Bima Journal of Science and Technology, Vol. 7 (1) Mar, 2023 ISSN: 2536-6041

DOI: 10.56892/bima.v7i01.399

ANALYSIS OF THE SOCIOECONOMIC BENEFITS OF LIVESTOCK REARING AMONG WOMEN IN GOMBE METROPOLIS, GOMBE STATE, NIGERIA

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ABSTRACT

The study analyzed the socio-economic benefits of livestock rearing among women in Gombe Metropolis, Nigeria. The objectives identified the types of livestock kept by women farmers in the metropolis, it also analyzed the uses of income generated from livestock rearing by women as well as challenges women faced in livestock rearing in the study area. The study focused on primary data collected from women engaged in rearing livestock in 22 selected settlements. Descriptive and inferential statistics were employed in analyzing the data. The results of this study revealed that 78% of the women farmers were young and active, have large household sizes and were literate to varying degrees. The predominant animals raised were poultry ($\bar{\chi} = 3.25$), goats ($\bar{\chi} = 2.74$) and Sheep ($\bar{\chi} = 2.33$). Replenishment of stock ($\bar{\chi} = 3.35$), educational needs of the farmers ($\bar{\chi} = 2.96$), health of animals ($\bar{\chi} = 2.87$) and health of family members ($\bar{\chi} = 2.84$) accounted for the main areas' income derived from livestock farming were expended. According to the Problem Confrontation Index (PCI) calculated, the main challenge facing women livestock farmers in the study area were health of animals and family members (PCI, 252). The results of the chi-square analysis indicated that gender, marital status, education, income, household size and occupation were significantly associated with women's involvement in livestock activities. The study concluded that low-income level of the greater proportion of respondents could be a threat to the sustainability of livestock farming in the study area. Hence, Government and Non- Governmental Organisations (NGOs) should link women with micro finance banks in other to have access to capital which can be used to improve their participation and expand enterprises for greater income and sustainability.

Keywords: Analysis, Benefits, Gombe, Livestock Rearing, Women

INTRODUCTION

Women play a prime role in the agricultural and rural economies in developing countries all over the world (Dawit, Tadesse, Ahmed, & Minilek, 2012). The roles that rural women play and their position in meeting the challenges of agricultural production and development are quite dominant and prominent (ES, 2019). However, their roles vary considerably between and within regions and are changing rapidly in many parts of the world, where economic and social forces are transforming the agricultural sector. However, little research has been conducted on women's roles in livestock keeping and the opportunities livestock-related interventions could offer them.

In the livestock sub- sector in particular, men have always been the target of the extension agents despite the indispensable labour provided by the womenfolk. There is no gainsaying the fact that the role of women in livestock production has either been ignored or underestimated (ES, 2019). Even though there is no consensus on quantifying the role of women in livestock production, there is clear indication that their contribution is quite significant (Okoruwa, Ahmad, & Sanusi,

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2010). Women are major contributors in the agricultural economy but face various constraints that limit them from achieving optimal livestock production and agricultural development. These constraints include limited access to productive resources, including land, water and credit; limited access to market information and market prices and limited decision-making powers because of unequal power relations within the household and the community. (Njuki & Pascal, 2019).

A report by Food and Agricultural Organization (FAO) argues that if women were to have access to the same level of resources as men, agricultural productivity would increase by up to 30%, agricultural output by up to 4%, and the number of poor people would reduce by up to 17% (Njuki & Pascal, 2019). Evidence from different developing countries and covering many small-scale livestock and agricultural production systems and livestock species reveals that poor women can and do own livestock. A common perception is that women are more likely to own small stock, such as chickens, sheep and goats, than larger animals, such as cattle, water buffaloes and camels. (Grandin, 2022). While often the case, studies revealed hat the type of species owned by women varies by region and culture and can be dynamic (Kristjanson *et al*., 2010). It is important to note that livestock are an asset that women can more easily own. It is generally easier for women in developing countries to acquire livestock assets, whether through inheritance, markets or collective action processes, than it is for them to purchase land or other physical or financial assets. In Nigeria, specifically the Northern states, women play significant roles in crop farming, livestock production and household management. (Abdulhameed & Onuk, 2016). Existing studies (Vijayalakshmy, Chakraborty, Biswal, & Rahman, 2023; Usman, Saboor, Mohsin, & Afzal, 2022; Grandin, 2022; Okoruwa, Ahmad, & Sanusi, 2010) have shown that women played dominant role in livestock production in Africa and beyond. Inaccurate and misleading statistics on female labor participation in agriculture has led to gross underestimations of the importance of women's work in this sector. In addition, constraints faced by women who tend animals have inhibited optimal livestock production and agricultural development. These have greatly limited their ability to gain access to government and other development actors for necessary support.

