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Determinants of Food Insecurity Among Agropastoral Households In Sagag District, Somali Regional State, Ethiopia

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ABSTRACT

Ethiopia is one of the most food-insecure and famine affected countries (Mohamed, 2017). A large portion of the country's population has been affected by chronic and transitory food insecurity. The situation of chronically food insecure people is becoming more and more severe. This study investigates the underlying problems causing food insecurity in Ethiopia and tests, policy options that could alleviate the problem in the future. For this purpose, three distinct levels of measurements including, national, household and individual levels are often applied in a given country. The measurement at national level is relatively more aggregated and mainly focuses on the food availability. At household level, the measurement takes different forms including food access and nutrition indicators. Some interventions are designed and focused on population, food production, and market dynamics. Moreover, degraded land contributed considerably to the poor average productivity of the land. Policy analyses showed that future policy options such as land rehabilitation and capacity building for skilled use of agricultural inputs such as seeds and fertilizer need to be combined carefully to account for their different implementation times. Therefore, this study is an attempt to explore the factors of food insecurity among agro-pastoral households in Sagag Districts, Somali Regional State in Ethiopia.

Key Words: Food Insecurity, Agro-pastoral, Policy, Chronic, Transitory

1. Introduction

Ethiopia is one of the most food-insecure and famine affected countries (Mohamed, 2017). A large portion of the country's population has been affected by chronic and transitory food insecurity. The situation of chronically food insecure people is becoming more and more severe. Food security situation in Ethiopia is highly linked to recurring food shortage and famine in the country, which are associated to recurrent drought .. According to (Diouf and Sheeran, 2010), more than 41 percent of the Ethiopian population lives below the poverty line and above 31 million people are undernourished. By using the threshold of 2,550 kilocalories (Kcal) per adult equivalent per day, 40 percent of Ethiopian households for whom their majority reside in rural parts of the country were food insecure and undernourished (Mohamed, 2017).

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Food insecurity condition in Ethiopia is increasing due to a combination factors include: interaction of environmental degradation, high population growth, diminishing land holding, outbreak plant and livestock disease, chronic shortage cash income, poor social and infrastructure facility, instability and arm conflicts, pre and post-harvest crop loss and lack off/on farm income led to a significant decline in the productivity per households and causes of food insecurity and starvation (Mohamed, 2017). These trends have combine with repeated effects of famine over years, to considerably erode the productive possessions of rural households (Program, 2020).

Different studies undertaken in different parts of Ethiopia identify numerous determinants of household food security. For instance, household education status, sex of household head, family size, family labor, land holding, farm oxen, livestock ownership, off-farm income, farm implements, access to market, farm inputs and rainfall distribution are mentioned in many of the studies (Mota et al., 2019).

Somali region is one of the poorest and least developed regions of Ethiopia, neglected by national development efforts (Abdirahman et al., 2015). It is only in recent years that efforts have been undertaken to provide basic infrastructure such as road accessibility and administrative buildings as well as education and basic health services for each of the woredas. The recurrent drought and chronic food insecurity in Somali region are of major concern by the federal and regional government and humanitarian organizations (Abdirahman et al., 2015). Sagag Woreda where this study was carried out has low agricultural and livestock production and productivity due to numerous problems including irregular

rainfall distribution, land degradation, poor farmland management practices (Agricultural Office of Sagag woreda).

Therefore, it is important to highlight the determinants of food security and its co-ops strategies in the study area. Due to the above issues, the investigator was interested in assessing food security among the agricultural and pastoral community.

2. Objectives

2.1. General Objective

The general objective of the study is to analyze the food security situation and the coping strategies of agro-pastoral households in Sagag woreda of the Somali Regional State.

2.2. Specific Objectives

- Assess the status of food security of agricultural and pastoral households.
- Identify the determinants of the food insecurity status of agricultural and agricultural households in the study area.
- Identify agro-pastoral households' coping strategies against food insecurity in the study area.

3. Research Questions

Based upon the objectives of this study, the following research questions are developed.

- What is the status of food security in Sagag Woreda?
- What are the determinants of food insecurity in the study area?
- What are the coping strategies used by food insecure households in the study area?

4. Materials and Methods

4.1. Description of the Study Area

Sagag is one of the Seven Woredas of Nogob Zone, bordered on the East by:- Garbo woreda, West by:- Yahoob woreda, North by:- Dhuxun woreda ,South by:- Dhagax-Madob woreda and North-East by:- Birqot woreda. Human population according to 2010 data obtained from the woreda Administration is estimated around 102,160 of which percentage of female estimated around 52. 1% and male estimated around 47. 9% of the total population 9.5% are residing in the urban and rest percentage are rural areas. The woreda leis between 7'86'0 north 8'38'0' north latitude 42'000"east to42'44'00"east, longitude (CSA,2007). The woreda has 23 Kebeles (Agricultural office of the woreda). Those kebeles are pastoralists and agro-pastoralists four of them are agro-pastoralists while the remaining nineteen Kebeles are pure pastoralists.

