56.2) 5th
Deities and ancestors			
Watchdogs of morality discipline and proximity	47 (92.2) 1st	28 (73.7) 2nd	75 (84.3) 1st
Arbiters of difficult conflict for resolution	40 (78.4) 2nd	25 (65.8) 3rd	65 (73.0) 2nd
Invisible reconciliators of conflict	28 (54.9) 5th	33 (86.8) 1st	61 (68.5) 3rd
Initiators of the dynamics of conflict resolution	36 (70.6) 3rd	18 (46.2) 5th	54 (60.7) 4th
Custodians of the knowledge and wisdom of conflict resolution	31 (60.7) 4th	21 (55.3) 4th	52 (58.4) 5th

Source: Field survey, 2019. Note: Multiple response, figures in parentheses were percentage

d. Village unions

Also, Table 4.30 reveals that transparency and accountability in dispute resolution (91.5%), providing early warning on conflict and its consequences (88.5%) and providing sensitive information that reduces conflict (87.7%) were the major roles of village unions as reported by farmer in Niger State. Conversely, linking of farmer and pastoralist with government officials for peace building (88.8%), providing early warning on conflict and its consequence (84.4%) and organizing seminars and training for peace (81.3%) were the important roles played by village unions in Nasarawa State for conflict resolution. The pooled result shows that linking farmer and pastoralist with government officials for peace building (86.9%) and

providing early warning on conflict and its consequence (86.2%) were the key roles played by village unions in conflict resolution in the study area. This involves creating awareness on future conflict by the village unions and ability of village unions to ensure farmer and pastoralist coexist for peaceful resolution with the use of peace building mechanisms.

Similarly, the result presented in Table 4.31 reveals that the pastoralist in Nasarawa State stated that providing early warning on conflict and its consequence (90.2%), linking of farmer and pastoralist with government officials for peace building (80.3%) and organizing seminars and training for peace (70.1%) were the major roles of village unions in conflict resolution. The pastoralist in Niger State stated that providing early warning on conflict and its consequence (78.9%), providing sensitive information that reduces conflict (71.1%) and linkingof farmer and pastoralist with government officials for peace building (65.8%) were the essential roles played by village unions in conflict resolution.

The pooled result shows that providing early warning on conflict and its consequence (85.4%) and linking of farmer and pastoralist with government officials for peace building (74.2%) were the most important roles played by village unions in managing conflict in the study area. Other roles of village unions include provision of proactive steps before the arrival of the conflict, involvement of government officials in conflict resolution and use of experts in the training of pastoralist on conflict resolution.

Table 4.30: Distribution of farmer according to roles of village union, religious leaders and women group in conflict resolution

Variable	Nasarawa State (n=160)	Niger State (n=130)	Pooled (n=290)
	Freq (%) Rank	Freq (%) Rank	Freq (%) Rank
Village unions			
Link farmer and pastoralist to government officials for peace building	142 (88.8) 1st	110 (84.6) 4th	252 (86.9) 1st
Provide early warning on conflict and its consequence	135 (84.4) 2nd	115 (88.5) 2nd	250 (86.2) 2nd
Provide sensitive information that reduces conflict	125 (78.1) 5th	114 (87.7) 3rd	239 (82.4) 3rd
Organize seminars and training for peace	130 (81.3) 3rd	106 (81.5) 5th	236 (81.4) 4th
Transparency and accountability in dispute resolution	120 (75.0) 6th	119 (91.5) 1st	239 (81.4) 4th
Facilitate dialogue between farmer and pastoralist	127 (79.4) 4th	101 (77.7) 6th	228 (78.6) 6th
Religious leaders			
Promote dialogue between the contending parties	148 (92.5) 1st	119 (91.5) 2nd	267 (92.1) 1st
Create psychological fear in people through the use of holy scriptures and deities	142 (88.8) 3rd	114 (87.7) 3rd	256(88.3) 2nd
Offer spiritual advice	131 (81.9) 5th	123(94.6) 1st	254 (87.6) 3rd
They also ensure harmonious co-existence between both parties by elaborating on the oneness of God	140 (87.5) 4th	110 (84.6) 4th	250 (86.2) 4th
They consult their God to detect the culprits	145 (90.6) 2nd	101 (77.7) 5th	245 (84.5) 5th
Women group			
Provision of refugee camp for internally displaced persons	150 (93.8) 1st	112 (86.2) 3rd	262 (90.3) 1st
Rendering of educational services	132 (82.5) 3rd	120 (92.3) 1st	252 (86.9) 2nd
Provision of relief materials	141 (88.1) 2nd	102 (78.5) 5th	243 (83.8) 3rd
Encourage inter-ethnic harmony through inter-marriages	122 (76.3) 5th	116 (89.2) 2nd	238 (82.1) 4th
Offering free medical assistance	126 (78.8) 4th	107 (82.3) 4th	233 (80.3) 5th

Source: Field survey, 2019

Note: Multiple response, figures in parentheses were percentage

e. Religious leaders

Table 4.30 shows that offering spiritual advice (94.6%), promoting dialogue between the contending parties (91.5%) and creating psychological fear in people through the use of holy scriptures and deities (87.7%) were the essential roles played by the religious leaders in conflict resolution as reveals for farmer in Niger State. The farmer in Nasarawa State however reported that promoting dialogue between the contending parties (92.5%), consulting God to detect the culprits (90.6%) and creating psychological fear in people through the use of holy scriptures and deities (88.8%) were the vital roles played by religious leaders in conflict resolution. For the pooled result, the roles played by religious leaders in

conflict resolution in the study area were promoting dialogue between the contending parties (92.1%) and creating psychological fear in people through the use of holy scriptures and deities (88.3%).

On the other hand, the result for the pastoralist from Nasarawa State reveals that promoting dialogue between the contending parties (88.2%), offering spiritual advice (78.4%) and ensuring harmonious co-existence between both parties by elaborating on the oneness of God (74.5%) were the major roles played by religious leaders in conflict resolution. The finding in Niger State indicates that promoting dialogue between the contending parties (84.1%), creating psychological fear in people through the use of holy scriptures and deities (76.3%) and offering spiritual advice were the roles played by religious leaders in conflict resolution.

The pooled result shows that promoting dialogue between the contending parties (86.5%) and ensuring harmonious co-existence between both parties by elaborating on the oneness of God (75.3%) were the most important roles of religious leaders in conflict resolution. The roles of religious leaders in conflict resolution can never be downplayed, and these involve the use of prayers, sacrifices and incense to appeal to a supernatural being (Muhammed *et al.,* 2015).This signifies the interventions of spiritual leaders in conflicts resolution. This finding is in tandem with that of International Crisis Group (2017) who reported that religious leaders are very important in conflict resolution in Africa.

f. Women groups

Table 4.30 further shows that provision of refugee camps for internally displaced persons (93.8%) and provision of relief materials (88.1%) were the common roles played by women group in conflict resolution as indicates by farmer from Nasarawa State. The farmer in Niger

State however, reveals that rendering of educational services (92.3%) and encouraging inter-ethnic harmony through inter-marriages (89.2%) were the major roles of women group in conflict resolution. The pooled result shows that provision of refugee camp for internally displaced persons (90.3%) and rendering educational services (86.9%) were the most important roles played by women groups in conflict resolution. Women groups in Nigeria such as Catholic Women Diocese of Nigeria have been proactive in visiting areas affected by conflicts and disasters in Benue and Borno States respectively by supplying relief materials and medical assistance.

On the other hand, the result for the the pastoralist from Niger State reveals that provision of refugee camp for internally displaced persons (89.5%) and rendering of educational services (78.9%) were the most common roles of women group in conflict resolution while provision of refugee camp for internally displaced persons (68.6%) and rendering of educational services (62.7%) were the vital roles of women group in conflict resolution for Nasarawa State.

The pooled result shows that provision of refugee camp for internally displaced persons (77.5%) and rendering educational services (69.7%) were the common roles of women group in conflict resolution in the study area. This finding is in agreement with that of Anthony (2013) who reported that during farmer and pastoralist conflicts in Benue State of Nigeria, the Justice Development and Peace Commission (JDPC), an organ of peace building established by the Catholic Church and other religious groups played vital roles in the resolution of the conflict. Apart from preaching for peace, the organ reconciled the warring parties through dialogue. Besides, the religious leaders established schools, hospitals and maternity homes to bridge the gap of development and give hope to the people in TCR.