Numerous studies have examined women's role in livestock and household management in Africa and beyond. For instance, Raju, (2021), Sahito, Abro, & Khatwani (2021), Bhanotra, Wankhade, Khandey, & Kumar (2015), Mulugeta and Amsalu (2014), Jadhav & Deshmukh, (2014), Amin, et al., (2010), surveyed women's role and their decision making in livestock and household management across the globe. These studies showed that majority (98%) of the women participated regularly in livestock activities and household management but had less involvement in decision-making. It is important to note that the economic contribution by women have not only been underestimated and unrecognized but very little has actually been written and known about what women do in different sectors of the economy and particularly in agricultural sector (World Bank 2003).Consequently, there is paucity of research on women's roles in livestock keeping and the opportunities livestock-related interventions could offer them (IFAD, 2007).

In view of the above, the need to analyze the socio-economic benefits women derive from livestock rearing Gombe metropolis, Gombe State, where significant involvement of women in livestock production becomes

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imperative. The aim of this study is to analyze the socio-economic benefits of livestock rearing women in Gombe metropolis, Nigeria. The objectives of this study are to identify the types of livestock kept by women farmers in Gombe metropolis, analyze the uses of income generated from livestock raired by women and identify challenges women faced in livestock raised in the study area. The hypothesis formulated to guide the phenomenon of the study were: Ho: the socio-economic characteristics of livestock women producers do not influence their involvement in livestock activities

H_1: the socio-economic characteristics of livestock women producers do influence their involvement in livestock activities.

The findings of the study would be helpful to government and other development organizations in formulating policy that would empower and recognize the role of women in agriculture. The outcome of the study will be used as reference materials to other researchers. The study covered elected communities from the eleven wards in Gombe metropolis. It focused on small ruminants such as goats, sheep, and domestic fowl such as chickens, turkeys, ducks, or geese. The targeted class of women are the low- and medium-income group.

Socio-Economic Benefits of Livestock Rearing Among Women

Women play an important role in livestock management, processing, and marketing, acting as care providers, feed gatherers, and birth attendants. They are also involved in milk production, although not all women control the sale of milk and its products. Livestock strengthens their decision – making power and capabilities, thus promoting women's economic and social empowerment and consequently provides a way to enable rural women to break the cycle of poverty (Patel et al,2016). Livestock ownership is increasing women's decision-making and economic power within both the household and the community. It is also a source of cash and/or can open up access to credit (the sale of small ruminants can provide an emergency source of cash for medical treartment or school fees, while daily milk provides a regular flow of cash income often used to purchase food and household items).

According to Galie et al (2018), the management, processing and marketing of livestock products generate more income than most of the activities women tend to be involved in, and bring benefits for the whole family (for instance by increasing food security at the household level, small ruminants provide food products such as milk, butter, cheese and meat, all of which are a source of protein, minerals and vitamins)

Animals provide raw materials such as wool, skins, and bones use for clothes, or as fuel for home consumption and for sale. Processing of these materials can be an important source of additional employment and income for poor rural women (Covarrubias, Nsiima & Zezza, 2012). It is important to note that owning, controlling and benefiting from livestock production increases women's self-esteem and strengthens their role as producers and income generators within the household and in the community. Livestock ownership increases women's likelihood of gaining access to credit.

MATERIALS AND METHODS

Study Area

The study area, Gombe metropolis is situated between Latitudes 10^0 15' 00" N, 10^0 19' 30" N and Longitude 11^0 07' 15" E, 1^0 13' 30"E (Fig 1). It is in the center of the state and shares boundaries with Kwami LGA to the North and almost surrounded by Akko Local Government Area to the East, South and West.

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It has a land area of 52km^2 (Ministry of Lands and Survey, 2003).

