

**EFFECT OF FARMERS-HERDERS' CONFLICTS ON RURAL HOUSEHOLDS' INCOME IN
ADAMAWA STATE, NIGERIA**

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ABSTRACT

The farmers-herders conflict is persistent in many regions, leading to significant socio-economic consequences. This study aimed at examine the effect of farmers-herders' conflicts on household income in Adamawa State, Nigeria. Survey research design was adopted for the study. The population of the study is one million, one hundred and thirty eighty thousand five hundred and thirty two (1,138,532) farmers and herders from the six local government areas of Adamawa state which were purposively sampled for the study based on the intensity of the conflicts. Out of this population, four hundred (400) respondents were sampled which comprises of 300 crop farmers and 100 herders. Multiple regression analysis using E-view was used to determine the effects of farmers-herders' conflicts on rural Household Income in Adamawa State, Nigeria. The finding of the study revealed that environmental, political-institutional and economic factors have negative and significant effect on rural household income with coefficient of -0.2444 (0,020), -0.3522 (0.015) and -0.250 (0.074) respectively while social and ethno-religious factors do not have a significant effect on rural household income with coefficient 0.1511 (0.2885) and -0.0326 (0.7670) respectively. It was recommended among other things that policy interventions such as promoting ranching and modernizing livestock management through the National Livestock Transformation Plan (NLTP), establishing Rural Grazing Area (RUGA) settlements and enacting legislation prohibiting open grazing in some states among other that can address the underlying factors of conflicts and promote peaceful coexistence between farmers and herders are essential to mitigate the negative effects of farmers-herders conflicts on rural household income in Adamawa State and Nigeria at large.

Key words: coexistence, consequences, equation, Model, socio-economic, relationship
JEL CODE: Q12

1.1 Introduction

The means of livelihoods and economic sustainability for the majority of Nigerian population is Agricultural production. Farmers and herders make significant contribution in meeting household needs and thus contributing to the income of rural household. Income at the individual and household level is achieved when all people at all times have peaceful and harmonious environment for income generation (Nwankpa, 2017). Cooperation and conflicts characterized the relationship between farmers and herders in arid and semi-arid region of the world, and the existence of cooperation and peaceful conflicts resolution between farmers and herders is essential to agricultural production and sustainability of the rural household income.

In Asia, America and across the African region, farmers and herders have historically competed over the use of resources and, in some cases, engaged in violent conflicts, while at the same time they have mutually cooperated in trade, land/resource use and have peacefully coexisted (Oтите & Albert as cited in Nwobodo, 2021). The perception of conflicts in most part of the world is abnormal, dysfunctional and hence despicable. Nevertheless, Oтите & Albert as cited in Nwobodo, 2021, opined

that conflict is a fact of life and sometimes can be a forerunner of positive change. In the same vein, Moore (2004), viewed conflicts as necessary condition for society to evolve and developed. What is important is the ability to manage such conflict towards positive change. Traditionally, there has been rivalry between farmers and herders for the exploitation of resources and, occasionally, violent clashes which has a negative effect on household income (Kaderi et al, 2018). In an attempt to minimize the negative effect of farmers-herders conflicts, a lot of efforts have been put in place by the past and present administration to curtail the menace of farmers-herders conflicts in Adamawa state and Nigeria at large. At Adamawa State level, are: commissioning of the pilot ranching project and the National Life Stock Transformation Plan (NLSTP) by Governor Umaru Fintri, resuscitation of Lala, Gongoshi Vunokilang Ganye, Loco Grazing reserves among others targeted at curtailing the clash between farmers and herders and to promote sustainable life stock practices in the state, (Daily Post, 2024). At federal level were Grazing Reserve Act of 1964, National Grazing Routes and Reserve Bill 2012 and 2016, proposed establishment of Rural Grazing Area (RUGA) settlements in all states of the federation targeted at checking the conflicts and improve agricultural productivity (Daily Trust, 2019).

Despite all these measures, put in place by the government and relevant authorities, conflicts between farmers and herders and its negative effects on rural household income seem to be escalating. From the foregoing, it attests to the facts that farmers-herders conflicts and its effect on household income have become a topical issue in recent time and a subject for debate.

