



Impact of Smallholder Agricultural Cooperatives on Market Participation of Vegetable Farmers in Cambodia: A Case Study of Svay Rieng Agro-Products Cooperative

DARY PHON*

*University of Tokyo, Kashiwa City, Japan
Email: phondary@gmail.com*

EIJI YAMAJI

The University of Tokyo, Kashiwa City, Japan

Received 14 November 2015 Accepted 29 April 2016 (*Corresponding Author)

Abstract Agricultural cooperatives play a crucial role in improving Cambodian farmers' participation in vegetable markets. Cambodia's vegetable sector is afflicted by the dual problems of supply and quality; the country imports huge amounts of vegetables from Vietnam and Thailand, and most domestic vegetable production is still inorganic. This quantitative study shows the impacts of Svay Rieng Agro-Products Cooperative (SAC) on its members' participation in vegetable markets. Data was collected from a survey of 44 SAC members and 20 non-SAC members in Svay Rieng province. A market participation index was used to measure the level of respondents' market participation. Based on the quantity of vegetables sold, the 64 sample farmers represent four levels of market participation across 52 market participation scores: level 1 includes scores 4-16 (35.9% of total respondents); level 2 scores 12-32 (32.8%); level 3 scores 24-36 (17.2%); and level 4 scores 32-52 (14.1%). T-test analysis shows that the participation in vegetable market of SAC members is higher than that of non-members. Logit model reveals that variable of growing vegetables as a primary source of household income is positively related to the probability of selling vegetables to SAC. Tobit model is used to determine factors affecting market participation levels of SAC members. The study revealed five factors as critical variables affecting effective market participation: 1) education level of household head, 2) receiving market information, 3) volume of vegetable production, 4) distance to main market, and 5) the extent to which vegetable growers supply SAC. The study stresses the importance of agricultural cooperatives in improving farmers' participation in vegetable markets. Plus, the results concerning the probability of selling vegetables and level of participation in vegetable markets can usefully contribute to informing and improving the royal decree and prakas on agricultural cooperatives in Cambodia.

Keywords agricultural cooperative, market participation, Cambodia

INTRODUCTION

Cambodia's agriculture sector contributed about 27.5% of total GDP in 2012, and crop production alone accounted for 55% of agricultural GDP (MAFF 2013). Although vegetable production in Cambodia increased between 2007 and 2013 (MAFF 2013), Cambodia supplements 40-50% of its vegetable consumption with imports from Vietnam and Thailand. In 2010, for instance, vegetable imports amounted to 70 to 80 tonnes a day (Vietnam Business News, 2010). This huge volume of imports is affecting most stakeholders in the vegetable sector. The Cambodian government is committed to improving agricultural development and promoting smallholder livelihoods through the establishment of agricultural cooperatives. Agricultural cooperatives play an important role in rural

economic development and poverty alleviation (Chea, 2010). Yet few studies have examined the impact of agricultural cooperatives on farmers' participation in vegetable markets in Cambodia.

OBJECTIVE

The objectives of the study are to evaluate the impacts of SAC on market participation of SAC members, and to determine the factors affecting the extent of their market participation.

METHODOLOGY

Household survey: A structured questionnaire was used to gather information from 44 SAC member households and 20 non-member households. Household heads or other adult family members were interviewed face-to-face. Six of the 20 areas covered by SAC were selected for survey. These areas were chosen because the farmers there are more likely to grow the crops of interest, namely cucumbers, Chinese cabbage, Chinese greens, pickle cabbage and dwarf cabbage, than in the other areas. All farmers in the six areas who had produced these five crops in the previous growing season were engaged in face-to-face interviews.

Data analysis: Market participation index, T-test, logit and tobit regression models were used. Following Gani and Adeoti (2011), the market participation index was used to measure the level of market participation among respondents in the study areas. Table 1 describes the index used in computing the total market participation index (TMPI).

Table 1 Market participation index

Quantity sold (L)	Scores									
	Market location (X)					Period of sale (Y)		Buyer (Z)		
	Home- stead (X1)	Farm gate (X2)	Village market (X3)	Town market (X4)	City market (X5)	On- season (Y1)	Off- season (Y2)	Consu- mer (Z1)	Trader (Z2)	SAC (Z3)*
>0 - <450kg (L1)	1	2	3	4	5	1	2	1	2	3
451 - 1000 (L2)	2	4	6	8	10	2	4	2	4	6
1001-1450 (L3)	3	6	9	12	15	3	6	3	6	9
>1450 (L4)	4	8	12	16	20	4	8	4	8	12