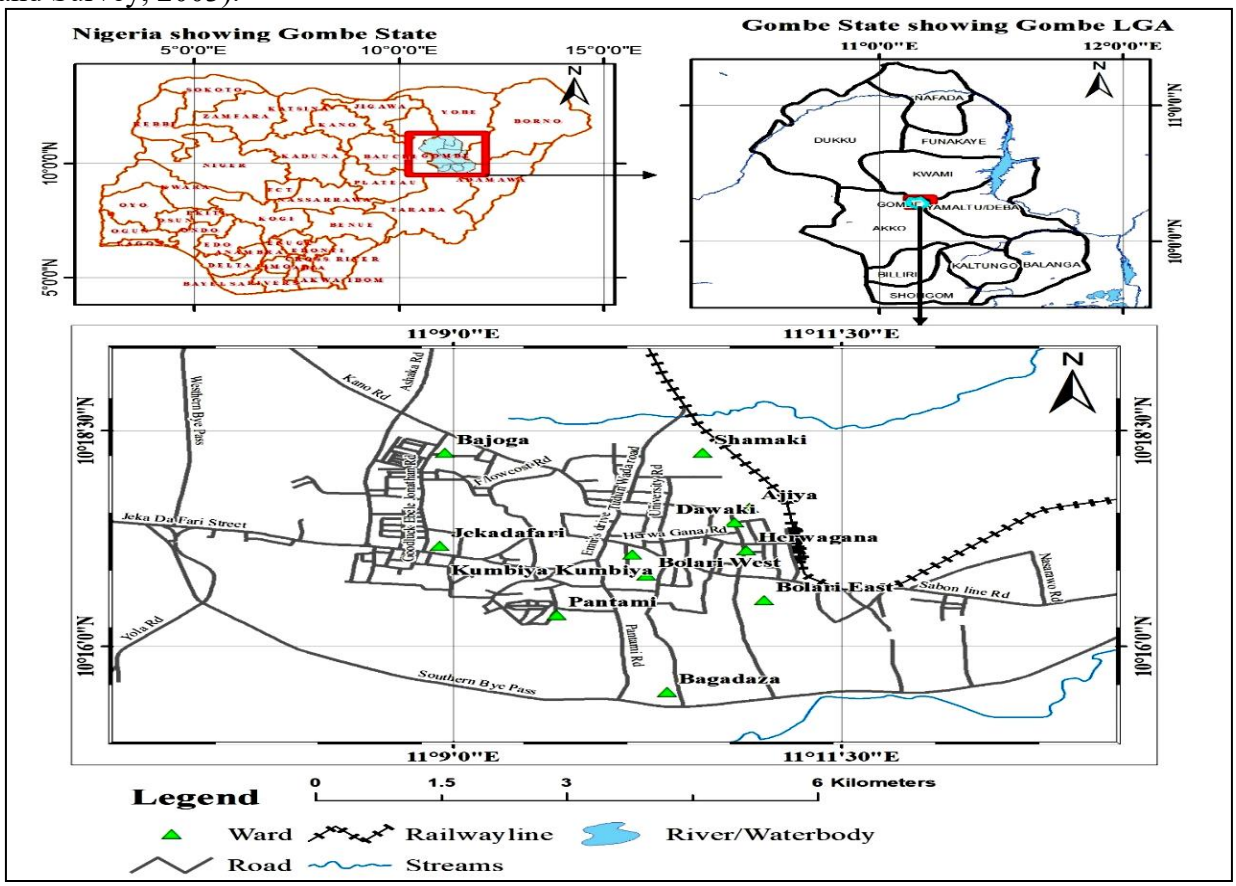

Figure 1: Map of Gombe State showing study area

Source: Remote sensing and GIS unit, Department of Geography, Gombe State University (2021)

The people of Gombe State are mainly farmers; they produce both food and cash crops. Food crops include cassava, maize, tomato, groundnut, etc. These commodities provide raw materials for agro-based industries like the Tomato Companies and groundnut oil mills in the state and other parts of the country. Other industries are cement industry, furniture and block making industries and other small-scale industries. Gombe State is blessed with natural resources like uranium, gypsum, and limestone, and recently petroleum deposits exploration is conducted with the hope of finding oil in commercial quantity. (OS, 2019)