Table 4.31: Distribution of pastoralist according to roles of village union, religious leaders and women group in conflict resolution

Variable	Nasarawa State (n=51)	Niger State (n=38)	Pooled (n=89)
Village union	**Freq (%) Rank**	**Freq (%) Rank**	**Freq (%) Rank**
Provide early warning on conflict and its consequence	46 (90.2) 1st	30 (78.9) 1st	76 (85.4) 1st
Link farmer and pastoralist to government officials for peace building	41 (80.3) 2nd	25 (65.8) 3rd	66 (74.2) 2nd
Provide sensitive information that reduces conflict	30 (58.8) 5th	27 (71.1) 2nd	57 (64.0) 3rd
Organize seminars and training for peace	36 (70.1) 3rd	20 (52.6) 5th	56 (62.9) 4th
Transparency and accountability in dispute resolution	34 (66.7) 4th	22 (57.9) 4th	56 (62.9) 4th
Facilitate dialogue between farmer and pastoralist	26 (50.9) 6th	17 (44.7) 6th	43 (48.3) 6th
Religious leaders			
Promote dialogue between the contending parties	45 (88.2) 1st	32 (84.1) 1st	77 (86.5) 1st
Ensure harmonious co-existence between both parties by elaborating on the oneness of God	38 (74.5) 3rd	29 (76.3) 2nd	67 (75.3) 2nd
Offer spiritual advice	40 (78.4) 2nd	26 (68.4) 3rd	66 (74.2) 3rd
Create psychological fear in people through the use of holy scriptures and deities	34 (66.7) 4th	23 (60.5) 4th	57 (64.0) 4th
Consult their God to detect the culprits	31 (60.7) 5th	19 (50.0) 5th	50 (56.2) 5th
Women group			
Provision of refugee camp for internally displaced persons	35 (68.6) 1st	34 (89.5) 1st	69 (77.5) 1st
Rendering of educational services	32 (62.7) 2nd	30 (78.9) 2nd	62 (69.7) 2nd
Provision of relief materials	27 (52.9) 3rd	25 (65.8) 3rd	52 (58.4) 3rd
Offering free medical assistance	24 (47.1) 4th	20 (52.6) 4th	44 (49.4) 4th
Encourage inter-ethnic harmony through inter-marriages	20 (39.2) 5th	14 (36.8) 5th	34 (38.2) 5th

Source: Field survey, 2019

Note: Multiple response, figures in parentheses were percentage

g. Elders and family heads

Additionally, Table 4.32 shows that capacity for articulating norms and customs (93.1%), linkage between abstract and sincerity of purpose (89.2%), enhancing and promoting of the process of conflict resolution (86.2%) were the common roles of elders and family heads in conflict resolution in Niger State. However, while capacity for articulating norms and customs (90.0%), enhancing and promoting the process of conflict resolution (82.5%) and making the process of conflict resolution drivable and practicable (79.4%) were the major roles of elders and family heads in Nasarawa State. The pooled result shows that capacity for articulating norms and customs (91.4%), enhancing and promoting of the process of conflict

resolution (84.1%) were the commonest roles of elders and family heads in conflict resolution.

Furthermore, for the pastoralist from Niger State indicates that capacity for articulating norms and customs (92.1%), enhancing and promoting the process of conflict resolution (81.6%) and making the process of conflict resolution drivable and practicable (73.7%) were the most common roles of elders and family heads in conflict resolution. The pastoralist in Nasarawa State reveals that capacity for articulating norms and customs (82.4%), enhancing and promoting the process of conflict resolution (76.5%) were the prominent roles of elders and family heads in conflict resolution.

Table 4.32: Distribution of farmer according to the roles of elders and family heads, age-grade association and professional associations (guild of hunters) in conflict resolution

Variable	Nasarawa State (n=160)		Niger State (n=130)		Pooled (n=290)	
	Freq (%)	Rank	Freq (%)	Rank	Freq (%)	Rank
Elders and family heads						
Capacity for articulating norms and customs	144 (90.0)	1st	121 (93.1)	1st	265 (91.4)	1st
Enhancers and promoters of the process of conflict resolution	132 (82.5)	2nd	112 (86.2)	3rd	244 (84.1)	2nd
Making the process of conflict resolution drivable and practicable	127 (79.4)	3rd	109 (83.8)	4th	236 (81.4)	3rd
Linkage between abstract and sincerity of purpose	120 (75.0)	4th	116 (89.2)	2nd	236 (81.4)	3rd
Investiture of authority	114 (71.3)	5th	101 (77.7)	5th	215 (74.1)	5th
Age-grade associations						
Summoning offenders to the venue of conflict resolution	125 (78.2)	1st	114 (87.7)	1st	239 (82.4)	1st
Ensuring adherence to and application of the norms and customs governing conflict resolution	119 (74.3)	2nd s	107 (82.3)	3rd	226 (77.9)	2nd
Protecting the lives of the crowd of spectators at the scene of conflict resolution	115 (71.9)	3rd	111 (85.4)	2nd	226 (77.9)	2nd
Watching over the behaviours of parties to the conflict the scene of reconciliation	110 (68.8)	4th	105 (80.7)	4th	215 (74.1)	4th
Professional associations (Guild of hunters)						
Legitimate power and social responsibilities of the society	117 (73.1)	2nd	113 (86.9)	1st	230 (79.3)	1st
Their prerogative of position engineered positive results which they normally propelled	122 (76.3)	1st	104 (80.0)	3rd	226 (77.9)	2nd
Have wisdom and diplomacy in tilting the magnitude of conflicts to a manageable limit	117 (73.1)	2nd	108 (83.1)	2nd	225 (77.6)	3rd
Peace and harmony reign supreme in their sphere of influence	113 (70.6)	4th	97 (74.6)	4th	210 (72.4)	4th

Source: Field survey, 2019. Multiple response, figures in parentheses were percentage

The pooled roles of elders and family heads in conflict resolution were capacity for articulating norms and customs (86.5%) and enhancing and promoting the process of conflict resolution (78.7%). The roles of elders and family heads are vital to socialize the younger ones on the culture and norms that will inculcate good morals in them (Aliyu *et al.*, 2018). Anthony (2013) also reported that elders in conflict prone areas of Benue State advise the youths on the need to give room for peace and shun all forms of violence.

h. Age-grade associations

Table 4.32 reveals that among farmer in Niger State, summoning offenders to the scene of conflict resolution (87.7%), protecting the lives of the crowd at the venue of conflict resolution (85.4%) and ensuring adherence to, and application of, the norms and customs governing conflict resolution (82.3%) were the most important roles of age-grade association in conflict resolution. The farmer from Nasarawa State however revealed that summoning offenders to the venue of conflict resolution (78.2%), ensuring adherence to and application of the norms and customs governing conflict resolution (74.3%) and protecting the lives of the crowd of spectators at the scene of conflict resolution (71.9%) were the commonest roles of the associations in conflict resolution.

The pooled result shows that summoning offenders to the venue of conflict resolution (82.4%) was the most important role of age grade association in conflict resolution. This suggests that the age-grade associations ensure that the culprit of conflicts are brought to the venues of conflict resplution.

Similarly, the result further reveals that the pastoralist from Nasarawa State reveals that summoning offenders to the venue of conflict resolution (78.4%) and ensuring adherence to

and application of the norms and customs governing conflict resolution (70.6%) were the important roles of age-grade associations in conflict resolution, while summoning offenders to the scene of conflict resolution (76.3%) and watching over the behaviours of parties in the conflict at the venue of reconciliation (65.8%) were the essential roles of age-grade associations in Niger State. The pooled result shows that watching over the behaviours of parties in the conflict at the venue of reconciliation (62.9%) and ensuring adherence to, and application of, the norms and customs governing conflict resolution (60.8%) were the important roles played by the age-grade associations according to the pastoralist from Niger State. This involves strict monitoring of farmer and pastoralist behaviour in order to ascertain change in behaviour or attitude that could escalate conflicts.

Also, the age-grade associations offer shelter for the spectators such as journalists and representatives of both groups in conflict resolution. This agrees with Ahmed (2018) who posited that the age-grade associations the under auspices of Miyetti Allah Cattle Breeders Association are saddled with the tasks of monitoring the activities of its members for utmost compliance to acceptable practices for both farmer and pastoralist in Zamfara State, of Nigeria.

i. Professional associations (Guild of hunters)

Table 4.32 shows that legitimating the power and social responsibilities of the society (86.9%) and having wisdom and diplomacy in tilting the magnitude of conflicts to a manageable limit (83.1%) were the major roles of professional associations (guild of hunters) in Niger State. The farmer from Nasarawa State however, stated that prerogative position of hunters leads to positive results (76.3%) and legitimising the power and social responsibilities of the society (73.1%) were the commonest roles of the professional associations (guild of

hunters) in Nasarawa State. The pooled result shows that legitimating the power and social responsibilities of the society (79.3%) and prerogative position of hunters leads to positive results (77.9%) were the most common roles of professional association (guild of hunters) in conflict resolution.

