

Assessment of Food Security Situation among Farming Households in Rural Areas of Cambodia

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Abstract:

This study was designed to assess the food security status among farming households in rural areas of Koas Krala District, Battambang Province, Cambodia. The study utilized a multistage random sampling technique to select a sample of 257 rural farm households for interview. Data collected were analyzed using percentages, mean score, logistic regression and food security index. Using the food security index approach, the study revealed that 68% of the respondents were food secure while 32% were food insecure. The results of the logistic regression revealed that educational level, age, sex, household size, social organization and access to credit were significant determinants of food security. The study therefore recommends the efforts aimed at reducing food insecurity among rural farming households should focus on increasing household income and food supply.

Keywords: Food Security; Logistic Regression; Rural Area in Cambodia

Introduction

The Food and Agriculture Organization of the United Nations (FAO) State of Food Insecurity for 2010 assesses that nearly 1 billion people are estimated to be undernourished, representing almost 16 percent of the population of developing countries. Although the strong commitment of international institutions and the efforts conducted to reach the objective to half, within year 2015, the number of people suffering from hunger, food insecurity still represents one of the biggest challenges for a big part of the world population and must be treated with the utmost urgency. It is generally recognized that food security, and therefore food insecurity, is a multidimensional phenomenon. Several indices measuring hunger and the progress in achieving hunger eradication helped understanding the issue and monitoring the progress in eliminating hunger as well as providing targets for national and international political action (Clay, 2002).

Food security is a difficult concept to measure since it deals in very broad terms with the production, distribution and consumption of food. Food

insecurity on the other hand lends itself more readily to measurement and analysis. It should be stressed that food security and famine and hunger are not to be confused: food security refers to the availability of food whereas famine and hunger are the consequence of the non-availability of food, in other words the results of food insecurity. The FAO definition of food insecurity is: "A situation that exists when people lack secure access to sufficient amounts of safe and nutritious food for normal growth and development and an active and healthy life." Any analysis of food security will examine whether a change from security to insecurity or insecurity to security actually takes place and also the probability of such a change happening. Factors that may lead to a situation of food insecurity include non-availability of food, lack of access, improper utilization and instability over a certain time period. Mohammed (2003) noted that food insecurity exists when there is physical unavailability of food, lack of social and economic access to adequate food and/or inadequate food utilization.

Achieving food security is still a major problem for households in most rural areas of Cambodian. This study was therefore designed to assess the food security status among farming households in rural areas of Cambodia.

Research Methodology

Research Site Selection

The research conducted in one of the districts in Battambang province named Koas Krala. Koas Krala district is a particular vulnerable to climate change while flood and drought frequently destroyed agricultural products in this area. There are totally 6 communes in Koas Krala district and this research will aim to cover only on Doun Ba Commune therefore, this research cannot be represent the whole country because of the small sample size it becomes difficult to generalize the results to the entire country based on the findings of this study.

Study design and data collection

Primary data for this study were collected from the farming households through the use of structured

interview schedule, comprising closed and open-ended questions. A multi-stage random sampling technique was employed in selecting a sample of 257 farming households.

Analytical techniques

Descriptive statistics such as frequency counts and percentages; mean scores, food security index and logistic regression were employed to fulfil the objectives of the study. To determine the food security status of the rural farming households, the households were classified into food secure and food insecure households, using the food security index. The food security index formula is given by:

$$F_i = \frac{\text{Per capita food expenditure for the } i^{\text{th}} \text{ household}}{2/3 \text{ mean per capita food expenditure of all households}}$$

Where F_i = Food security index
 When $F_i > 1$ = Food secure i^{th} household
 $F_i < 1$ = Food insecure i^{th} household.

A food secure household is therefore that whose per capita monthly food expenditure fall above or is equal to two third of the mean per capita food expenditure. On the other hand, a food insecure household is that whose per capita food expenditure falls below two-third of the mean monthly per capita food expenditure (Omonona and Agoi, 2007). Additionally, the number of food secure/insecure households in the state was determined by taking the frequency of the food secure/insecure households. The headcount ratio (H) of food security was calculated to measure the percentage of the population of households that are food secure/insecure. The headcount index formula is given by;

$$\text{Headcount index (H)} = M/N$$

Where M = number of food secure/insecure households

N = the number of households in the sample

Based on the food security index (F_i), multivariate logistic regression was estimated to identify determinants of food security among the respondents (Ifeoma and Agwu, 2014). Logistic equation used is:

$$Z = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_k + u$$

Where Z = Logit for food security = Logit (p)

β_0 = constant

$\beta_1, \beta_2, \dots, \beta_k$ = the parameters which interpret the effect of X on Z

X = explanatory variables

k = number of explanatory variables

p = probability of the household being food secure

u = error term

Result and Discussion

The table1 mention the socio-economic of the household which revealed that 61.9% of the household heads were more than 50 years and 22.2% were between 41 and 50 years, implying that majority of them were predominantly in their economically active age. Therefore, they are energetic to cultivate large size farms for increased food production and engage in off-farm jobs so as to increase household income. Male headed household were 68.5% while female only 31.5%. In this case, male headed households are expected to have more access to farm land for food production. The majority of households head were married (67.3%) but education level was very low (55.6% was illiterate). Mostly, the household size ranked from 4 to 6 people per family which revealed that most of the farmers had large household sizes, which could probably serve an insurance against shortfalls in the supply of farm labor. The majority (74%) of land size was less than 2 hectares per family which show that the households are subsistence farmers with the average monthly income 300 000 riels. Participation with social organization was not popular in the research area with only 13% of the total households were engaged and the others 87% mentioned that they had never participated with any social organization in their community. Moreover, accessible to credit also came up with less percentage among the household. Nearly all of them (90%) inaccessible to credit while only 10% ever access to credit in study area.