Prior to the past few decades, symbiotic and harmonious relationships exist between farmers and herders characterized by exchange of goods and services. Lately, this relationship turned soar degenerates to conflicts which results to fight for the resources with negative effect on rural household income (Accord, 2018). This leads to swing from the formally attained peaceful coexistence to ferocious way of life. This change could be attributed to social, environmental, politico-institutional, economic and ethno-religious factors. These factors have direct and negative effect on livelihood of the people in the affected area. It is on the basis of this assumed unprecedented violence dimension that the researcher intends to examine the effect of farmers-herders conflicts on rural household income in Adamawa State, Nigeria.

The purpose of this study is to examine the effect of Farmer-herders' conflicts on rural household income in Adamawa State. Specifically, the study sought to examine the effect of social, environmental, politico-institutional, economics and ethno-religious factors on rural household income in Adamawa State. In line with the specific objectives, the study is guided by the following research questions "What are the effects of social, environmental, politico-institutional, economics and ethno-religious factors of Farmer-herders' conflicts on rural household income in Adamawa State, Nigeria? The study equally formulated and tested the hypothesis "Social, Environmental, politico-institutional, Economic, and Ethno-religious factors of farmers'- herders conflicts do not have significant effect on rural household income in Adamawa State at 0.05 level of significant.

2.0 Literature review

Conflict is a situation where two or more parties perceive incompatible goals, interests, or values, leading to a struggle or clash between them, often involving attempts to neutralize, injure, or eliminate the opposing party, with the potential for negative consequences if not managed effectively (Abdulfattah & Yaser, 2019). Adeola and Chux (2015), consider conflicts as an intrinsic and inevitable part of the existence of human beings, and define it as the pursuit of incompatible interests and goals by different groups. Significantly, most scholars sees conflict as a process, which has developed from past interactions by individuals and groups; and that there are recognized opposing interests between parties in a zero-sum situation. The occurrence of different types of conflicts between farmers and herders could be seen from different perspective by different people.

Okeke (2014) opined that the occurrence of different types of conflicts between farmers and herders could be social, environmental, political, resources, etc. The researcher further stated that those causes are not an alien phenomenon to Nigeria and the West Africa region at large as those causes has become a household issue.

Household income is a measure of the combined incomes of all people sharing a place of residence or a particular household. Many scholars have examined the relationship between conflicts and household income. Topher et al, (2015) estimates the relationship between violent conflict and household income in four states of Nigeria's Middle Belt region (Benue, Kaduna, Nasarawa, and Plateau) where farmers and herders routinely clash over access to farmland, grazing areas, stock routes, and water points for animals and households, the results revealed that farmers/herders conflict has an inverse relationship with household income of the affected communities. Similarly, Sadiq et al, (2021), examined the impact of farmers-herders conflict on the livelihoods of farming households in Nigeria's middle belt region the finding revealed that farmers' herders' conflict has affected the livelihoods of highly conflict-prone households both in the short and long runs, thus hampering the rural economy and the national economy in general.

This study is anchored on Realistic Conflict Theory (RCT) by Muzafer Sherif. It proposes that competition for limited resources, whether real or perceived, can lead to prejudice and hostility between groups. It highlights how the struggle for resources can create negative perceptions of out-groups and foster conflict. It equally argues that when groups perceive themselves to be in competition for limited resources (like jobs, land, or even social status), it can trigger negative attitudes and behaviours towards the other group. In the context of this study, farmers and herders are into competition for land which has trigger negative attitudes and behaviours between them. This theory highlights the role of material competition in shaping intergroup dynamics which has negative effects on the parties involved

Empirical Review on effect of farmers-herders conflicts

Nnaji et al (2022) examines the differential impacts of the incidence and severity of farmer-herder resource use conflicts on food insecurity of rural households in Nigeria. Employing two-stage predictor substitution model to estimate survey data collected from 401 rural households in Nigeria. The empirical results show that both the incidence and the severity of farmer-herder conflicts positively and significantly increase food insecurity, and the severity of these conflicts has a larger effect than their incidence. Similarly, Olagbemiro et al (2022), examines the effect of resilience on arable crop productivity after farmers-herdsmen conflicts in the Ogbomoso Agricultural Zone of Oyo State. A multistage sampling technique was used to select 270 arable crop farmers, which is about 29.4% of the 919 registered arable crop farmers for the study, using a structured questionnaire to obtain primary data. The result of the OLS regression analysis model for the effect of resilience techniques on arable crop productivity indicated significant relationship. The study recommends that the flexibility strategies employed by the respondents should be investigated and adopted by appropriate authorities in order to mitigate the regular conflicts between farmers and herders in Nigeria.