In the same vein, the result presented in Table 4.33 further reveals that the pastoralist from Nasarawa State have stated that legitimating the power and social responsibilities of the society (82.4%) and having wisdom and diplomacy in tilting the magnitude of conflicts to a manageable limit (76.5%) were the vital roles of professional associations in conflict resolution. The finding in Niger State shows that legitimising the power and social responsibilities of the society (76.3%) and having wisdom and diplomacy in tilting the magnitude of conflicts to a manageable limit (65.8%) were the most common roles of professional associations in conflict resolution.

The pooled result indicates that legitimising the power and social responsibilities of the society (79.8%) and having wisdom and diplomacy in tilting the magnitude of conflicts to a manageable limit (71.9%) were the prominent roles of professional association in conflict resolution. This finding is in agreement with that of Shettima and Tar (2018) who posited that some professional associations take action to set up court-like procedures, with witnesses, site inspection and independent assessment of costs and others, and make judgments with justice and equity.

Table 4.33: Distribution of pastoralist according to the roles of elders and family heads, age-grade association and professional associations (guild of hunters) in conflict resolution

Variable	Nasarawa State (n=51)		Niger State (n=38)		Pooled (n=89)	
	Freq (%)	Rank	Freq (%)	Rank	Freq (%)	Rank
Elders and family heads						
Capacity for articulating norms and customs	42 (82.4)	1st	35 (92.1)	1st	77 (86,5)	1st
Enhancers and promoters of the process of conflict resolution	39 (76.5)	2nd	31 (81.6)	2nd	70 (78.7)	2nd
make the process of conflict resolution drivable and practicable	34 (66.7)	3rd	28 (73.7)	3rd	62 (69.7)	3rd
Linkage between abstract and sincerity of purpose	34 (66.7)	3rd	25 (65.8)	4th	59 (66.3)	4th
Investiture of authority	25 (49.0)	5th	20 (52.6)	5th	45 (50.7)	5th
Age-grade association						
Watching over the behaviours of parties to the conflict the scene of reconciliation	31 (60.8)	3rd	25 (65.8)	2nd	56 (62.9)	1st
Ensuring adherence to and application of the norms and customs governing conflict resolution	36 (70.6)	2nd	18 (47.4)	3rd	54 (60.8)	2nd
Summoning offenders to the venue of conflict resolution	40 (78.4)	1st	29 (76.3)	1st	49 (55.1)	3rd
Protecting the lives of the crowd of spectators at the scene of conflict resolution	27 (52.9)	4th	15 (39.5)	4th	42 (47.2)	4th
Professional associations (Guild of hunters)						
Legitimising the power and social responsibilities of the society	42 (82.4)	1st	29 (76.3)	1st	71 (79.8)	1st
Have wisdom and diplomacy in tilting the magnitude of conflicts to a manageable limit	39 (76.5)	2nd	25 (65.8)	2nd	64 (71.9)	2nd
Their prerogative of position engineered positive results which they normally propel	32 (62.7)	3rd	20 (52.6)	3rd	52 (58.4)	3rd
Peace and harmony reign supreme in their sphere of influence	23 (45.1)	4th	14 (36.8)	4th	37 (41.6)	4th

Source: Field survey, 2019

Multiple response

4. 6.2 Preventive measures put in place to avert dispute between farmer and pastoralist as perceived Farmer

From Table 4.34, finding for Nasarawa State indicates Kendall's coefficient of concordance of 0.84 while for Niger State it was a 0.42 and significant at 1% probability level respectively. The pooled result shows that the Kendall's coefficient of concordance obtained in the analysis was 0.33 and it was significant at a 1% level of probability; suggesting that 33.0.% of the farmer agreed on the outcome of the ranking. The finding in Nasarawa State shows a strong agreement among the rankings while the findings for Niger State and the pooled result shows weak agreement. The finding for Nasarawa State shows that re-establishing cattle routes ($\bar{X}$ =8.16), payment of compensation by the culprits ($\bar{X}$ =8.14) and avoiding

contamination of streams by cattle ($\bar{X} = 7.88$) were the mostly used preventive measures put in place to avert dispute between farmer and pastoralist. However, the finding for Niger State indicates that the establishment of cattle colony ($\bar{X}$=7.84), provision of education and civic training for both farmer and pastoralist ($\bar{X}$=7.72) and re-establishing of cattle route ($\bar{X}$= 7.43) were the mostly used preventive measures put in place to avert dispute between farmer and pastoralist.

The pooled result reveals that the most common preventive measures put in place to avert dispute between farmer and pastoralist in the study area were re-establishing of grazing cattle route ($\bar{X}$=7.84), implying that establishment of cattle routes will minimize recurrent contacts between farmer and pastoralist that is often associated with conflicts. This finding agreed with Akinpeloye *et al.* (2020) who reported that the establishment of cattle routes is very vital in the prevention of conflict between farmer and pastoralist.

Also, provision of education and civic training for both farmer and pastoralist ($\bar{X}$ =7.58), payment of compensation by the culprits ($\bar{X}$=7.55) were the preventive measures mostly used in the study area. This finding is in tandem with that of Aliyu *et al.* (2018) who reported that provision of education and stopping the setting of the bush ablaze indiscriminately by pastoralist would prevent conflict between farmer and pastoralist.

Table 4.34: Distribution of farmer according to preventive measures put in place to avert disputes

Variable	Nasarawa State (n=160)		Niger State (n=130)		Pooled (n=290)	
	Mean ($\bar{x}$)	Rank	Mean ($\bar{x}$)	Rank	Mean ($\bar{x}$)	Rank
Re-establish cattle route	8.16	1st	7.43	3rd	7.84	1st
Provision of education and civic training for both farmer and pastoralist	7.47	5th	7.72	2nd	7.58	2nd
Payment of compensation by the culprits	8.14	2nd	6.82	10th	7.55	3rd
Avoiding indiscriminate bush burning	7.64	4th	6.85	8th	7.28	4th
Avoiding destruction of farm land by pastoralist	6.94	8th	7.38	4th	7.14	5th
Avoiding contamination of streams by cattle	7.88	3rd	6.16	13th	7.11	6th
Traditional rulers involvement	7.02	7th	7.02	6th	7.02	7th
Establishment of cattle colony	6.10	11th	7.84	1st	6.88	8th
Farmer should avoid farming on cattle route	7.16	6th	6.28	12th	6.77	9th
Avoidance of cattle rustling	6.48	10th	7.02	6th	6.72	10th
Establishment of farmer and pastoralist union	6.61	9th	6.85	8th	6.72	10th
Overgrazing of farmland should be discouraged	6.09	12th	6.57	11th	6.30	12th
Provision of grazing reserves	5.29	13th	7.07	5th	6.09	13th
Kendall's W	0.84		0.42		0.33	
Chi-Squared	161.044		66.299		113.547	
Degree	12		12		12	
Asymptotic significant	0.0000		0.0000		0.0000	

Source: Field survey, 2019.

4.6.3 Preventive measures put in place to avert dispute between pastoralist and farmer as perceived by Pastoralists

The finding for Nasarawa State in Table 4.35 indicates a Kendall's value of 68.0% which was significant at 1% level of probability while that of Niger State shows a value of 10.0% and was significant at 1% level of probability. This implies that pastoralist in Nasarawa State shows better agreement in the ranking than their Niger State counterparts.The pooled result shows a Kendall's coefficient of concordance of 0.63 and significant at a 1% level of probability; suggesting that 63.0% of the pastoralist agreed on the outcome of the ranking. The finding for Nasarawa State and the pooled result shows a strong agreement among the rankings while the finding for Niger State shows a weak agreement. This could be attributed to activities of banditry that often result to rampant cattle rustling and kidnapping of pastoralist for ransom.

The preventive measures mostly adopted in Nasarawa State include; payment of compensation by the culprits ($\bar{X}$=8.39), avoidance of indiscriminate bush burning ($\bar{X}$=7.91) and provision of education and civic training for both farmer and pastoralist. However, the preventive measures used mostly in Niger State were establishment of cattle colony ($\bar{X}$ =8.55), avoidance of destruction of farmland by pastoralist ($\bar{X}$=8.45) and avoidance of indiscriminate bush burning ($\bar{X}$=7.97).