Note: * Developed by authors

Source: Gani and Aeoti 2011

The total market participation index (TMPI) represents each respondent's score, and the score regulates the level of participation in the market. When the scores for the quantities of vegetables sold and other indices including market location, period of produce sale, and buyers were computed, the minimum market participation score 3 indicates the lowest level and 96 the highest level of participation.

$$\text{Minimum Score} = X1(L1) + Y1(L1) + Z1(L1) = 3$$

$$\begin{aligned} \text{Maximum Score} = & X1(L4) + X2(L4) + X3(L4) + X4(L4) + X5(L4) + Y1(L4) + Y2(L4) + Z1(L4) + Z2(L4) \\ & + Z3(L4) = 96 \end{aligned}$$

In addition, the different levels of farmers' participation in vegetable markets were determined using the following formula:

$$\frac{RTMPI}{NMPWC} \times \frac{100}{I}$$

where RTMPI = replication/frequency of total market participation indices, and NMPWC = number/size of market participants within a given category.

T-test as modeled by the t-distribution was used to test the statistical difference in the average market participation score of SAC members and non-members. Logit model was used to determine the probability of farmer-members selling vegetables to SAC. Tobit model was used to determine factors influencing the level of SAC members’ market participation in the study areas.

RESULTS AND DISCUSSION

Impact of Svay Rieng Agro-Products Cooperative on Market Participation

The four levels of market participation signify that although the 64 surveyed farmers participated in the market, they did so to different degrees. The various levels of market participation in the study areas and their scores are shown in Fig. 1; the main features of the data are described below.

At level 1, 23 respondents (35.9% of the total) participated in the market; score level 4 (4.35%) has the fewest and score level 16 the most participating farmers (4.35%). Majority of farmers in this level fall into score levels 8, 10, 13 (17.39% at each score level).

At level 2, 21 respondents (32.8%) participated in the market; score level 12 (4.76%) has the fewest and score level 32 the most participating farmers (4.76%). Most farmers in this level are concentrated in score levels 16 and 20 (19.05% and 24 (23.81%).

At level 3, 11 respondents (17.2%) participated in the market; score level 24 (45.45%) has the fewest and score level 36 the most participating farmers (9.10%). Most farmers in this level have a score level of 24 or 30 (45.45%).

At level 4, 9 respondents (14.1%) participated in the market; score level 32 (22.22%) has the fewest and score level 52 the most participating farmers (44.45%) in this level. Most farmers have score levels of 52 (44.45%) or 30 (22.22%).

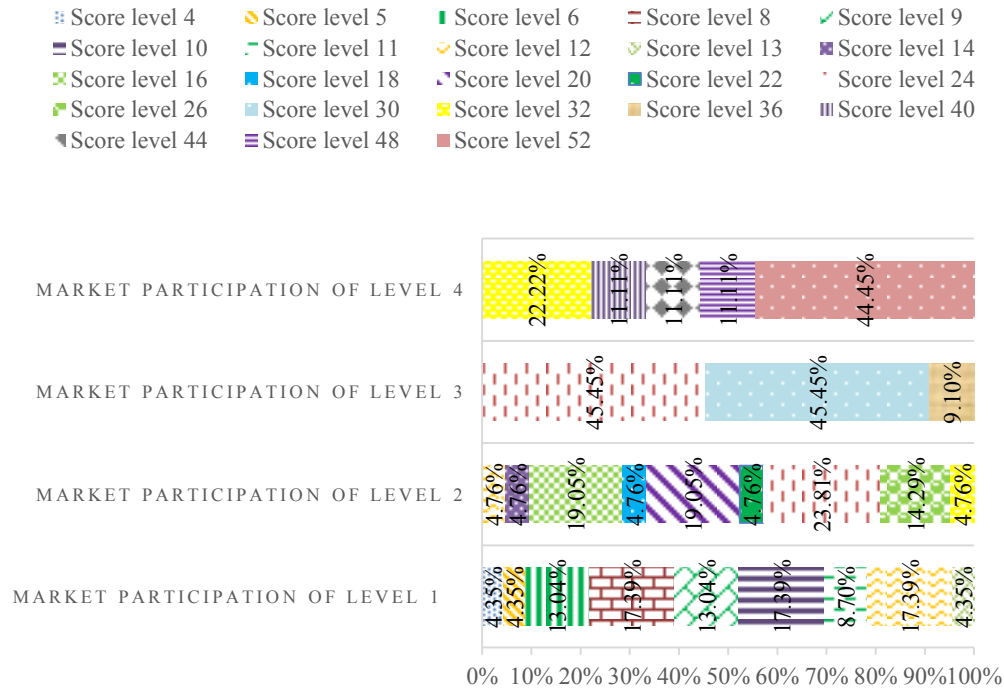


Fig. 1 Four levels of participation in vegetable markets