4.2. Research Design

This study has adopted descriptive research design with quantitative and qualitative approach. It is the best approach recommended by many scholars of this subject, as quantitative approach is useful to estimate required variables and qualitative method is helpful in capturing qualitative feature of human behavior. It helps to substantiate quantitative results generated by econometrics models.

4.3. Sampling Techniques and Sample Size Determination

The sample size was determined by using the recommended formula by Yamane (1967)

$$n = \frac{N}{1} + N(e)^2$$

(Where, n = total sample size, N=2253, The level of confidence was 92% with a margin of error of 0.08). The sample size is determined as n=146.

4.4. Tools and techniques of data collection

In this study, both primary and secondary data sources were used. Primary data were collected from respondents using an interview schedules and guides supplemented by key informant interviews and focus group discussions. Secondary data were collected from various sources published documents, official websites, and unpublished documents and related literature was deeply reviewed.

4.5. Methods of Data Analysis

To measure household food security, a food security index was constructed. This involved two steps: identification and aggregation. Identification is the process of defining a minimum level of nutrition necessary to maintain healthy living — the "food security line" for the population under study, below which households are classified as food-insecure. Aggregation on the other hand derived food security statistics for the households. Daily per capita calorie consumption was estimated by dividing the estimated daily calorie supply to the household by the household size adjusted for adult equivalence using the equivalent male adult scale weights.

The method used to find out the determination factors influencing food security was Binary Logit Model. Binary Logit Model used two types of variable those were response variable or dependent variable (food endurance level through Jonsson and Toole cross classification) and independent explanatory (Independent variables) were some variables that allegedly affect the level of food security in the study area. Binary Logit Model was used for the case of regression equation with Qualitative Response Variable. Qualitative data used in this study was the level of food security divided into 2 categories those are food secure and three next categories as food insecure as dependent variable.

5. Results and Discussion

5.1. Result of descriptive statistics

The different characteristics of sample households were compared to see if there are significant differences between food secure and food insecure groups. These including, age of the household head, family size, and dependency

ratio, oxen holding, livestock holding, off/non-farm income, cultivated land, market distance , extension contact.

Age of the household head: The average age of the sampled household heads was 46.5 years with the minimum and maximum of 24 and 76 years respectively. The average age of food secure household heads was 38.5 years with a standard deviation of 7.541 whereas it was 46 years with a standard deviation of 8.1 for food insecure household heads. The result showed that mean age of food insecure household heads is significantly higher than food secure household. The difference is significant at 1% significant level.(Table 1 below) Family size in AE: The mean family size in AE for the sampled households was 5.88 persons with the minimum of two and maximum of 12. The mean family size in AE was 5.35 persons with the standard deviation of 1.7 and 6.2 with the standard deviation of 1.9 for food secure and food insecure households respectively. There is significant difference between food secure and food insecure households with respect to family size at 1% significant level. .(Table 1 below)

Dependency ratio (DR): The average mean dependency ratio of the sample households was 1.03 with the standard deviation of 1.036 and with the minimum of 0.00 and maximum of five. The mean dependency ratio was 0.80 with the standard deviation of 1.01 for food secure households and 1.1 with the standard deviation of 1. for food insecure households. The mean dependency ratio of food insecure households found significantly higher than food secured households in the district. The difference is significant at 1% significant level. .(Table 1 below).

Oxen ownership: The number of oxen owned by the sample households varies from the minimum of zero to a maximum of two. The average number of oxen owned was 0.66 with the standard deviation of 0.80 for food secure and 0.13 with the standard deviation of 0.37 for food insecure households. The average numbers of oxen owned appeared greater for food secure households as compared to food insecure households and this difference was statistically significant at 1% significant level. (Table 11 below)

Off/non-farm income: It is very important for the wellbeing of the households in that it help the households to access food when income from agriculture is inadequate to enable households to access food throughout the year. Consequently, the sampled households who have engaged in off/non-farm activities have generated an average income of Birr 705.32 with standard deviation of 1150. The food secured household engaged and generated significantly higher off/non- farm income of Birr 1529 on average than their food insecure counterparts 146.04 generate. This variable was found statistically significant at 1% significance level.(Table 1 below)

Cultivated land: The cultivated land per household for the sampled households varies from a minimum of 0.17 ha to a maximum of 3.97 ha. Average cultivated land of the sampled households was 2.58 ha with a standard deviation of 1.85. The average cultivated land was 3.22 ha with the standard deviation of 1.9 for food secure and 2.12 ha with the standard deviation of 1.66 for food insecure households respectively. Therefore, the mean cultivated land by food secure households was significantly higher than the food insecure. The difference is found to be significant at 1% significance level.(Table 1 below)