In another study, Abolaji and Ahmed (2022), examines the extent to which farmer's-herdsmen's clashes affect sustainable development in Nigeria. The sample size for the interview was 20 where the interviewees were purposely selected based on their experience in the subject matter and questions were asked through focus group discussion. The study found that government insensitivity to the plight of both farmers and herders is responsible for the crises which have negative impact on sustainable development. The study therefore recommends that conflict management mechanisms should be instituted, and also sanctions should be imposed to forestall future conflicts. Furthermore, Sadiq et al, (2021), examined the impact of farmers-herders conflict on the livelihoods

of farming households in Nigeria using field survey. Data elicited from 290 respondents chosen through a multi-stage sampling technique was analysed using inferential statistics. The empirical evidences showed that conflict has affected the livelihoods of highly conflict-prone households both in the short and long runs, thus hampering the rural economy and the national economy in general with the impact more on farmers' income. The study recommends initiation of peace process to find lasting solutions to farmers-herders conflict in the studied area.

Solomon (2021), examines the extent to which conflicts between farmers and herders affect food production, food availability, food stability, and food utilization in Taraba state. The study adopted survey research method and sampled 285 respondents using multi stage sampling technique. The data collected were analyzed using p-table and percentage, and Pearson Correlation used to test the hypotheses. The results revealed that the increasing incidence of the farmers' herders' conflicts has greatly affected crop farming and grazing activities, resulting in low productivity, food instability, low food utilization, food inaccessibility and inadequate availability of food in Taraba state. Based on the findings, the study recommended among others the need to assist farmers with zero interest credit facilities to boost production and strengthen ties between herders and farming communities to improve security in rural farming areas. Similarly, Bulus et al, (2020), examined spatial analysis of the impacts of crop farmers and cattle herders' conflicts on Community Development. A purposive sampling technique was used to select three local governments, one each from each senatorial district of the state. The sample size of the study is 126 respondents comprising of 63 crops farmers and 63 cattle herders. Data were gathered with the aid of structured questionnaires and structured interview schedules. Focus Group Discussion (FGD) was also conducted with separate groups of cattle herders and crop farmers. The finding revealed the effects of these conflicts to include loss of lives and properties, reduction of household income, and reduced access to agricultural land. The study recommended formal education for both farmers and herders, sensitization of the crop farmers and cattle herders by the government and community leaders on the need for both groups to coexist and implementation of the existing laws on grazing reserves and land use policies by the government.

Okoro (2020), examined the implication of herdsman-farmers' conflict on the national development. The study is anchored on conflict theory, frustration aggression theory, and failed state theory. The work adopts qualitative approach to data analysis relying on secondary sources like journals, textbooks, newspapers and online organizational publications. Evidences show that attacks and counter-attacks from Fulani herdsman and farmers respectively resulted to loss of human and animal lives, displacement of persons, destruction of houses, farmlands and crops, and distrust between herdsman and farmers. The study concluded that the Herdsman-farmers' conflict created casualties, displacement, food insecurity, distrust and unemployment capable of inhibiting national development in Nigeria. The study therefore recommended that government at all levels should promulgate legislations outlawing open grazing of cattle while encouraging herders to establish ranches for their cattle. All Fulani herdsman operating in any local government should be registered to enable monitoring of their activities and co-existence. In another study, Rukwe et al, (2019), evaluated the effects of Farmers-herders conflict on the farming households in southern Taraba State, Nigeria. Using multi stage sampling techniques, 102 farming households were selected. Descriptive statistics was used to analyze the data and the results revealed that the causes of conflicts in the study area were uncontrolled grazing and damage to crops by cattle. The most severe consequences of conflicts were decrease in output and income of farmers and Loss of lives and injuries sustained. It was concluded that Farmers-herders conflicts are destructive and have far reaching consequences on livelihoods, farming household as well as rural development in Taraba State and Nigeria at large if left unchecked. It was recommended that intensive system of grazing,

through ranching should be introduced so that cattle are restricted to a particular place and chances of future clashes foreclosed.