In the same vein, the pooled result reveals that the preventive measures put in place to avert conflict in the study area was the avoidance of indiscriminate bush burning ($\bar{X}$=7.94). This implies that prevention of indiscriminate bush burning in the study area will prevent crises. Also, payment of compensation by the culprits ($\bar{X}$=7.88) is one of the preventive measures used in the study area. This implies that payment of compensation to pastoralist for the

damages that arise from farmer incessant reparsal action. Aliyu *et al.* (2018) similarly states that payment of compensation is one of the major ways of tackling farmer and pastoralist conflict. This finding is in line with Oguntolu (2018) who reported that the establishment of cattle colony and non-encroachment of farmland are preventive measures against farmer and pastoralist conflict in North Central Nigeria. Urama *et al.* (2018), on the other hand, reported that involvement of traditional rulers, avoidance of cattle rustling, establishment of cattle colony, establishment of farmer and pastoralist unions and avoiding over-grazing were the methods used in resolving farmer and pastoralist' conflicts in Enugu State, Nigeria.

Table 4.35: Distribution of pastoralist according to preventive measures put in place to avert dispute

Variable	Nasarawa State (n=51)		Niger State (n=38)		Pooled (n=89)	
	Mean ($\bar{x}$)	Rank	Mean ($\bar{x}$)	Rank	Mean ($\bar{x}$)	Rank
Avoiding indiscriminate bush burning	7.91	2nd	7.97	3rd	7.94	1st
Payment of compensation by the culprits	8.39	1st	7.18	6th	7.88	2nd
Establishment of cattle colony	7.31	4th	8.55	1st	7.84	3rd
Avoiding destruction of farm land by pastoralist	7.29	5th	8.45	2nd	7.79	4th
Providing education and civic training for both farmer and pastoralist	7.34	3rd	7.50	4th	7.41	5th
Discouraging overgrazing of farmland	6.74	8th	7.14	7th	6.91	6th
Farmer should avoid farming on cattle route	7.25	6th	6.14	10th	6.78	7th
Provision of grazing reserves	6.68	10th	6.82	8th	6.74	8th
Re-establishing cattle route	6.95	7th	6.42	9th	6.72	9th
Avoidance of cattle rustling	6.28	12th	7.26	5th	6.70	10th
Avoiding contamination of streams by cattle	6.72	9th	5.99	11th	6.40	11th
Traditional rulers involvement	6.50	11th	5.78	13th	6.19	12th
Establishment of farmer and pastoralist union	5.64	13th	5.79	12th	5.70	13th
Kendall's W	0.68		0.10		0.63	
Chi-Squared	41.905		45.812		67.723	
Degree	12		12		12	
Asymptotic significant	0.0000		0.0000		0.0000	

Source: Field survey, 2019.

4.7.1 Problems associated with TCR mechanisms used by farmer

The result of factor analysis in Table 4.36 shows the extracted factors based on the problems associated with the use of TCR by farmer in the study area. The Kaiser-Meyer-Olkin (KMO) test which measures the degree of inter-correlation among the variable and the appropriateness of factor analysis has a calibration value of 0.72 implying that the inter-correlation and appropriateness of variable were good for factor analysis (Williams *et al.*, 2010). Bartlett's test which tests the statistical probability of whether the correlation matrix correlates with the variable was an identity matrix (at the level of 1%) indicating a significant relationship between the variable (Williams *et al.*, 2010).

The result of the principal component analysis using the varimax rotation method isolated 5 underlining or principal factors for each of the 16 variable associated with TCR in the study area. These five underlying factors explained 68.9% of the variation in the result. That is to say that the factors that meet the cut-off criterion with Eigen-values greater than 1 are generally considered satisfactory. The extracted factors and their respective factor loadings exclude those whose absolute loading value was less than 0.40 according to Kaiser's rule of thumb (Farinde and Alabi, 2015). These factors include; distrust factor (1), leadership factor (2), cultural/political factor (3), attitudinal factor (4), knowledge factor (5).

a Distrust factor

The first factor, labelled distrust factor, has an Eigen-value of 5.440, loaded with three items and explained 32.0% of variation of the inhibiting factors. The specific factors that revolve around distrust factors with high factor loadings were: distrust among the group (0.852), decision-taking under TCR may be biased (0.817), and nature of the leaders of both groups (0.693). Distrust factor could be a major challenge to TCR mechanisms. Distrust occurs due

to lack of confidence between both parties as a result of their past dealings. This tends to weaken the effectiveness of TCR mechanisms. The decision-taking most times under TCR may be biased. This could be due to compromise from the institutions involved in conflict resolution due to political, tribal and mudane consideration. The nature of the leader of both groups could ignite the conflict through their unguarded utterances and brainwashing of their followers. This finding concurs with that of Dimelu *et al.* (2017) who reported that lack of trust and nature of leaders were some of the factors hindering peace between farmer and pastoralist.

b. Leadership factors

The second factor, labelled leadership factor, has an Eigen-value of 2.104, loaded with three items and explained 12.4% of the variance in the inhibiting factors. The specific factors that revolve around leadership factors with high factor loadings were: nature of community leaders (0.826), lack of uniform TCR laws in Nigeria (0.767) and the people who are involved in the TCR process are not properly trained (0.689). Poor or bad leaders could prolong the peace process between farmer and pastoralist. The attitude of most of the community leaders such as Kings, Chiefs, and heads of farmer' representative could worsen the conflict and retard the atmosphere for a peaceful resolution. Also, the lack of uniform TCR laws in Nigeria is one of the leading problems affecting TCR mechanisms. More so, lack of specialists and properly trained personnel are major challenge to the success of TCR mechanisms. This finding collaborates that of Akinpeloye *et al.*(2020) who stressed that the attitude of community leaders is a problem in conflict zones of Nigeria.

c. Cultural and political factors

The third factor labelled cultural and political factor has an Eigen-value of 1.758, loaded with four items and explained 10.3% of the variance in the inhibiting factors. The specific factors that revolved around political/cultural factor with high factor loadings were: time-consuming (0.773), cultural differences (0.724), capital intensive (0.714) and political influence (0.603). The principle of TCR is a gradual process and take time before justice is achieved. Also, TCR could be capital intensive and not always free as perceived by most farmer. More so, factors such as inadequate training could hinder the speedy progress of TCR. Cultural factors mostly arise due to lack of respect for the various cultural entities. In a related study Okoli, *et al.* (2014) reported that lack of respect for cultural entities is a major cause of conflict in Nasarawa, State Nigeria.

d Attitudinal factors

The fourth factor labelled attitudinal factor has an Eigen-value of 1.237, loaded with three items and explained 7.3% of the variance in the inhibiting factors. The specific factors that revolved around the attitudinal factors with high factor loadings were: Inadequate orientation on benefits of TCR mechanisms (0.767), unwillingness to accept truce (0.734) and lack of interest in the TCR mechanisms (0.686). This finding is in agreement with that of Olaniyan and Yahaya (2016) who said that inability of farmer to accept truce and lack of interest in TCR mechanisms are major factors affecting conflict resolution mechanisms in Northern Nigeria.

e Knowledge factors

The fifth factor labelled knowledge factor has an Eigen-value of 1.185, loaded with three items and explained 6.9% of the variance in the inhibiting factors. The specific factors that revolved around knowledge factors with high factor loadings were: egocentrism (0.819), ignorance among both parties (0.661) and illiteracy among both parties (0.569). Egocentrism, ignorance and illiteracy among farmer and pastoralist could all contribute to problems associated with TCR mechanisms in the study area. This finding aligns with that of Ior *et al.* (2018) who reveals that illiteracy is one of the causes of communal conflict in Benue and Nasarawa States, Nigeria.

Table 4.36: Problems associated with the use of traditional conflict resolution mechanisms (Farmer)

Factor	Distrust	Leadership	Cultural and political	Attitude	Knowledge
Distrust between the groups	0.852*	0.368	-0.130	0.190	-0.127
Decision making under TCR may be biased	0.817*	0.619	0.063	0.083	0.106
Nature of the leaders of both groups	0.693*	0.268	-0.054	0.395	0.032
Nature of community leaders	0.641	0.826*	-0.119	0.362	-0.112
Lack of uniform TCR laws in Nigeria	0.014	0.767*	0.265	-0.189	-0.286
The people who are involved in an TCR process are not properly trained	0.501	0.689*	-0.160	0.142	-0121
Time-consuming	0.504	-0.133	0.773*	-0.090	0.364
Cultural differences	0.032	0439	0.727*	-0.006	-0.132
Capital intensive	0.402	-0.300	0.714*	0.014	0.417
Political influence	0.439	-0.140	0.603*	-0.028	-0.072
Inadequate orientation on benefits attached to mechanisms	0.484	-0.132	-0.334	0.767*	0.224
Unwillingness to accept a truce	-0.078	-0.075	0.3640	0.734*	-0.3151
Lack of interest in the mechanisms	0.307	-0.121	-0.250	0.686*	0.247
Egocentrism	0.597	0.016	-0.042	-0.339	0.819*
Ignorance among both parties	0.435	-0.132	-0.334	-0.344	0.661*
Illiteracy among both parties	0.120	-0.471	-0.173	-0.097	0.569*
Chi2 ($\chi 2$)	2430.60 12				
Eigen-value	5.440	2.104	1.758	1.237	1.185
% of variance	32.0	12.4	10.3	7.3	6.9
Kaiser-Meyer-Olkin Test	0.72				
Bartlett's Test of Sphericity ($\chi 2$)	136***				

Source: Field survey, 2019.