Methodology

Purposive sampling technique was adopted in the selection of two communities from each Simple Descriptive Statistics such as frequency counts and percentages were used. Chi-square was used in analyzing the stated hypothesis to test the relationship between socio-economic characteristics of respondents and their involvement in livestock activitiesward in Gombe metropolis with women engaged in rearing mall ruminants like goats, sheep, geese, turkey, chicken etc. The total population of selected community in Gombe metropolis based on 1991 population census was 10532

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persons. Using exponential formula: $P_{t+n}= P_t^{er*n}$ with 3.2% inter-census growth rates for Gombe state, the 2020 projected population is 26052 persons. Hence, using Taro Yamane (1967) method of sample size determination ($\frac{N}{1+N(e2)}$) where N=population size and e = sampling error of 0.01 significant level, 100 was obtained as sample size for the study (Table 1)

The respondents were chosen using systematic random sampling, with a random start of every second house (i.e., 2, 4, 6, 8, etc.) until the selected sample was exhausted.

Table 1: Selected Communities and Determination of Sample size

S/No.	Wards	Selected community	1991 Population	2020 Projected Population	Sample Size
1	Ajiya	Darango	672	1662	6
		Girgam	938	2320	9
2	Bajoga	JauroBosse	774	1915	7
		DokariKarama	586	1450	6
3	Bolari East	Bolari	396	980	4
		GarinJalo	274	678	3
4	Bolari West	GarinWakili	911	2253	9
		Garin Abbas	386	955	4
5	Dawaki	Dawakeri	358	886	3
		SabonGari	285	705	3
6	Herwagana	GarinWaziri	311	769	3
		GarinMagaji	270	668	3
7	Kumbiya-Kumbiya	Malam Isa	294	727	2
		Laro	430	1063	4
8	Pantami	Nahuta	757	1872	7
		Tumo	448	1108	4
9	Jekadafari	Jekadafari	384	950	4
		SabonGarinKwami	499	1234	5
10	Nasarawo	WuroBundu	550	1361	5
		Ganjuwa	419	1036	4
11	Shamaki	Jauro Bello	434	1074	4
		Jauro Sabo	156	386	1
Total	**11**	**22**	**10532**	**26052**	**100**

Source: Author's compilation, 2021

RESULTS AND DISCUSSION

Information on socio-economic characteristics of respondents is presented on Table 2. Regarding age of respondents, results show that a larger percentage (28%) fell within the age bracket of 31 to 40 years. This is followed by 21 to 30 years and 41 to 50 years representing 25% each. The data presented in the table indicates that above three-fourth of the women farmers were young to middle aged who could actively and productively participate in economic activities.Information on the religion of respondents indicates that

Socio – Economic Characteristics of Respondents

87% of the respondents are Muslims, while the remaining 13% are Christians. This implies that above three-quarter of women livestock farmers in the study area are Muslims.

It is obvious from the data in Table 2 that a greater proportion (47%) have less than 6 members. This is followed by 42% (6-10 members), 8% (11-15members) and the least is 1% (16 to above 26). By implication, the above analysis shows that the study area has

DOI: 10.56892/bima.v7i01.399

large household size implying availability of family labour for livestock management activities. However, housewives and mothers are so affected and limit their number of hours' allocation to economic activities.

Table 2: Socio-economic characteristics of Respondents

S/N	Characteristics	Number	Percentage
1	**Age**		
	Less than 20years	4	4.0
	21-30years	25	25.0
	31-40years	28	28.0
	41-50years	25	25.0
	51-60years	11	11.0
	Above 60years	7	7.0
2	**Religion:**		
	Islam	87	87.0
	Christainity	13	13.0
3	**Household size**		
	Less than 6	47	47.0
	6-10	42	42.0
	11-15	8	8.0
	16-20	1	1.0
	21-25	1	1.0
	Above 26	1	1.0
4	**Education**		
	Quaran	36	36.0
	Primary	14	14.0
	Secondary	36	36.0
	Tertiary	17	17.0
5	**Occupation**		
	Crop farming	16	16.0
	Trading	41	41.0
	Civil servant	15	15.0
	Animal rearing	28	28.0
6	**Marital Status**		
	Married	84	84.0
	Single	8	8.0
	Widow	8	8.0
7	**Income Level**		
	Less than N5,000	40	40.0
	N5,000-N20,000	36	36.0
	N21,000-N35,000	10	10.0
	N36,000-N40,000	3	3.0
	N41,000-N65000	6	6.0
	Above N65,000	5	5.0