In a related study, Onah et al, (2019), explored the socio-economic implication of the crop growing farmers-herdsmen conflicts on national development with a view to suggesting some practical solutions. The data were generated from documentary and interviews granted to key stakeholders. The findings of the study revealed that the conflicts have gravely imparted negatively on social and economic lives in the affected areas and consequently have hindered national development. The roots of the intensifying conflict, among other things are attributed to struggle for resource (land) control by crop farmers and herdsmen; proliferation of arms and mismanagement of conflicts by key stakeholders. The study suggested that government should enact and enforce laws that regulate activities of herdsmen particularly as regards to open grazing and community leaders and other community-based organizations should endeavour to enhance peaceful co-existence among different inhabitants in their areas via alternative dispute resolution mechanism. Similarly, Emmanuel et al, (2019) investigated the impact of Farmers and Fulani Herdsmen conflict on Socio-economic activities in Agatu LGA of Benue State, Nigeria. Purposive sampling technique was used to select 101 respondents. Mean and standard deviation were used to analyze the data while T-Test was used to test the hypotheses. the results revealed that the destruction of crops was one of the causes of Farmers and Fulani herdsmen conflict while the socio-economic impacts of the conflict was the destruction of lives/properties, reduction of outputs/income and the reduction of quality in social relationship between the Nomads and farmers. The study concluded that socio-economic activities would continue to be affected unless the root causes of the conflict is addressed. The study recommended that stakeholder should exercise good leadership and political will by bringing the feuding parties on a dialogue table while meting punishment and rewards where necessarily so as to restore peace, order and trust on the populace and community at large.

In Barkin Ladi Local Government Area of Plateau State, Cinjel and Ugwoke (2019), examined herders-farmers conflicts and its effect on societal progression. The main instrument used to generate data was interview. It was also found that the conflicts have negative impact on lives and properties, farm products, livestock, food production, business and a lot of others. Conclusion was drawn that the herders and farmers confrontation in Barkin Ladi is a migraine to socio-economic development. Recommendations such as control of borders, good governance, improve policing, religious tolerance and a lot of others were proffered. In another study, Ajibefun (2018) investigated the social and economic effects of the menace of Fulani herdsmen crises in South-west Nigeria. A sample size of 250 farmers and 150 herders were selected from affected Local Government areas in Southwest, Nigeria via purposive sampling technique. Descriptive statistics and inferential statistics were used to analyze the data. The findings revealed that the menace of Fulani herdsmen are reduction in output and income of farmers/nomads, loss of produce in storage, displacement of farmers, scarcity of agricultural products, loss of properties and infrastructural damages. Based on the findings, it was recommended among others that community leaders from the two groups should be involved in the process of restoring peace to the affected communities.

Adebo and Olotu (2018) assess the consequence of pastoralist and crop farmers conflicts on rural livelihood in Oyo State Nigeria. Three stages random sampling technique was used to sample 90 farmers from 6 communities contiguous with pastoralist settlement. Data was collected with structured questionnaire and analysed using descriptive statistics. The results revealed reduction in crops yield, farmers' income, food quality and quantity. It was concluded that the conflict has negative consequence in every facet of rural livelihoods in Oyo state. It was recommended that government and non - governmental organization should come to the aid to cushion the effect of damage and put machineries in place to resolve the issue. In a related study, Okoro (2018) examined the prevalence of herdsmen-farmers conflict and its effects on socioeconomic

development in Nigeria. The study is anchored on frustration aggression theory, and the theory dialectical-materialism. The research adopts qualitative approach to data analysis which relies on secondary sources like journals, textbooks, newspapers and online publications. Results show that the conflicts have resulted to loss of lives, displacement, distrust, destruction of properties etc. The study concluded that the Herdsmen-farmers conflict created food insecurity, distrust and unemployment. The study recommended that State governments should designate grazing fields for the nomadic herdsmen and make them pay tax to the state.

