Farmland abandonment and its drivers on the urban-rural fringes of Ghana

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Introduction

The farmlands are vital for agricultural progress, human survival and economic growth (Nnadi et al., 2021).

However, farmlands have suffered significant losses across the globe (Mao et al., 2018).

The global farmland abandonment area is 385–472 million square kilometers (8–10%) of the total world cultivated land (Chaudhary et al., 2020).

These losses are primary because of fast urbanization, industrialisation and economic expansion (Wang et al., 2021).

Increasing farmland abandonment have negative impacts on both the environment and socio-economic condition (Shackleton et al., 2019).

It is critical to lower farmlands abonnement for reducing food insecurity, poverty, and family vulnerability while also improving social, economics, and environment.

This study aims to 1) To describe the factors influencing farmland abandonment in Sub-Saharan Africa taking Ghana as a case country region.

Methodology

- The study was conducted in the Osudoku District in Ghana
- A total sample of 151 smallholder famers were selected using multi-stage sampling technique.
- Data were collected on socio-economic characteristics and off-farm activities using questionnaire survey in 2021.
- Descriptive statistics and Multiple Linear Regression (MLR) models were used for the analysis.

Descriptive analysis

- On average 39.78 percent share of the total farmland area per household is abandoned (Table 1).
- The average farm size found in the study region was 4.9 hectares (Table 1).
- The largest parcels in the sample were 20 hectares and the smallest was 0.5 hectare (Table 1).

Table 1 Descriptive statistics of farmland abandonment determinants

Farmland abandonment	0	100	39.78	26.30
Gender	0	1	0.49	0.50
Age	19	65	38.60	12.58
Education	0	15	7.75	4.49
Household size	2	10	5.97	2.61
Off-farm income	0	1	0.62	0.49
Farming income	1	5	3.19	1.24
Source of labour	0	1	0.44	0.50
Farm inheritance	0	1	0.54	0.50
Community connections	0	1	0.61	0.49
Access to labour	0	1	0.68	0.47
Number of parcels	1	6	1.92	0.95
Farmland size	0.5	20	4.89	3.10
Terrain largest farmland	0	1	0.58	0.50
Land dispute	0	1	0.48	0.50
Distance from farmhouse to the farthest parcel	3	25	9.70	3.97
Distance from farmhouse to a major road	3	25	11.86	5.66
Distance from farmhouse to nearest urban area	7	47	21.23	8.13
Access to credit	0	1	0.40	0.49
Access to subsidies	0	1	0.49	0.50
Legal land ownership	0	1	0.74	0.48