Source: Fieldwork, 2022

Educational levels of respondents illustrate that out of the 100 female respondents sampled, 37 % had no formal education, 34 % had secondary education, 16% obtained tertiary education and 13% had primary education respectively. This result implies that most of the participants in this study were literate to varying degrees. With respect to secondary and tertiary education, 50% had reached those levels. It is evident that in this study half of the respondents had high levels of literacy. According to Sinyolo (2014), higher levels of education "implies more opportunities of generating income and, implies better understanding of new and improved farming technologies. However, Ahmed et al (2012) wrote that low education levels can hamper the ability to adopt better technology and technical information, which consequently affects participation in agricultural production.

In addition, information in Figure 4 depicts that a greater percentage (82%) of the respondents are married, 12% single and 6% widow. This implies that more than two-third of the respondents are married. Since married people are likely to give birth, indicating more family labour for livestock management in the study area.

Information on the income level of respondents is displayed in Table 5. Results indicate that a greater proportion (40%) of the respondents earned less than N5,000.00 annually. Next is 36% of the respondents who earned between N5,000.00 to N20,000.00, 10% (N21,000.00-N35,000.00) and the least is 3% (N36,000-N40, 000.00). By inference, nearly half of the respondents are low-income earners living below the poverty line of one dollar per day.

Bima Journal of Science and Technology, Vol. 7 (1) Mar, 2023 ISSN: 2536-6041

DOI: 10.56892/bima.v7i01.399

Types of Livestock Raised by Respondents

Data on the types of livestock raised by respondents in the study area is portrayed on Table 3. It is obvious from the Table that chicken, guinea fowl, duck, sheep, cattle, and goats are the types of livestock raised in the study area. The result further reveals that majority of the women in livestock production kept poultry ($\bar{\chi} = 3.25$) as their major livestock enterprise. This was followed by goat production ($\bar{\chi} = 2.74$) and Sheep ($\bar{\chi} = 2.33$). This finding tallies with that of Ayoade et al, (2009) and Beth (2000) who explained that women raise smaller species of animals such as poultry, sheep, goat because they are cheaper to raise and requires lesser initial cost of investment than the larger ruminants, namely, cattle, camel, or donkey.

Table 3: Types of livestock (N=100)

Livestock	SA	A	D	SD	$\bar{\chi}$	Rank
Goat	43	6	33	18	2.74	2
Sheep	30	8	27	35	2.33	3
Goats and Sheep	11	5	50	34	1.93	4
Goat and Cattle	6	3	53	38	1.77	7
Goats, Sheep and Cattle	5	3	53	39	1.74	8
Chicken	68	3	15	14	3.25	1
Duck	9	6	41	44	1.80	5
Chicken and Duck	5	5	53	37	1.78	6
Guinea fowl and Chicken	1	7	52	40	1.69	9
Guinea fowl, Chicken and Duck	1	5	50	44	1.63	10

Source: Fieldwork, 2021.

Note: SA=strongly agree; A=Agreed; D=disagree; SD=strongly disagree

$\bar{\chi}$=Mean- $[\frac{SAX4+AX3+DX2+SDX1}{100}]$

Uses of Income Derived from Livestock Farming

The various ways by which income derived from livestock farming is expended is captured on Table 4. Results shows that replenishment of stock takes the lion share ($\bar{\chi} = 3.35$). Next is educational needs ($\bar{\chi} = 2.96$), health of animals ($\bar{\chi} = 2.87$) and health of family members ($\bar{\chi} = 2.84$). Others are Ceremony ($\bar{\chi} = 2.72$) and visit to other families ($\bar{\chi} = 2.17$). This implies that a greater proportion of income derived from livestock farming is expended on stock replenishment and educational needs of the family.

Table 4: Uses of income obtained from Livestock raising.

Uses of Income	SA	A	D	SD	$\bar{\chi}$	Rank
Health of family	31	34	23	12	2.84	4
Health of Animal	26	31	30	30	2.87	3
Ceremony	28	30	28	14	2.72	5
Educational needs	39	28	23	10	2.96	2
Visit to other family	6	31	37	26	2.17	6
Replenishment of stock	62	18	13	7	3.35	1

Source: Field work, 2021.