4.7.2 Problems associated with TCR mechanisms used by pastoralist

The result of factor analysis in Table 4.37 shows the extracted factors based on the problems associated with the use of TCR mechanisms. The Kaiser-Meyer-Olkin (KMO) test which measures the degree of inter-correlation among the variable and the appropriateness of factor analysis has a calibration value of 0.567; signifying that the inter-correlation and the appropriateness of the variable were moderate for factor analysis (Adewunmi *et al.*, 2019).

Bartlett's test which tests the statistical probability of whether the correlation matrix correlates with the variable was an identity matrix (at the level of 0.000) indicating a significant relationship between the variable (Adewunmi *et al.,* 2019).

The result of the principal component analysis using the varimax rotation method isolated 3 underlyining or principal factors for each of the 15 variable. These three underlying factors explained 76.4% of the variation in the factors. That is to say that the factors that meet the cut-off criterion with Eigen-values greater than 1 are generally considered satisfactory. The extracted factors and their respective factor loadings exclude those whose absolute loading value was less than 0.40 according to Kaiser's rule of thumb (Farinde and Alabi, 2015). Those factors include: cultural factors (1), attitudinal factor (2) knowledge and distrust factor (3)

a. Cultural factors

The first factor labelled cultural factor has an Eigen-value of 6.90, loaded with three items and explained 34.9% of the variance in the inhibiting factors. The specific factors that revolved around the cultural factors with high factor loadings were: time-consuming **(**0.8488), political factor (0.8377) and capital intensive (0.6728). The issues related to political factors cannot be over-emphasised owing to the different political ideologies between farmer and pastoralist. This finding affirms the result of Okoli *et al.* (2014) who indicates that difference in political ideologies is the cause of conflict in Benue and Nasarawa, States Nigeria.

b. Attitudinal factor

The second factor labelled economic and institutional factor has an Eigen-value of 2.84, loaded with four items and explained 21.8% of the variance in the inhibiting factors. The specific factors that revolved around economic and institutional factors with high factor

loadings were lack of interest in the mechanisms (0.8271), inadequate orientation on benefits of the mechanisms (0.7713), unwillingness to accept truce (0.7403) and inadequate skill personnel (0.7168). The processes of TCR could take time before execution. On the other hand, TCR is capital intensive because of the financial implications for logistic purposes. More so, factors such as inadequate skill personnel could hinder the progress of TCR.

c. Knowledge/distrust Factor

The third factor labelled social factors has five factors with an Eigen-value of 2.02 and 19.7% variance of the inhibiting factors**.** The factors highlighted here include: sometimes the decision making under TCR may be biased (0.8955), distrust between the groups (0.8221), lack of uniform TCR laws in Nigeria (0.8177), illiteracy among both parties (0.6616) and nature of the leaders of both groups (0.5465). Therefore, the biased nature of some of the officials involved in TCR can create problem in conflict resolution. Also, lack of interest in TCR mechanisms due to the inability of past measures to address the problem between farmer and pastoralist is a problem that is associated with TCR in the study area. Distrust between the groups can also be a major challenge to TCR mechanisms, as a result of not having faith in one another. Moreover, illiteracy among both parties, lack of interest in the mechanisms and nature of leaders for both groups can all lead to problems in TCR mechanisms usage in the study area. This finding aligns with that of Samuel (2015) who reported that illiteracy contributed to the conflict among rural farming populace in Northern Nigeria.

Table 4.37: Problems associated with the use of traditional conflict resolution mechanisms (Pastoralist)

Factor	Cultural Factor	Attitudinal factors	Knowledge and distrust
Time-consuming	0.849*	0.252	-0.584
Political differences	0.838*	0.583	0.113
Capital intensive	0.673*	0.252	-0.584
Lack of interest in the mechanisms	0.312	0.827*	0.228
Inadequate orientation among benefits attached to mechanisms	-0.154	0.771*	0.067
Unwillingness to accept a truce	-0.108	0.740*	0.275
Ignorance among both parties	0.440	0.509*	0.162
Egocentrism	0.548	0.725*	-0.205
Inadequate skill personnel	-0.154	0.717*	0.410
Sometimes, the decision taking under TCR may be biased	-0.337	0.189	0.896*
Distrust between the groups	-0.395	0.268	0.822*
Lack of uniform TCR laws in Nigeria	0.794	-0.487	0.818*
Illiteracy among both parties	0.312	0.006	0.662*
Nature of the leader of both groups	0.381	0.084	0.547*
Chi^2 ($\chi 2$)	1801.78		
Eigen-value	6.90489	2.83526	2.02086
% of variance	34.9	21.8	19.7
Kaiser-Meyer-Olkin Test	0.57		
Bartlett's Test of Sphericity ($\chi 2$)	1779.936		

Source: Field survey, 2019.

4.8.1 Hypotheses Testing

(Farmer)Hypothesis I

The result in Table 4.38 indicates that there was a significant relationship between the effectiveness of TCR mechanisms and some selected socio-economic characteristics. The coefficient of age (-0.1006) was negative but significant at 10% level of probability; indicating that as farmer' age increases, their perceived effectiveness of TCR mechanisms reduces. The coefficient of of size of farmland (0.1967) was positive and significant at 1% level of probability. This signifies that an increase in the size of farmland will increase the

perception of farmer on effectiveness of TCR. The coefficient of household size (0.5450) was also positive and significant at 1% level of probability; suggesting that increase in members of the household will increase the perceived effectiveness of farmer on TCR mechanisms.

The coefficient of farming experience (0.4984) was positively significant at a 1% level of probability; indicating that an increase in years of farming will lead to an increase in perceived effectiveness of TCR mechanisms. Also, the coefficient of extension contact (0.2312) was significant at 1% level of probability; showing that access to extension contact will increase the perceived effectiveness of TCR mechanisms among farmer in the study area. Therefore, the null hypothesis that there was no significant relationship between farmers socio-economic characteristics and effectiveness of TCR mechanisms was rejected.

Table 4.38: Relationship between farmers socio-economic characteristics and perceived effectiveness of TCR mechanisms

Variable	Coefficient	P-value
Age	-0.1006	0.0873*
Education	-0.0227	0.7008NS
Size of farm land	0.1967	0.0008***
Household size	0.5450	0.0000***
Experience in farming	0.4984	0.0000***
Annual income	0.0497	0.3995 NS
Extension contact	0.2312	0.0001***
Credit	-0.0042	0.9434 NS
Cooperative	0.0286	0.6272 NS

Source: Field survey, 2019

*** Significant at 1% level of probability, **=Significant at 5% level of probability, *=Significant at 10% level of probability, NS= Not significant.

Hypothesis 2

The result in Table 4.39 shows that there was a significant (0.0103) relationship between preventive measures put in place to avert disputes between farmer and pastoralist and the perceived effectiveness of traditional conflict resolution mechanisms being used. Therefore, the null hypothesis was rejected.

Table 4.39: Relationship between preventive measures and perceived effectiveness of traditional conflict resolution mechanisms

Statistic	Pooled	F-value	Probability level	Decision
Wilky lamb	0.8517	1.84	0.0103***	S
Pillai's trace	0.1483	1.84	0.0103***	S
Lawley hotelling trace	0.1742	1.84	0.0103***	S
Roy's largest root	0.1742	1.84	0.0103***	S

Source: Field survey, 2019

*** Significant at 1% level of probability

S= significant

Hypothesis 3

Table 4.40 reveals that there was a significant (0.0643) relationship between traditional conflict resolution mechanisms being used in improving farmer-pastoralist relationship and the perceived effectiveness of traditional conflict resolution mechanisms. Therefore, the null hypothesis was rejected.

Table 4.40: Relationship between traditional conflict resolution mechanisms and perceived effectiveness of traditional conflict resolution mechanisms

Variable	Coefficient	P-value
TCR Mechanisms	0.1088	0.0643*

Source: Field survey, 2019

*=Significant at 10% level of probability.