In Ebonyi state, Umeh and Chukwu (2016), examined Socio-economic Perspectives to Arable Crop Farmer-herder conflicts. A combination of purposive, systematic and simple random sampling techniques was employed in the selection of 172 respondents (160 farmers and 12 herdsmen). Primary data were sourced through field survey, with the aid of a well-structured questionnaire and interview schedule. Both descriptive and inferential statistics were employed in data analysis. The results revealed that economic loss was huge on both parties. Social cost of the conflict among the farmers and the herdsmen include loss of peace and co-existence among the groups, breakdown of established friendship between the groups, perpetual fear of attack and loss of family means of livelihood. It was recommended that peace and conflict resolution committee that include representatives of farmer and herder communities be instituted by the state government. Ijirshar et al, (2015), analysed the conflict between Benue farmers and Fulani Herdsmen in Benue state with particular emphasis on the socio-economic effects of the conflict on Benue farmers output in the study area. The study adopted a survey design technique via a cross-sectional approach that involves field and sample surveys. The sample size of 340 Benue farmers who were affected by Fulani herdsmen attack was used for the study. The study revealed that, the number of Fulani Herdsmen attack and deaths recorded have negative effect on Benue farmers output in the study area and the socioeconomic effects of the conflict resulting to reduction in crop yield and income of the Benue farmers; displacement of farmers, loss of lives and properties, loss of products in storage and destruction of public and private facilities. The study therefore recommended that, elements of compromise and arbitration should be devised to resolve conflicts.

From the literatures reviewed, there is gap in terms of methodology because this study used SEM which is robust as compared to the descriptive statistics, content analysis, inferential statistics, table and simple percentage used by other researchers. In addition, there is also gap in terms of sampled size as this study used 400 respondents which is higher as compared to other studies reviewed.

3.0 Methodology

The study employed a purposive sampling technique and used structured questionnaires to elicit information from 400 respondents comprising of 300 farmers and 100 herders in Adamawa State. Multiple Regression Technique using Ordinary Least Square (OLS) was used for data analysis.

3.1 Model specification

Multiple Regressions model that was employed to achieve the objectives of this study is specified as follows:

$$HHI = \alpha_0 + \alpha_1 FHC + \alpha_2 SOF + \alpha_3 ENF + \alpha_4 PIF + \alpha_5 ECF + \alpha_6 ERF + \varepsilon \quad \text{---(3.1) where:}$$

HHI = Household income, FHC = Farmer-Herder Conflicts, SOF = Social factor, ENF = Environmental factor, PIF= Politico-institutional factor, ECF = Economic factor, ERF= Ethno-religious factor, α = level of significant and ε = error term.

4.0 Results and Discussion

Table 1: Descriptive Statistic for FHC, SOF, ENF, PIF, ECF and ERF

Descriptive Statistics												
	N	Range	Min.	Max.	Mean	Std. Dev.	Variance	Skewness	Kurtosis			
	Statistics				Std. Error	Statistic			Std. Error	Statistic	Std. Error	
FHC	400	4.000	1.000	5.000	3.50	.062	1.238	1.536	-.537	.122	-.823	.243
SOF	400	4.000	1.000	5.000	3.60	.06	1.203	1.460	-.696	.122	-0.593	.243
ENF	400	4.000	1.000	5.000	3.20	.068	1.287	1.672	-.415	.122	-0.976	.243
PIF	400	4.000	1.000	5.000	3.46	.055	1.107	1.237	-.9	.122	-.568	.243
ECF	400	4.000	1.000	5.000	3.72	.075	1.137	1.298	-.835	.122	-.751	.243
ERF	400	4.000	1.000	5.000	3.65	.061	1.224	1.507	-.746	.122	-.268	.243
Valid N (listwise)	400											

Source: Author's computation using SPSS Version 21

Table 1 is the descriptive statistic for the factors of farmers-herders' conflict on household income in Adamawa State of Nigeria. The mean and standard deviation value of FHC, SOF, ENF, PIF, ECF, ERF are 3.50 (1.24), 3.60 (1.20), 3.20 (1.29), 3.46 (1.11), 3.72 (1.14), 3.65 (1.22). While the minimum and the maximum values are 1.000 and 5.000 respectively. The skewness value of the entire factor ranges from -.268 to -0.976 while the kurtosis value ranges from -.415 to -.90, this shows negative and normal distribution and no outlier in the data sets.