Farmer's opinion on factors influencing farmland abandonment

- Existence of better off-farm opportunity (48 percent), small farm sizes (40 percent) and low income from farm (30 percent) were ranked as very important factors that influenced their decision to abandon a portion of their farmlands (Figure 1).
- Unfavorable terrain characteristics i.e., slope/stone (25 percent), low productivity from farm (25 percent) and land fragmentations (30 percent) were ranked as important factors in farmers' decisions to abandon a portion of their farmlands (Figure 1).
- Lack of labour on farms (permanent and seasonal) 39 percent and dispute (24 percent) were ranked as less important influential factors on farmland abandonment (Figure 1).
- About 34 percent of the surveyed farmers ranked lack of financial resources to cover operational cost as the not important factor to leave a portion or all their farmlands uncultivated (Figure 1).
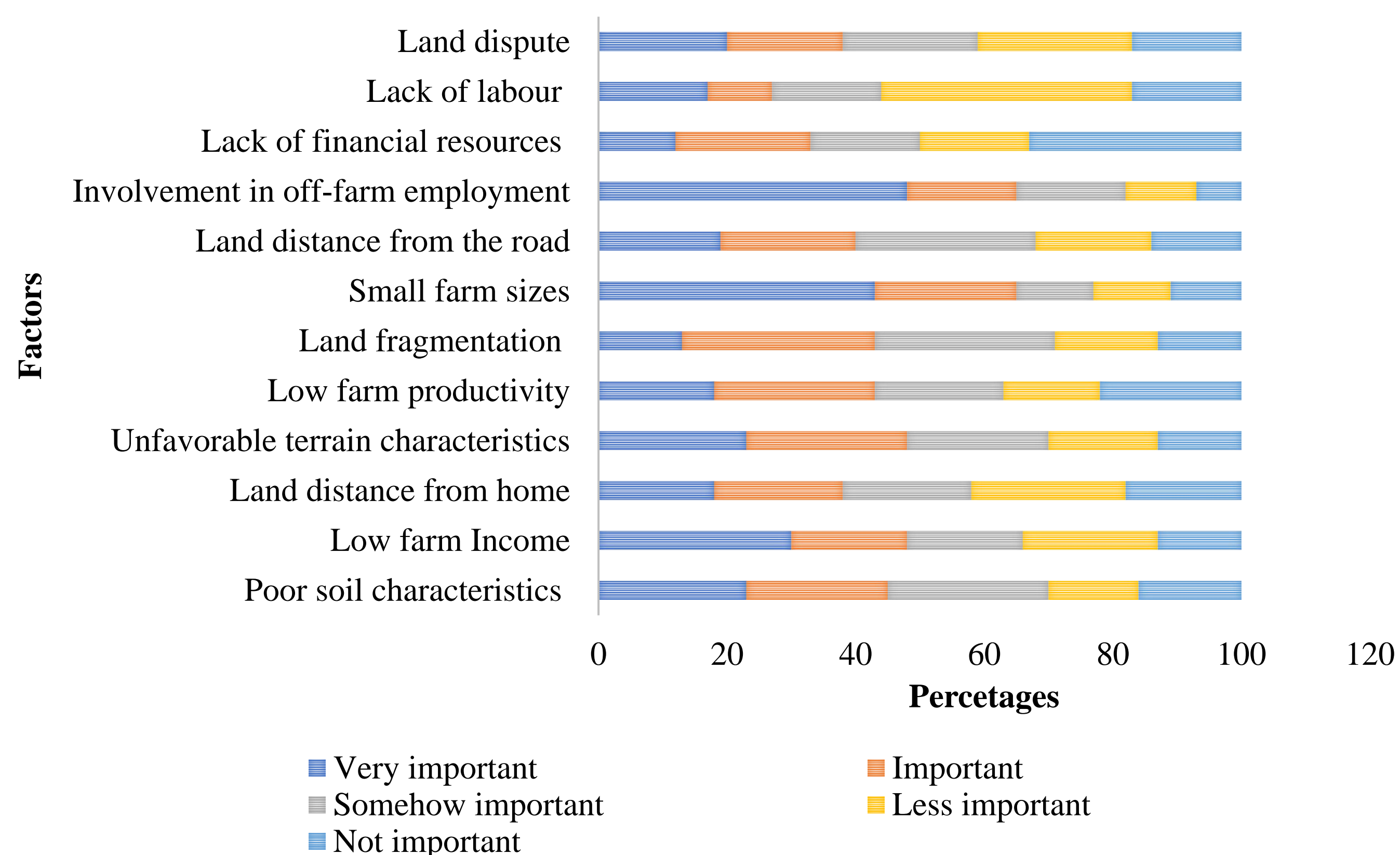