4.8.2 Hypotheses Testing (Pastoralist)

Hypothesis I

The result in Table 4.41 shows that there was a significant relationship between the perceived effectiveness of TCR mechanisms and socio-economic characteristicsm of the pastoralist. The coefficient of age (-0.1941) was negative but significant at a 10% level of probability. This implies that as pastoralist' increases their perceived effectiveness of TCR mechanisms reduces. The coefficient of household size (0.5978) was positive and significant at a 1% level of probability. This indicates that an increase in the household size of pastoralist will increase the perceived effectiveness of TCR mechanisms. The coefficient of experience in herding (0.2654) was also positive and significant at 1% level of probability. This denotes that increase in pastoralist experience is expected to increase the perceived effectiveness of TCR mechanisms in the study area. Therefore, the null hypothesis wass rejected.

Table 4.41: Relationship of some selected socio-economic characteristics and perceived effectiveness of TCR mechanisms

Variable	Coefficient	P-value
Age	-0.1941	0.0684*
Education	0.1730	0.1051 NS
Household size	0.5978	0.0000***
Experience in herding	0.2654	0.0120***
Annual income	0.0468	0.6632 NS
Extension contact	-0.0289	0.7882 NS
Credit	0.1380	0.1973 NS
Cooperative	-0.0046	0.9661 NS
Sex	0.0688	0.5219 NS

Source: Field survey, 2019 NS= Not Significant

*** Significant at 1% level of probability, **=Significant at 5% level of probability, *=Significant at 10% level of probability.

Hypothesis 2

The result in Table 4.42 shows that there was a significant (0.0006) relationship between preventive measures put in place to avert disputes between farmer and pastoralist and the patoralist perceived effectiveness of traditional conflict resolution mechanisms. Therefore, the null hypothesis was rejected.

Table 4.42: Relationship between preventive measures and perceived effectiveness of traditional conflict resolution mechanisms

Statistics	Pooled	F-value	Probability level	Decision
Wilky lamb	0.6866	3.56	0.0006***	S
Pillai's trace	0.3134	3.56	0.0006***	S
Lawley hotelling trace	0.4565	3.56	0.0006***	S
Roy's largest root	0.4565	3.56	0.0006***	S

Source: Field survey, 2019

*** Significant at 1% level of probability

S=Significant.

Hypothesis 3

Table 4.43 shows that there was no significant (0.4751) relationship between traditional conflict resolution mechanisms being used in improving the farmer-pastoralist relationship and the pastoralist perceived effectiveness of traditional conflict resolution mechanisms. Therefore, the null hypothesis was rejected.

Table 4.43: Relationship between traditional conflict resolution mechanisms and perceived effectiveness of traditional conflict resolution mechanisms

Variable	Coefficient	P-value	
TCR Mechanisms	0.0767	0.4751	NS

Source: Field survey, 2019 NS= Not Significant

CHAPTER FIVE

5.0 CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

Based on the findings of the study, the following conclusions were drawn: Farmer and pastoralist in the study area were predominantly male who were in their youthful and middle ages. Married farmer and pastoralist were the majority in the study area with large household sizes. Farmer and pastoralist in the study area were experienced in farming and herding. Most of the farmer had at least one form of formal education, while the majority of the pastoralist had no formal education. Most of the farmer had extension access while the majority of the pastoralist did not received extension services. Majority of the farmer and pastoralist had witnessed more than five conflicts in the past twelve months. Farmer reported that crop damage, attack on cattle by farmer and stealing of crops were the major causes of conflicts with pastoralist while pastoralist stated that crop damage, attack on cattle by farmer and competition for land and water were the major causes of conflicts with the farmers in the study area.

The result further reveals that the compatibility of the mechanisms to the environment, the complexity of practicing some of the TCR mechanisms and the relative advantage over the existing practices of conflict resolution among the farmer and pastoralist were greatly siginificant as majority of the farmer and pastoralsits indicates that about 1-10 of the TCR mechanisms were complex with high relative advantage.

Most of the farmer and pastoralist reported that traditional rulers were the major agents for conflict resolution. For farmers; compensation and punishment, use of agents to monitor

conflicts and imposing curfew in the area were the major TCR mechanisms used in improving pastoralist and farmer' relationship while compensation and punishment, tendering apology/use of negotiation and dialogue/conveying meeting were the most frequent TCR mechanisms used in improving farmer pastoralist relationship as indicates by the pastoralist. Farmer were willing to use TCR to preserve the relationship, understanding issues better and to maintain a cooperative approach while pastoralist were willing to use TCR to preserve the relationship, provide a model for quick dispute resolution and provide flexible means of resolving conflict.

Years of education, complexibility of TCR, cooperative organization, labour, goal of farming and farm size, access to extension agents, farming experience, number of conflicts witnessed, access to government support were the factors that influenced willingness to use TCR and the level of usage of TCR by farmer respectively. Conversely, herd size, access to extension agent, complexibility of TCR, number of conflicts witnessed, access to government support, goal of pastoral farming and pastoral experience, relative advantage of TCR, compatibility of TCR, access to credit, access to government support were the factors that influenced willingness to use TCR and level of usage of TCR by pastoralist.

The following mechanisms were perceived to be effective by farmer namely:dialogue/convening a meeting and use of agents to monitor conflict occurrences, rewards and mediation by elders. On the other hand, mediation by elders, peace education/teaching, compensation and punishment were perceived to be effective by pastoralist. Sex, age, marital status, access to extension agent, complexibility of TCR, labour and number of conflicts witnessed were the factors influencing the opinion of farmer on the effectiveness of TCR mechanisms. On the other hand, age, years of education, access to

extension agent, pastoral experience, complexibility of TCR, relative advantage of TCR and compatibility of TCR were factors influencing the opinions of pastoralist on the effectiveness of TCR mechanisms.

Farmer pointed out that re-establishing of cattle routes, payment of compensation by the culprits and avoiding the contamination of streams by cattle were the preventive measures put in place to avert disputes with pastoralist while payment of compensation by the culprits, avoidance of indiscriminate bush burning, provision of education and civic training for both farmer and pastoralist were the preventive measures put in place to avert dispute with farmer as reported by the pastoralist.

Major problems faced in the use of TCR in the study area were; distrust factors (distrust among the group and decision-making under TCR may be biased), leadership factors (nature of community leaders and lack of uniform TCR laws in Nigeria), cultural and political factors **(**time consuming, cultural differences and capital intensive**),** attitudinal factors (inadequate orientation on benefits attached to mechanisms and unwillingness to accept truce) and knowledge factor **(**egocentrism and ignorance among both parties**).** The pastoralist on the other hand reported that cultural factors (time-consuming and political factor), attitudinal factors (lack of interest in the mechanisms and inadequate orientation on benefits attached to the mechanisms), knowledge/distrust factor (sometimes the decisions taken under TCR may be biased and distrust between the group**)** were the major problems associated with the use of TCR mechanisms in the study area.

Result for farmer in the study area reveals that there was a significant relationship between the perceived effectiveness of TCR mechanisms and (age, size of farmland, household size, experience in farming and extension service). However, result for the pastoralist reveals a

significant relationship between the perceived effectiveness of TCR mechanisms and age, household size and experience in herding. There was a significant relationship between preventive measures put in place to avert disputes between farmer and pastoralist and the perceived effectiveness of traditional conflict resolution mechanisms. Also, there was a significant relationship between traditional conflict resolution mechanisms being used in improving farmer-pastoralist relationship and the perceived effectiveness of traditional conflict resolution mechanisms.

