



# Factors Causing Deficits in Traditional Rice Liquor Production in Rural Areas of Cambodia

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**Abstract** Adding value to agricultural products is expected to play an important role in increasing income and reducing poverty in rural areas of Cambodia. The promotion of agro-processing is one of the key strategies for the value addition. A variety of processed foods produced by individual small-scale farmers have helped generate income, with the exception of rice liquor which has been faced deficits and low profitability. This study aimed to clarify the socio-economic status of rice liquor farmers in rural areas and to examine the factors leading to deficits and surpluses in rice liquor production. Data on the economic status of rice liquor farmers and non-rice liquor farmers were collected by conducting structured interviews using questionnaires at the targeted areas in Takeo Province. Comparisons of the income structures of the two groups revealed that the rice liquor farmers mainly depended for income on agricultural activities including rice liquor production and pig rearing, whereas non-rice liquor farmers depended on non-agricultural activities such as off-farm businesses, labor work, and remittances. Rice liquor production was less profitable, and around 30% of rice liquor farmers faced deficits in this activity. A comparison of the economic status between deficit and surplus operations of rice liquor production revealed the key factors that caused deficits, such as a low sales price, high cost of rice, low productivity, and high frequency of production failure. Rice liquor farmers expected improvements in the production techniques, in the quality and productivity of liquor. Thus, modifying production techniques to improve the quality and productivity of rice liquor, and to reduce the rate of production failure are the key strategies to increase the profitability of rice liquor businesses.

**Keywords** agro-processing, added value, traditional product, business improvement, Cambodia

## INTRODUCTION

Adding value to agricultural products is expected to play an important role in increasing income and reducing poverty in rural areas. The promotion of agro-processing in rural areas has emerged as one of the key strategies to add value to local agricultural products (Royal Government of Cambodia, 2006; Royal Government of Cambodia, 2013). In rural areas of Cambodia, individual small-scale farmers have produced a variety of processed products, such as pickled vegetables, processed fish, traditional sweets, charcoal, and rice liquor (*sraa sar* in Khmer). The production of these processed foods, with the exception of rice liquor, has helped generate income for rural households; in contrast, rice liquor production has faced deficits and low profitability (Yagura et al., 2010). Instead, such producers have obtained profit from pig farming by reducing the cost of feeding pigs by using the by-products derived from the distillation of fermented rice (Vathana and Takeya, 2004; Yagura et

al., 2010). This production system kept pig farming profitable despite rice liquor operations staying in the red (Yagura et al., 2010). However, recent sales prices of pigs have been fluctuated in the Cambodian market due to increasing the imported pigs from Vietnam and domestic pig from large-scale farms. (Tornimbene and Drew, 2012). This situation have made the small scale rice liquor farmers with pig farming difficult to sustain their businesses in rural areas. It is significantly important to examine the strategies to improve profitability of rice liquor production.

The cultural norms and general production methods of alcoholic beverages from rice in Southeast Asian countries such as Vietnam and Laos have been clarified (Kozaki et al., 2002; Kozaki et al., 2005). The production methods of traditional brewed and distilled rice liquor in Cambodia were revealed by Kozaki (2007). Yamamoto and Matsumoto (2011) identified the production methods and raw materials of starter cultures for rice wine and rice liquor in Cambodia. However, there have been no studies which examined the economic issues and possibilities of the improvements in rice liquor productions.

## **OBJECTIVE**

This study aims to clarify the socio-economic status of rice liquor farmers in rural areas and to examine the factors that lead to a deficit or surplus to come up with the strategies of the development in rice liquor production.

## **METHODOLOGY**

This study attempted to clarify the socio-economic status of rice liquor farmers by comparing the farmers who were engaged in rice liquor production (rice liquor farmers) and those who were not (non-rice liquor farmers). Then, a detailed analysis was conducted by focusing on rice liquor production, including its economic and technical issues, to examine the factors that lead to deficit and surplus operations based on the economic analysis and the farmers' awareness.

In September 2008, structured interviews were conducted to understand the socio-economic status of farmers in six targeted communes consisting of 93 villages in Takeo Province, one of the areas where rice cultivation is most popular, given the region's high productivity and quantity of produce (Hamano et al., 2013). The most popular communes in rice liquor production were selected as surveyed areas according to the key informant interview results to the officers of the provincial department and the district offices, commune chiefs, and village chiefs. These structured interviews were conducted using questionnaires. All rice liquor farmers in the six communes were interviewed. They were identified based on the information provided by key informants, such as village and commune chiefs, since the accurate official information on the number and locations of rice liquor producers were not found in governmental institutes. In all of the 93 target villages, a non-rice liquor farmer was randomly selected in each village for comparison in this study.