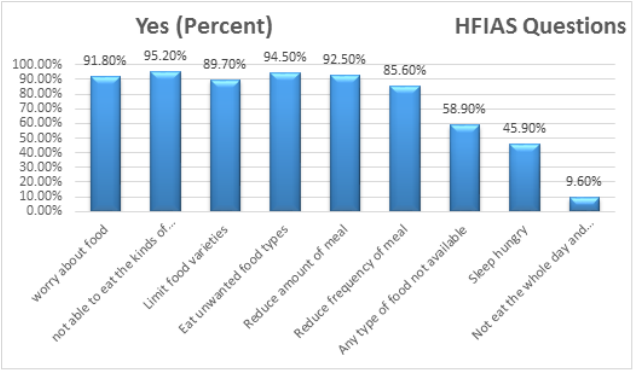

Figure 1: Households food insecurity access

Distance to nearest market: The mean distance of households were 5.82 and standard deviation of 1.954. 4.54 with mean and standard deviation of 5.53 for food secured households and the nearest market was 6.68 Km whereas for the food insecure was 13.67 Km, this means, on average food secure households were travelling less distance than food insecure households do. .(Table 1 below) As a result, the differences of mean distance shows there was significant difference between the food secure and food insecure households in terms of the market distance at 1% significant level.

5.2. Access and measuring of Food Security Status

To measure household's accessibility to food and level of food insecurity HFIAS was utilized. Based on the response to the nine HFIAS questions and their frequency of occurrence over the last 30 days, HHs was assigned a score that ranges from 0 to 27. A higher HFIAS is indicative of poorer access to food and greater household's food insecurity. Accordingly, the mean score of households was 1.72 with minimum and maximum value of 0 and 26 respectively.

(91.80%) of the households have experienced having an anxiety or uncertainty about the households food access. (95.20%) of the households have experienced being not able to eat the kinds of foods they preferred to eat. (89.70%) of the respondents also stated that they experienced in eating limited variety of foods because of lack of resource. Around (94.50%) HHs said that they ate foods that they really didn't want to consume, (92.50%) of the respondents have experienced eating smaller meals than they needed, (85.60%) of the households have reduced their meal frequency, (58.80) households have said that there is no any type of food available, (45.90%) of the households experienced skipping dinner or went to sleep without eating. (9.60%) of the respondents have also experienced or have went the hole day without eating

Table 1: Socio-economic characteristics of respondents (Food secure/insecure)

Variable	Mean	SD	Mean	SD	Mean	SD	t-Value
Age	38.5	7.541	46.52	8.11	42.73	8.611	5.3725***
Family size in AE	5.355932	1.729	6.229885	1.902	5.88	1.879	2.8238***
Dependency ratio	.8091525	1.013	1.186667	1.029	1.03	1.036	2.1880***
Livestock holding	18.83051	9.176	3.172414	3.65	9.50	10.052	-14.344***
Oxen holding	0.66	0.80	0.137	0.37	0.35	0.628	-10.644***
Cultivatedland (ha)	3.237288	1.914	2.126437	1.669	2.58	1.849	-3.7165***
Off/non-farm income	1529	1446.27	146.43	197.3	705.3	1150	-8.81***
Distance to market	4.542373	5.380	6.689	1.726	5.82	1.954	7.7240***
Extension contact	4.101695	5.380985	2.080	1.726	2.90	3.787	-3.2687***

Note: *** significant at 1% significance level. Food secure (n=59) Food insecure (n=87) Total sample (n=146)

6. Conclusion and Recommendation

This study examined the determinants of food security in Sagag district of Somali region, Ethiopia. The findings clearly point out the role of household assets and income diversification in contributing to household food security. The crucial contribution of different forms of capital (financial and physical) to attaining food security can be indirect and direct because respondents in the study area could be engaged in various income generation activities. Despite challenging circumstances, enhancing the resilience of food systems in the Eastern and Southern Africa offers real opportunities to not only tackle food insecurity and ensure that everyone has enough to eat, but to also generate more jobs, promote trade, and enhance resilience. Focus should be given on creation of gainful employment among youths in rural areas creating different sectors viable like commerce and trades, building resilience capacity to protect the affected people from untimely shocks (Natural calamities like droughts and floods) with the help of modern technology. The following recommendations are suggested as mentioned below.

6.1. Recommendations

- Although Government has made suitable policies and programs to address food insecurity issues but more need to do.
- NGOs/INGOs should be given more preference to reach to un-reach people on time in order to avoid displacement, untimely death etc.
- Accepting Climate smart agriculture practices is needed for that awareness creation through training programs should be appreciable.

Conflict of Interest

" The author declares that there is no conflict of interest involve in publishing this research paper"

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