5.2 Recommendations

i. The government should formulate and enforce policy guidelines to safeguard the access rights of marginalized groups to resources. Additionally, mitigating violent conflicts between pastoralist and farmer can be achieved by reinforcing pastoralist institutions and utilizing them as a platform for educating pastosralist on the importance of avoiding violence.

ii. To address the issue of unhealthy competition for land resources, it is strongly recommended to transition the nomadic pastoralist community to a sedentary lifestyle, encouraging them to embrace farming alongside cattle keeping.

iii. It was strongly recommended for constituted authorities to empower local communities through the devolution of natural resources management.

iv. Majority of the respondents in the study area did not have access to credit. Farmer and pastoralist should be supported with credit facilities to boost their production by the government or private sector intervention by relevant institutions.

v. Damage to crops was one of the major causes of conflicts in the study area. Government should place an embargo on open grazing by introducing cattle routes for pastoralist to reduce the contact of cattle with crop field.

vi. Stealing of crops/cattle was among the major causes of conflicts in the study area. Thus, pastoralist should be educated by extension agents on the need to stop the pilfering of farmer produce likewise farmer should be educated on the need to desist from cattle rustling.

vii. Tendering of apology was one of the least used TCR mechanisms in the study area. Therefore, stakeholders in conflict resolution should ensure offenders/culprits tender apology for peace to reign in the study area.

viii. Compensation was also one of the least used TCR mechanisms in the study area. It is therefore, necessary for extension agents, The National Orientation Agency (NOA) and other stakeholders to enlighten pastoralist on the need to compensate farmer that lose their produce to herdsmen attacks.

ix. The coefficient of extension service had a positive influence on the willingness to use TCR by farmer and pstoralists. It is necessary for extension agents to maintain constant visitation to farmer and pastoralist in order to boost their willingness level.

x. Pastoral experience negatively influenced the willingness of pastoralist to use TCR. It is recommended that experienced pastoralist should be involved and encouraged to use TCR for conflict resolution in the study area.

xi. The use of sanctions was not perceived to be an effective strategy in the study area. Hence, serious sanctions should be imposed on offenders by the government and

other stakeholders involved in conflicts resolution so that it would serve as a deterrent to future offenders.

xii. Provision of grazing reserves was ranked the least among the measure put in place to avert disputes between farmer and pastoralist. As such, State and Local Governments should work together with village heads to re-establish grazing reserves for the pastoralist.

xiii. Political influence was one of the problems associated with the use of TCR mechanisms in the study area. Thus, any attempt to politicize the conflict by political leaders should be discouraged by government and security agencies.

xiv. Illiteracy among both parties is one of the problems of use of TCR mechanisms in the study area. Government and stakeholders involved in the resolution of conflict should ensure that respondents have access to formal education and training that would enhance their knowledge on the need for peaceful coexistence.

5.3 Suggestion for Further Studies

The findings of this study have reveals other areas that could be explored for further studies. One of such areas is the implication of the effectiveness of TCR mechanisms for peace building efforts in the North Central Nigeria. While the present study focused on the effectiveness of the TCR mechanisms used in improving relations between farmer and pastoralist, further studies can evaluate the objectives of TCR and its ability to restore peace in the region.

Further studies could also examine the nature of relations that exists among the actors, Farmer, Pastoralist and the Nigerian Government and the implication of this for community development. It is necessary to investigate the extent to which they protect each other's

interests and at what expense. The study could also find out the degree of influence that one party enjoys over the other and the effect of this on the communities.

Another important area that could be explored is the role of the political leaders in escalating or de-escalating of the conflict between the pastoralist and sedentary farmer in the North-Central region. This is necessary against the background of the findings of the current study that political factors played significant functions in terms of the strained relationship buildup between these major land users. Emphasis also should be focussed on the determination of the efficacy of the techniques in improving the quality of life of the citizen affected by farmer-pastoralist conflicts and whether they could be wholly applicable to the areas ravaged or should be modified.

Limitations of the Study

Majorly the limitations of the study were language barrier and measurement of farm and herd sizes. These were overcomed with the use of local enumerators who understand the local language of the respondents to interpret and compare the land areas to football field and specific numbering of herds respectively.

Contribution to Knowledge

Determination of average occurence of farmer and pastoralist conflict which was six times per annum, with an average value of ₦421, 615.00k and ₦454, 652.50k of crop and livestock lost to the conflicts by the farmer and the pastoralist respectively.

Identification of the commonest and effective TCR mechanisms used in resolving farmer-pastoralist conflict in the study area. The most commonest mechanisms used were; use of agents to monitor conflict, dialogue/convening a meeting, compensation and punishment for

the farmer. For the pastoraslist, the mechanisms mostly used were; compensation and punishment, tendering apology and dialogue/convening a meeting.

The study identified the factors influencing the willingness of farmer and pastoralist to use TCR mechanisms for resolving conflicts in Nasarawa and Niger States, which include; age, household size, experience, educational status, membership of cooperative and number of conflicts witnessed. On the other hand agricultural extension contacts and number of conflicts witnessed were the factors that influenced the willingness of the pastoralist to use TCR mechanisms.

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APPENDICES

DEPARTMENT OF AGRICULTURAL EXTENSION AND RURAL DEVELOPMENT, SCHOOL OF AGRICULTURE AND AGRICULTURAL TECHNOLOGY,FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA, NIGER STATE, NIGERIA

RESEARCH QUESTIONNAIRE

Dear respondent,

This questionnaire aims at gathering relevant information that would assist the researcher to analyse "**Effectiveness of TCR Mechanisms in Improving Farmer-Pastoralist Relations in Nasarawa and Niger States, Nigeria**". All the information supplied here shall be solely for research purposes and will be treated as confidential. You are therefore required to fill in the answer for the following questions and mark or tick as appropriate.

Questionnaire Number.....

Name of the respondent.....---------

Phone numbers of the respondent----------

Name of the village/village.....

Local Government Area.....

SECTION A: SOCIO-ECONOMIC CHARACTERISTICS OF THERESPONDENTS

1. What is your sex? (a) Male [ ] (b) Female [ ]
2. What is your age in years?.....
3. Kindly indicate your marital status:
   (a). Single [ ] (b). Married [ ](c).Widow [ ] (d).Widower (e). Separated[ ] (f). Divorced [ ]
4 Kindly indicate your household size
   (a) Number of wives-------
   (b) Number of male children -------
   (c) Number of female children-----
   (d) Number of other dependents------
   (e) Total--------
5. What is your primary occupation (a) farming [ ] (b) cattle rearing [ ] (c) farming and cattle rearing [ ]

6. What is your secondary occupation? (a) farming [ ] (b) cattle rearing [ ] (c) farming and cattle rearing [ ] (d) trader [ ] (e) Tailoring [ ] (f) Artisan [ ] (g) Others [ ]

7 How long have you been in your primary occupation?.....

8. Kindly indicate your highest educationalstatus…..

(a) Adult [ ] (b) Quranic [ ] c Primary [ ] (d) secondary [ ] (e) OND/NCE [ ] f HND/Degree [ ] (g) [ ]

9. How many years did you spend to acquire formal education

10. What is the size of your farm land in (ha)?.....

11. What is your herd size in number?.....

12. Do you have access to agricultural extension service? (a) Yes { } (b) No { }

13. How many times did you have contact with extension agent?.....

14. If no kindly indicate why?.....

15. What is yourannual income from farming/livestock activities?.....

16. What is yourannual income from non farming activities? .....

17. Are you a member of any agricultural cooperative? (a) Yes [ ] (b) No [ ]

18. If yes, what groups or associations (a) Farmer‟ association [ ] (b) Miyetti Allah [ ] (c) Cooperative society [ ] (d) others (specify)…….

19. How many years have you been a member of cooperative/association?----------

20. Do you have access to credit over the last 12 months? (a) Yes [ ] (b) No [ ]

21. How much do you recieved?.....interest rate, ... sources of your credit? (a) Friends ( ) (b) Commercial bank (c) Cooperative (d) Contributions ( ) (e) Others ( )

22. What is mode of payment of your credit? (a) Cash ( ) (b) Kind ( )

23. What is your percentage of repayment----------

24. Source of labour used? (a) family labour ( ) (b) hired labour ( ) (c) communal labour ( ) (d) specify ……

25. Goal of farming/herding? (a) Produce for family consumption ( ), (b) for sale ( ), (c) both sales and family ( )

26. Access to government support (a) Yes ( ), (b) No ( )

26. How many farmer and pastoralist conflicts have you witnessed over the last 3 years ----------and what are the causes?

No	Causes	Tick
I	Damage to crops	
ii	Competition for land and water	
iii	Low awareness of stock route	
iv	Stealing of crops/cattles	
V	Illegal incursion of farm land by pastoralist	
vi	Farm fragmentation	
vii	Government attitude	
viii	Hostilities to one another	
ix	Indiscriminate bush burning	
X	Attack on cattles by farmer	
xi	Overgrazing on farmland	
xii	Rivalry between both parties	
xiii	Lack of compliance to stock routes	
xiv	Lack of respect for both parties	
xv	Drunkenness	
xvi	Drug abuse	
xvii	Others specify	

SECTION B: TRADITIONAL CONFLICT RESOLUTION MECHANISMS USED IN THE STUDY AREA

25. Who settled disputebetween the farmer and the cattle herders? (a) Police [ ] (b) law court [ ] (c) traditional rulers [ ] (d) farmer association [ ] (e) others specify……
26. Were the efforts successful? (a) Yes [ ] (b) No [ ]
27. If no, why do you think the efforts were not successful? (a) Distrust among the group [ ] (b) nature of the leaders of both groups [ ] (c) nature of community leaders [ ] (d) others specify…….
28. Number of TCR mechanisms that are compactible .....?
29. Relative advantage of TCR mechanisms that are beneficial than the existing practices ……?