One of the questionnaires required rice liquor farmers and non-rice liquor farmers to identify their socio-economic status. The questionnaire sought the following information: details about the head of the household and his/her spouse; businesses operated by the farmers; and income generated from the businesses, including other agricultural and non-agricultural economic activities to identify the main bearers and sources of a household's income. The other questionnaire was devised exclusively for rice liquor farmers in the region, and it consisted of questions designed to elicit detailed information about the production and sale of rice liquor to identify the factors leading to its deficit and surplus. The questions were designed to elicit the following information: the experience of producing rice liquor; the production process and frequency; the costs of raw materials and equipment needed for rice liquor production; production failures; sales price and amount of the product; and existing issues and areas of improvement in rice liquor production. Closed-ended questions were used to elicit answers regarding these issues and areas of improvement. The frequencies of keyword appearances as used by the farmers during their responses were also factored into the analysis. The farmers' awareness was also examined to ascertain whether there were issues that significantly affected the production and business of rice liquor farming.

The Statistical Package for Social Science Student Version 16.0 was used to conduct the Mann–Whitney test to compare the averages of the parameters between rice liquor farmers and non-rice liquor farmers. The deficit and surplus operation groups involved in the production of rice liquor were also compared in the same way.

## RESULTS AND DISCUSSION

### Interviewees and Features of the Households

Table 1 shows the numbers of farmers interviewed for this study and the numbers of their valid responses that were factored into the analysis. The 93 villages (in the six targeted communes) in the region consisted of 13,548 households (National Institute of Statistics 2009). A total of 166 rice liquor farmers, spread across 56 villages, were interviewed, and 117 valid responses were obtained. In each village in the target areas, a non-rice liquor farmer was randomly sampled for the interviews, and 87 valid responses were obtained from them. Table 1 shows that the average age of the husbands of rice liquor farmers was 39.9 years old and the average age of the wives was 38.5 years old. These averages are approximately six years younger than the average ages of the non-rice liquor farmers. There was, however, no difference in terms of the size of the household. Table 1 also shows the average sizes of the paddy fields and rice yields of the rice liquor farmers and non-rice liquor farmers. Most of both rice liquor and non-rice liquor farmers (96.6%) produced rice as the main staple food. Rice liquor farmers cultivated rice in 1.12 hectares of paddy field and harvested 1.78 tons of rice yield on average, which are larger by 31.8% and 27.1% than the corresponding values of non-rice liquor farmers (0.85 hectares and 1.40 tons), respectively.

**Table 1 Interviewees**

	Rice liquor farmers <sup>2</sup>		Non-rice liquor farmers <sup>3</sup>		Sig. <sup>4</sup>
Valid responses <sup>1</sup>	117		87		-
Average age (years old) of husbands (n)	39.9	(110)	46.5	(78)	0.00**
Average age (years old) of wives (n)	38.5	(116)	44.8	(85)	0.00**
Average number of household members (n)	6.0	(117)	6.2	(87)	0.63
Average size (ha) of the paddy fields in wet season (n)	1.12	(113)	0.85	(84)	0.02*
Average rice yield (t) in wet season (n)	1.78	(113)	1.4	(84)	0.02*

Note: <sup>1</sup>Overall, 166 rice liquor farmers were interviewed; 117 valid responses were obtained. Moreover, 93 non-rice liquor farmers were interviewed; 87 valid responses were obtained.

<sup>2</sup>Rice liquor farmers: 7 female household heads and 1 male household head did not have a spouse.

<sup>3</sup>Non-rice liquor farmers: 9 female household heads and 2 male household heads did not have a spouse.

<sup>4</sup>The Mann–Whitney test was used to compare the averages between the rice liquor farmers and the non-rice liquor farmers. The average difference is significant at \* 5% and \*\* 1% levels.

### The Economic Status of Rice Liquor Farmers and Non-rice Liquor Farmers in Rural Areas

Figure 1 shows the average annual incomes derived from all economic activities by both groups: the rice liquor farmers and non-rice liquor farmers. The average income of rice liquor farmers was found to be 5,601,000 Riel (R) (4,000 R = 1 U.S. Dollar), which was lower than the average income of non-rice liquor farmers of 5,980,000 R by 379,000 R (6.3%). A large proportion (73.8%) of the income obtained by rice liquor farmers came from agricultural activities, of which 26.5% came from agro-processing including rice liquor, 38.7% from animal husbandry, 7.2% from rice milling, and 1.4% from crop/vegetable productions. On the other hand, non-rice liquor farmers obtained 73.8% of their income through non-agricultural activities, of which 43.9% came from off-farm business enterprises such as grocery shops, food stalls, and small restaurants; 17.4% came from the paid work (employment) such as agricultural work, construction, and public services; and 12.5% came from remittance provided by family members who lived away from home. The higher average income of non-rice liquor farmers was a direct result of the difference of average remittance that the two groups