Table 2: OLS Results on Effect of Farmers-Herders' conflicts on rural household income in Adamawa state

Variable	Coefficient	Std. Error	t-Statistic	Prob.
SOF	0.151062	0.142124	1.062887	0.2885
ENF	-0.244423	0.105229	-2.322766	0.0207
PIF	-0.352229	0.144377	-2.439656	0.0151
ECF	-0.250466	0.139968	-1.789453	0.0743
ERF	-0.032607	0.109973	-0.296500	0.7670
C	12.12889	0.386372	31.39170	0.0000
R-squared	0.029217	Durbin-Watson stat		1.890209
Adjusted R-squared	0.016897			
F-statistic	2.371559			
Prob(F-statistic)	0.038724			

Author's computation using E-view version 11

Table 2 shows OLS results on effects of factors of farmers' herders' conflicts on rural household income in Adamawa State. The coefficient of social factor (0.1511), indicates that one unit rise in social factor will increase rural household income by 0.15% though not statistically significant. The coefficient of environmental factor of -0.2444 shows an inverse relationship between environmental factors and rural household income. It suggest that one unit increase in environmental factors will leads to 0.2444% reduction in rural household income and it is statistically significant at 5%. On the other hand, one unit decrease in environmental factors will leads to 0.2444% increase in rural household income. Politico-institutional factors have a negative relationship with rural household

income with coefficient of -0.3522. The results revealed that one unit increase in Politico-institutional factors will leads to 0.1% decrease in rural household income and it is statistically significant at 5%. The coefficient of economic factors of -0.2505 suggest that one unit increase in economic factors will leads to 0.25% decrease in rural household income in Adamawa state and it is statistically significant at 10%. The coefficient of ethno-religious factors of -0.0326 suggest that one unit increase in ethno-religious factor will leads 0.03% reduction in rural household income in Adamawa state but is not statistically significant. The constant value of 12.12 implies that rural household income will remain at 12.12% even when all the factors are held constant and it is significant at 1%. The F-statistics of 2.3715 and its corresponding probability of 0.0387 indicate that all the variables are jointly significant influencing household income in Adamawa State.

After the Multiple regression on effect of farmers-herders' conflicts on household income, post-test such as Serial Correlation, Heteroskedasticity and Variance Inflation Factor test (VIF) were carried out to ascertain the existence or otherwise of those problems associated with them.

Table 3: Breusch-Godfrey Serial Correlation LM Test

F-statistic	1.517262	Prob. F(2,392)	0.2206
Obs*R-squared	3.072667	Prob. Chi-Square(2)	0.2152

Author's computation using E-view version 11

The Breusch-Godfrey Serial Correlation LM Test result in table 3 shows the coefficient and probability value (0.2206 and 0.2152) which are greater than 0.05 levels of significance; this implies that the null hypothesis of no serial correlation cannot be rejected. Thus this necessitates the acceptance of null hypothesis and therefore concludes that the model has no serial correlation.

Table 4: Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.917855	Prob. F(5,394)	0.4692
Obs*R-squared	4.605517	Prob. Chi-Square(5)	0.4659
Scaled explained SS	4.007959	Prob. Chi-Square(5)	0.5483

Author's computation using E-view version 11

Breusch-Pagan-Godfrey Heteroskedasticity Test results in table 4, revealed that there is no Heteroskedasticity in the data set as indicated by the probability of 0.4692, 0.4659 and 0.5483) which are greater than 0.05 level of significance and this implies that the null hypothesis of homoscedasticity cannot be rejected. Thus, this necessitates the acceptance of null hypothesis and therefore concludes that the model has equal variance (homoscedastic).

Table 5: Variance Inflation Factor

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
SOF	0.020199	69.99261	2.406927
ENF	0.011073	34.25288	2.081419
PIF	0.020845	72.72695	2.661958
ECF	0.019591	66.32836	2.475358

ERF	0.012094	38.26846	1.928416
C	0.149284	35.75939	NA

Author's computation using E-view 11

Table 5 shows the results of Variance inflation factors of farmers-herders' conflicts on rural household income in Adamawa state. With the centred VIF OF (2.4069, 2.0814, 2.6620, 2.4753 and 1.9284), the results revealed that there is no multicollinearity in the data set. This is indicated by the centred VIF of less than 3 for the all variables.