30. Number of TCR mechanisms that are difficult to understand by individual farmer/pastoral (complexibility)… .....?
31. Indicate the alternative dispute mechanisms used in improving farmer-pastoralist relationship in your area?

No	**TCR mechanisms used**	**Tick**
i	Imposing a curfew on the area	
ii	Use of propaganda	
iii	Setting of judicial committee of enquiry	
iv	Use of agents to monitor conflict occurrence	
v	Compensation and punishment	
Vi	Traditional oath taking	
vii	Rewards	
viii	Informal settlement	
Ix	Mediation by elders	
X	Dialogue/convening a meeting	
Xi	Reconciling both parties	
Xii	Tendering apology/use of negotiation	
xiii	Persuasion of actors	
Xiv	Inculcation of myths	
Xv	Ritual treaties/blood covenant	
xvi	Use of sanction	
xvii	Good governance	
xviii	Use of marriage	
Xix	Peace education/teaching	
Xx	Check and balances	
xxi	Effective communication	
xxii	Inter-faith dialogue	

SECTION C: WILLINGNESS OF FARMER/PASTORALIST TO USE TCRM

32. Are you willing to use TCR? (a) Yes [ ] (b) No [ ]
33. If yes kindly indicate your opinion on willingness to use TCR. Please remember to tick only once for each of the listed statements: 1 = Strongly Disagreed, 2= Disagreed, 3= Undecided, 4= Agreed and 5= Strongly Agreed

TCR STATEMENTS	**SA**	**A**	**UN**	**DS**	**SD**
TCR is expected to provide model for quick dispute resolution					
TCR will provide flexible means of resolving conflict					
TCR is a cheaper means of resolving conflict					
TCR are easily accessible to the poor and vulnerable					
TCR is restorative in nature					
TCR maintains a cooperative approach					
TCR will preserve relationship					
TCR provides strict confidentiality					
Parties involved in conflict have control over the process					
No language barrier					
TCR is non-partisanship in nature					
TCR does not requires adherence to rules and evidence					
TCR eases tension between disputants					
TCR is less restrictive form of dispute resolution					
The panelists involved in TCR are highly experienced					
Parties have equal control on the outcome					
The focus is on understanding issues better					

TCR is democratic in nature					
TCR encourage parties to agree on fair settlement					
TCRis a win-win situation					

SECTION D: EFFECTIVENESS OF DIFFERENT TCR MECHANISMS

34. Are TCR mechanisms effective in conflict resolution between farmer and pastoralist

(a) Yes [ ] (b) No [ ]

35. If yes kindly indicate the effectiveness of TCR in resolving farmer and pastoralist

No	**TCR mechanisms**	**Very effective**	**Effective**	**Not effective**
i	Imposing a curfew on the area			
ii	Use of propaganda			
iii	Setting of judicial committee of enquiry			
iv	Use of agents to monitor conflict occurrence			
V	Compensation and punishment			
vi	Traditional oath taking			
vii	Rewards			
viii	Informal settlement			
Ix	Mediation by elders			
X	Dialogue/convening a meeting			
xi	Reconciling both parties			
xii	Tendering apology/use of negotiation			
xiii	Persuasion of actors			
Xiv	Inculcation of myths			
Xv	Ritual treaties/blood covenant			
xvi	Use of sanction			
xvii	Good governance			
xviii	Use of marriage			
Xix	Peace education/teaching			

Xx	Check and balances			
Xxi	Effective communication			
Xxii	Inter-faith dialogue			

SECTION E: ROLES OF INSTITUTIONS INVOLVED IN CONFLICT RESOLUTION

36. Do institution play roles in conflict resolution in your area(a) Yes [ ] (b) No [ ]
37. If yes kindly indicate from the roles of institutions in farmer-pastoralist conflict resolution.Please remember to tick only once for each of the listed statements: 1 = Strongly Disagreed, 2= Disagreed, 3= Undecided, 4= Agreed and 5= Strongly Agreed

Traditional leaders (Kings and chiefs)	**Tick**	**SA**	**A**	**UN**	**DS**	**SD**
Provision of communal solidarity						
Provision of traditional oath taking						
Rewards for law abiding citizen						
Provision of vigilante groups for mediating conflict						
Checks and balances						
Cracking of jokes to quench tension						
Use of coercive to quench tension between both parties						
Carrot and stick (reward and punishment) for parties involved in conflict						
Use of cursing to normalize farmer and pastoralist behaviors						
Use of police/military						
Enforcement law and restore and peace in conflict areas						
Curfew enforcement in order to calm tensions in conflict zones						

Road blocks in order to check mate further spread of conflict and also eliminate the use of ammunitions						
Use of police toenforce law and order						
Arrest and prosecution culprits to serve as deterrent to others						
Deities and ancestors						
Watchdogs of morality discipline and proximity						
Initiators of the dynamics of conflict resolution						
Arbiters of difficult conflict for resolution						
Custodians of the knowledge and wisdom of conflict resolution						
Invisible reconciliators of conflict						
Village union						
Provide sensitive information that reduce conflict						
Organize seminar and training for peace						
Link farmer and pastoralist to government officials for peace building						
Facilitate dialogue between farmer and pastoralist						
Provide early warning on conflict and its consequence						
Transparency and accountability in dispute resolution						
Religious leaders						
Promote dialogue between the contending parties						

Offer spiritual advice						
Create psychological fear in people through the use of holy scriptures and deities						
They also ensure harmonious co-existence between both parties by elaborating on the oneness of God						
They consult their God to detect the culprits						
Women group						
Provision of relief materials						
Provision of refugee camp for internally displaced persons						
Offering free medical assistance						
Encourage inter-ethnic harmony through inter-marriages						
Rendering of educational services						
Elders and family heads						
Investiture of authority						
Capacity for articulating norms and customs						
Linkage between abstract and sincerity of purpose						
Enhancers and promoters of the process of conflict resolution						
They made the process of conflict resolution thrivable and practicable						
Age-grade association						
Summoning offenders to the scene of conflict resolution						

Watching over the behaviors of parties to the conflict the scene of reconciliation						
Ensuring adherence to and application of the norms and customs governing conflict resolution						
Protecting the lives of the crowd of spectators at the scene of conflict resolution						
Professional associations (Guild of hunters)						
They legitimate power and social responsibilities of the society						
Their prerogative of position engineered positive results which they normally propelled						
Have wisdom and diplomacy in tilting magnitude of conflicts to manageable limit						
Peace and harmony reign supreme in their sphere of influence						

SECTION F: PREVENTIVE MEASURES PUT IN PLACE TO AVERT CONFLICT BETWEEN FARMER AND PASTORALIST

38. Are there preventive measures put in place to avert farmer-pastoralist conflict in your area?(a) Yes [ ] (b) No [ ]
39. If yes, kindly indicate the measures utilized to avert farmer-pastoralist conflict.Please remember to tick only once for each of the listed statements: 1 = Strongly Disagreed, 2= Disagreed, 3= Undecided, 4= Agreed and 5= Strongly Agreed

S/NO	Preventive measures	Tick	SA	A	UN	DS	SD
i	Establishment of cattle colony						

ii	Provision of grazing reserves						
iii	Provide education and civic training for both farmer and pastoralist						
iv	Establishment of farmer and pastoralist union						
v	Re-establish grazing cattle route						
vi	Payment of compensation by the culprits						
vii	Traditional rulers involvement						
viii	Farmer should avoid farming on cattle route						
ix	Avoidance of cattle rustling						
X	Avoid contamination of streams by cattle						
xi	Overgrazing of farm land should be discouraged						
xii	Avoid indiscriminate bush burning						
xiii	Avoid destruction of farm land by pastoralist						

SECTION G:PROBLEMS ASSOCIATED WITH TCR MECHANISMS BEING USED IN THE STUDY AREA

40. Do you encountered any problem in using TCR(a) Yes [ ] (b) No [ ]

41. If yes indicate from the list below

Variable	**Tick**	**Very severe**	**Severe**	**Not severe**
Political influence				
Cultural differences				
Time consuming				
Capital intensive				

Unwilingness to accept truce				
Ignorance among both parties				
Egocentrism				
Inadequate orientation among benefits attached to mechanisms				
Inadequate skill personnels				
Lack of interest in the mechanisms				
Illiteracy among both parties				
Distrust among the group				
Nature of the leaders of both groups				
Nature of community leaders				
Lack of uniform TCR laws in Nigeria				
The people who are involved in an TCR process are not properly trained				
Sometimes, the decision taking underTCR may be biased				

Thanks.