Note: SA=strongly agree; A=Agreed; D=disagree; SD=strongly; -disagree

[Mean ($\bar{\chi}$) $=\frac{\Sigma fx}{N} = \frac{SAX4+AX3+DX2+SDX1}{100}$]

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Challenges of livestock raising

Information on challenges confronting women livestock farmers is presented in Table 5, indicating that health of animals and family members recorded the highest PCI (252) implying the greatest challenge facing women livestock farmers in the study area. This is followed by water scarcity with PCI (175), low innovation and shed improvement with PCI (171). Others are fodder collection (PCI, 170), rustling (PCI, 167) and ranching (PCI, 166).

Table 5: Challenges confronting livestock farming (N=100)

Challenges	High	Medium	Low	PCI	Rank
Health of animals and family members	69	14	17	252	1
Fodder collection	20	30	50	170	5
Water scarcity	23	29	48	175	2
Ranching	19	28	53	166	7
Rustling	19	29	52	167	6
Low innovation	19	33	48	171	3
Shed improvement	19	33	48	171	3

Source: Field work, 2021.

PCI= Problem Confrontation Index $(High\ X\ 3 + Medium\ X\ 2 + Low\ X\ 1)$

Relationship between Socio-Economic Characteristics of Respondents and their Involvement in Livestock Activities

The results of the chi-square analysis between the selected socio- economic characteristics (independent variable) of women livestock farmers and their involvement in livestock activities (dependent variable) indicate that out of seven variables, six were statistically significant. These are gender, marital status, education, income, household size and occupation in Table 6. The variables all had their computed values greater than their tabulated value, hence the null hypothesis that there is no relationship between the socio-economic characteristics of women livestock farmers and their involvement in livestock activities is rejected. Whereas the alternative hypothesis that there is relationship between the socio-economic characteristics of women livestock farmers and their involvement in livestock activities is accepted. Only one variable namely age of the farmers had no relationship with their involvement in livestock activities. The above result is in harmony with Dan and Kim (2020) that family size and education of respondents were significant factors influencing the extent of women's participation in livestock raising in the study area.

CONCLUSION

It is evident that the study area has large household size and higher proportion of the married people indicating availability of family labour for livestock management activities. However, it is important to note that families with large sizes, increase women's responsibilities as housewives and mothers thereby limiting their number of hours allocated to economic activities. Results of the study also revealed that half of the inhabitants had high levels of literacy. Higher levels of education could imply more opportunities of generating income and better understanding of new and improved farming technologies, which could go a long way in boosting livestock production. Women raise more of smaller ruminants in

DOI: 10.56892/bima.v7i01.399

the study area probably since they are cheaper to raise and require lesser initial cost of investment. High expenditure on stock replenishment, educational needs, health of family members and animals implies that livestock raising has empowered the women folk economically. However, the myriads of challenges faced by women livestock farmers in the study area could limit the extent of women economic empowerment expected.

Table 6: Chi-square analysis between independent and dependent variables (p<.005)

Dependent Variable	Independent Variable	Degree of Freedom	Computed Value	Tabulated Value	Probability	Comment
Involvement in Livestock activities	Gender	1	63.040	7.879	.000	Significant
	Marital Status	4	111.898	14.860	.000	Significant
	Age	4	7.816	14.860	0.99	Not Significant
	Education	5	61.536	16.750	.000	Significant
	Income	3	31.072	12.838	.000	Significant
	Household Size	3	58.190	12.838	.000	Significant
	Occupation	3	51.143	12.838	.000	Significant

Source: Field work, 2021.

Recommendations

Considering the findings, the following recommendations were made:

i. Government and NGOs should link Women with micro finance banks in other to have access to capital which can be used to improve their participation and expand enterprises for greater income.
ii. Strengthening Extension Services to improve women's competence in farming. Theoretical training should always be accompanied by practical training to enable farmers to grasp and apply information and new technologies better.
iii. Government and other development actors should make available improved breed of animals that are resistant to diseases at a subsidized rate for women livestock farmers. This would help to reduce expenditure on health of animals.
iv. The government should reconsider subsidizing farm inputs to enable farmers to purchase inputs at affordable prices.

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