Table 6: T-statistics of farmers'-herders' conflict on rural household income in Adamawa State

Variable	Coefficient	Std. Error	t-Statistic	Prob.
SOF	0.151062	0.142124	1.062887	0.2885
ENF	-0.244423	0.105229	-2.322766	0.0207
PIF	-0.352229	0.144377	-2.439656	0.0151
ECF	-0.250466	0.139968	-1.789453	0.0743
ERF	-0.032607	0.109973	-0.296500	0.7670
C	12.12889	0.386372	31.39170	0.0000

Author's computation using e-view 11

Hypothesis testing

Ho: social factors; environmental factors; politico-institutional factors, economic factors and ethno-religious factors have no significant effect on on household income in Adamawa state. The result of the hypothesiseis in table 6 revealed that, environmental factors, politico-institutional factor, and economic factors have significant effect on rural household income in Adamawa State while social and ethno-religious factors do not have significant effect on rural household income in Adamawa state as indicated by their respective probability values of 0.0207, 0.0105, 0.0743, 0.2885, and 0.7670.

Environmental factor of farmers'-herders' conflicts has inverse and significant effect on household income in Adamawa state as an increase in environmental factor will reduce household income while decrease in environmental factor will lead to increase in household income in Adamawa State. This finding corroborated with the finding of Sadiq et al (2021) and Mc Dougal (2015), which on their separate studies revealed that Environmental factors of farmers herders conflicts has negative and significant effect on household income.

Politico-institutional factors have a negative and significant effect on household income in Adamawa state. This shows that any Politico-institutional factors that cause farmers conflict will reduce the household income of the affected community. The finding of this study is in line with that of Vanger and Nwosu (2020) who opined that tensions and conflicts between Tiv-farmers and the Fulani-herdsmen is occasioned largely by the disarticulation of the traditional institutional norms/rules of interaction by formal political institutions expressed in land use laws, West African sub-regional protocol, human rights provision of the Nigerian constitution and the Benue State law on anti-grazing which cause conflicts between the two parties and resulted into decrease in rural household income of the people.

Economic factor of farmers'-herders' conflicts has inverse and significant effect on rural household income in Adamawa state as an increase in economic factor will reduce household income while decrease in economic factor will lead to increase in household income in Adamawa State. The results of this study is in line with the study of Abolaji and Ahmed (2022), Emmanuel et al (2019), Ajibefun (2018), which in their separate study opined that economic factors of foarmers herders conflicts has negative effect on rural household income.

The study further revealed that social, environmental and economic factor have significant effect on household income in Adamawa State as indicated by their probability values of 0.000, 0.001, and 0.000 respectively while politico-institutional and ethno-religious factor was found statistically insignificant effect on rural household income in Adamawa State. With the F-statistics of 2.3756 and its probability value of 0.03, it shows that all the factors of farmers-herders conflicts (SOF, ENF, PIF, ECF, ERF), have significant effect on rural house hold income in Adamawa state. The constant value of 12.12 implies that rural household income of the farmers and herders remains constant at 12.12 even when all the factors are held constant and it is significant at 1%

5.0 Conclusion and recommendations

This study was conducted to examine the effect of farmer-herders' conflict on household income in Adamawa state. The study found that Environmental factors, politico-institutional factors and economic factors has significant effect on household income in Adamawa state, while social and ethno-religious factors do not have significant effect on household income in Adamawa state. The study recommends pro-active response by improving security intelligence techniques, protection of the environment, political and religious tolerance among the people and above all policy intervention such as promoting ranching and modernizing livestock management through the National Livestock Transformation Plan (NLTP), establishing Rural Grazing Area (RUGA) settlements and enacting legislation prohibiting open grazing in some states to tackles the primary factors of conflicts and encourages peaceful coexistence between farmers and herders are essential to alleviate the negative effect farmers-herders conflicts on the people of Adamawa State and Nigeria at large.

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