Figure 1. Farmers opinion on factors affecting farmland abandonment

Future prospect of farms in the next 5 years

- Regarding the future development of the farms, 30 percent of the households reported that they plan to sell their farmlands for non-agricultural use in the upcoming 5 years .
- Out of the sample only 18 percent of the farmers planned to continue farming in the next 5 years
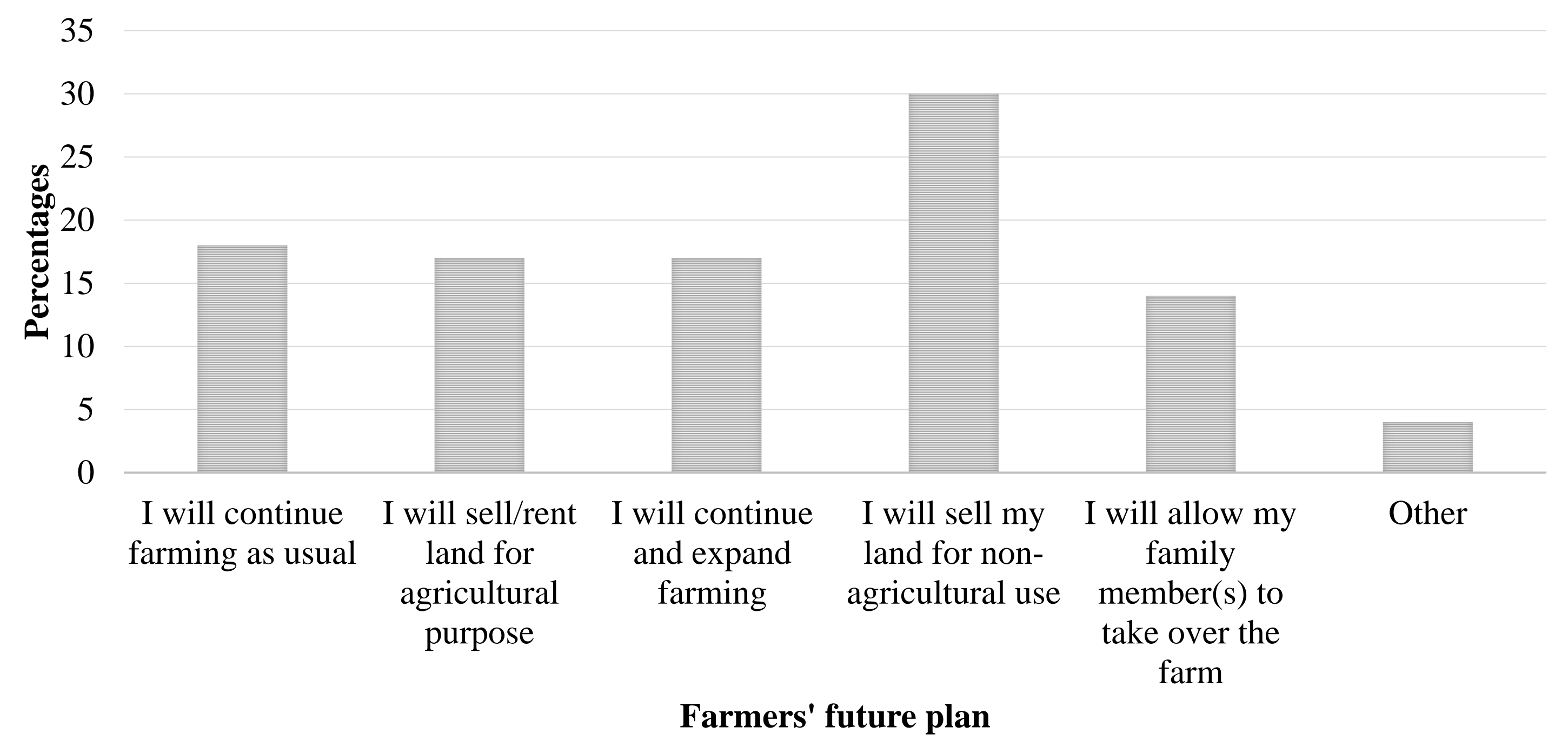

Figure 2. Future plans of farms in the next 5 years

Factors influencing farmland abandonment

- The regression model is statistically sufficient as it has F value of 3.368 with p value = 0.000 (Table 2) which means that all 20 independent variables used in the model are simultaneously significant to the dependent variable.
- The adjusted R square value shows that, the 20 factors together contributed 25% to the variation in small farmers' decision of "farmland abandonment".
- The result revealed that the off-farm income, farmland size and distance to nearest urban area (km) indicated the strong relationship with farmers' farmlands abandonment in the study region.

Table 2 Results of multiple linear regression

Determinant	VIF	Coef.	Sig.
Constant	-	-0.229	0.775
Gender	1.149	-0.006	0.976
Age	1.195	0.000	0.982
Education	1.143	0.005	0.834
Household size	1.145	0.006	0.885
Off-farm income	1.188	0.033	0.018
Farming income (cedis)	1.219	-0.002	0.985
Source of labour	1.236	-0.257	0.227
Farm inheritance	1.173	0.258	0.212
Community connections	1.186	-0.051	0.819
Access to labour	1.249	-0.181	0.405
Number of parcels	1.530	-0.103	0.403
Farmland size	1.566	0.244	0.000
Terrain largest farmland	1.18	0.297	0.157
Land dispute	1.25	-0.129	0.543
Distance to the farthest farmland (km)	1.133	0.008	0.749
Distance to a major road (km)	1.188	0.016	0.391
Distance to nearest urban area (km)	1.222	0.027	0.038
Access to credit	1.113	0.142	0.488
Access to subsidies	1.137	-0.028	0.890
Legal land ownership	1.263	0.050	0.815
R2			0.358
Adjusted R2			0.251
Durbin Watson			2.103
F value			3.368
P value			0.000

Conclusion and recommendations

- The findings indicated three important factors that influence farmland abandonment in our study area: namely off-farm income, farmland size and distance from farmhouse to the nearest urban area
- To support rural farmers, the governments should support high-cost agricultural inputs by providing agricultural subsidies to farmers in order to reduce their operational cost.

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