Table1: Demographic characteristics for respondents

Items	Frequency	Percentage
Age (years)		
19-30	7	2.7
31-40	34	13.2
41-50	57	22.2
>50	159	61.9
Sex		
Male	176	68.5
Female	81	31.5
Marital Status		
Married	173	67.3
Single	16	6.2
Divorced	4	1.6
Widowed	57	22.2
Separated	7	2.7
Education Level		
Illiterate	143	55.6
Primary School	44	17.1
Secondary School	35	13.6
High School	24	9.3
University	11	4.3
Household Size		
1-3	32	12.5

4-6	163	63.4
6-8	53	20.6
>8	9	3.5
Farm Size(Ha)		
<2	189	73.5
2-5	30	11.7
6-10	21	8.2
11-15	12	4.7
>15	5	1.9
Monthly Income (Riels)		
<21 000	93	36.2
210 000-300 000	132	51.4
310 000-400 000	15	5.8
410 000-500 000	12	4.7
>500 000	5	1.9
Participation in Social organization		
Yes	34	13.2
No	223	86.8
Access to Credit		
Yes	25	9.7
No	232	90.3

*4 000riels= 1USD

Households were profiled into food secure and food insecure groups based on their per capita food expenditure. The food insecurity line is defined as two-third of the mean per capita food expenditure of the total households studied. Base on the analysis, the value of mean per capita food expenditure was 250 000riels. Therefore, households whose per capita food expenditure falls below 250 000riels were designated food insecure, while households whose per capita food expenditure equals or is greater than 250 000riels were food secure. It was observed that 68% of the households were food secure while 32% were food insecure. On the other hand, based on the headcount ratio, 68% had their per capita food expenditure equals or above 250 000riels, while 32% had their per capita food expenditure below 250 000riels.

Table2: Summary statistics of food security status in the study area

Food Security Status	Food Secure	Food Insecure
2/3 Mean per capita food expenditure is 250 000Riels		
Percentage of Household	68	32
Number of Household	175	82
Head count ratio (H)	0.68	0.32

The result of the logistic regression in Table 4 shows that educational level ($p=0.051$), age ($p=0.095$), sex ($p=0.046$), household size ($p<0.001$), social

organization ($p=0.074$) and access to credit ($p=0.016$) were significant determinants of the food security status of the rural farming households. These findings are in consonance with that of Omonona and Agoi (2007), Babatunde et al. (2007), Amaza et al. (2008) and Ifeoma and Agwu(2014).

The positive relationship between educational level of household heads and food security implies that households with an educated household head are more likely to be food secure than those with an uneducated household head. Also, the higher the number of years the household head spends in school, the probability of the household being food secure. The estimated coefficient of age indicates that the older the higher probability.

The sex of the head of the household reveals a significant positive relationship with household food security status. This indicates that households headed by males have a higher probability of being food secure than households headed by women. This may be as a result of the fact that in male headed households, both heads and their spouse are involved in income generating activities while in female headed households, the head (who may be unmarried or widowed) solely provide necessities for the family. The estimated coefficient of social organization variable indicates that the participation in social organization increases the probability of the household being food secure.

Household size has a negative coefficient that is significant at 5% level implying that a large household size may likely be food insecure, while a small household size could be food secure. Farmers' access to credit facilities is also a crucial factor in determining the food security status of an individual as it had a positive and significant coefficient at 5%. Babatunde et al. (2007) noted that farming households with good access to credit facilities have greater probability of being food secure than those without credit facilities.

Food Security Status	Coefficient	Std.Error	Z	P> z
Education Level	0.13232	0.06792	1.95	0.051*
Age	0.06230	0.03728	1.67	0.095*
Sex	1.88963	0.94896	1.99	0.046**
Household size	-0.57702	0.13438	-4.29	0.000**
Extension contact	0.19045	0.61906	0.31	0.758
Social Organization	-1.21962	0.68270	-1.79	0.074*
Credit	1.51889	0.63030	2.41	0.016**
Constant	0.85477	1.25839	0.68	0.497

Dependent variable: Food Security status. Number of observations: 257. ** p<0.05, *p<0.10.

Table03: Determinants of food security status of rural farming households

Conclusion and Recommendation

The study revealed that 68% of the households were food secure while 32% were food insecure. Also, the educational level of household head, age of household head, sex of household head, household size, participation in social organization and access to credit facilities were significant determinants of household food security status in the study area. The major perceived effects of food insecurity on households were reduced household income/savings due to increased expenditure on food and increase in the price of food. From the respondents' opinion, engaging in off-farm and non-farm jobs to increase household income and diversion of money meant for other purposes to buy food were major coping strategies that are employed to cushion the effects of household food insecurity.

Based on the major findings of the study, the following recommendations are made in an attempt to improve the food security status of households in the area. Educational level of household head was a significant determinant of food security status of the farm households. Hence, there is need for formal education to be promoted as a means of improving food security as it opens up more income-earning opportunities for the farm households especially in the non-farm sector. Household heads should be properly educated on the importance of family planning and birth control measures so as to have a manageable family size that will subsist on the available resources.

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