Farmer’s Motivation in Aren Sugar Processing Business

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Abstract: The objectives of the research were to analyze socio-economic characteristics and motivation of farmers in aren sugar processing business in Kolaka District, Southeast Sulawesi, Indonesia. The analysis used in this research was quantitative descriptive analysis. The results showed that average state of socio-economic characteristics of aren sugar farmer that were in the category of productive age, which was 46.12 years old, has fulfill basic education category (9 years education), low category of dependents as many as three people, the Average experience of aren sugar processing business during 18 years, and the average aren trees were tapped as much as seven trees, every day, (b) farmer’s motivation in aren sugar processing business in low category, with the indicator is the motive of imitation, economic, security, affiliations, awards, and self-actualization.

1. Introduction

The gap between consumption and national sugar production has been filled with imported sugars. This means that there is a big chance for brown sugar agro-industry to thrive as an alternative source of sweetener Indonesian society. Great opportunities of brown sugar agro-industry as an alternative sweetener and raw materials of various kinds of food and beverages that also have advantages in health side requires high performance in order to capture these opportunities. The high performance is needed to improve the quantity and quality of sugar required by the market.

Indonesia is very rich in natural resources as a sweetener resources, primarily on palm group such as aren trees, coconut, lontar, siwalan, sawit, and nipah. Similarly in Southeast Sulawesi which has a land area of aren tree as a source of raw materials of brown sugar, as much as 3,477 ha [1]. Kolaka District was third for the aren land area (5.75%) after Bombana District (76.79%) and Muna District (8.66%). Aren land area in Muna District is not utilized as aren sugar production centers. District of Bombana and Kolaka also did not maximize the potential of its aren land area. It was interesting that the productivity of aren sugar in Kolaka District only 0.33 tons/ha/year. It was lower than the North
Kolaka District which its aren land area was lower. The central areas of aren sugar in Kolaka District was in Wolo Sub District, especially in the Village of Tolowe Ponre Waru and Langgomali. However, there has been decreasing the number of farmer in aren sugar processing business in both villages. It was very interesting to study. On the other hand, looks great opportunities for the development of aren sugar processing industry but it turned out there was a decrease in motivation of farmers to produce aren sugar. Decrease in the number of aren sugar processors indicates a decline in the motivation of farmers to process aren sap into aren sugar. Continuous decline in motivation can eliminate the great potential of aren sugar agroindustry as a source of food material and sweetener (sugar). Intrinsic and extrinsic motivations are often closely related to one's socioeconomic factors [2], as well as the palm sugar processors.

Based on the above description, the problem formulation in this study are as follows: (1) How socio-economic characteristics of farmer in aren sugar processing Business? (2) How is the motivation of farmer in aren sugar processing Business?

2. Material and Method
The population of this research was the farmer who was also aren trees owner who run aren sugar processing business as many as 149 people in the village of Talowe Ponre Waru and Langgomali, Wolo Sub District, Kolaka District, Southeast Sulawesi, Indonesia. Simple random sampling method was used to determine the sample. The number of samples was determined by Slovin formula (α=10%) in order to obtain the total sample of 60 people.

The analysis used in this research was quantitative descriptive analysis. Statistical techniques such as the value of maximum, minimum, and average, percentage, and the value of the interval were used to determine socio-economic characteristic (family dependents, business experience, and ownership aren) and the motivation criteria (high, medium, low). Socio-economic characteristic of age and education followed generally accepted category in Indonesia. There were three category of age, namely productive age yet (<15 year), productive age (15-54 year), and not productive age (>54 year). Socio-economic characteristic of education contain six category, such as: no school, not completed primary school, elementary school, junior high school, high school, and bachelor degree. The indicator of motivation in this study, among others; motive of imitation, economic, security, affiliations, awards, and self-actualization. Formula of class interval as follows:

\[ I = \frac{J}{K} \]

where:
- \( I \) = class interval
- \( J \) = Distance distribution (the highest score minus the lowest score)
- \( K \) = class amount

3. Result and Discussion
3.1. Socio-economic characteristic of farmers in aren sugar processing business
Socio-economic characteristics of farmer in aren sugar processing business include age, education, family dependents, business experience, and the number of aren trees owned. Social-economic characteristics of respondents could be seen in Table 1.

Table 1 showed that aren sugar processing business was dominated by farmer in productive age (>70%). It could be explained that aren sugar processing business practices required a lot of energy to do the preparation tapping, tapping, and sap cooking (boiling) into aren sugar, [5]. Tapping should be done twice a day. Moreover, the process of cooking (boiling) sap need very long time (4-8 hours) so it requires a lot of firewood. Activities to prepare firewood also requires a lot of energy. Respondents did all the activity by their selves. Respondents who were in productive age criteria will be willing to keep running the aren sugar processing business, because only requires their energy while the raw materials and auxiliary materials were still available in nature around their residence, abundantly. Good education is needed for existence and sustainability a business.
Table 1. Social-economic Characteristics of Respondents

| Socio-economic Characteristics | Education | Dependent | Experience | Aren tree tapped |
|-------------------------------|-----------|-----------|------------|------------------|
| age                           | ES        | JHS       | HS         | BD               |
| 3-6                           | 0-3       | 4-7       | >7         | 0-15             |
| 0.0                           | 0.0       | 0.0       | 0.0        | 0.0              |
| %                             | 00.0      | 00.0      | 00.0       | 00.0             |
| number                        | 0         | 43        | 17         | 3                |
|                              | 6         | 21        | 19         | 11               |
|                              | 1         | 37        | 22         | 1                |
|                              | 10        | 28        | 22         | 10               |
|                              | 0         | 39        | 19         | 2                |
| Highest                       | 73.00     | High school | 8.0        | 43               |
| Lowest                        | 18.00     | No school | 0.0        | 1                |
|                              | 3.0       | 18        | 7.0        |
| Average                       | 46.12     |           |            |                  |

Note: NS= not school, NCPS= not complete primary school, ES= elementary school, JHS= junior high school, HS= high school, BD= bachelor degree

Base on Table 1 showed that 66.7% of respondents were on basic education category (elementary and junior high school). It could be explained that the aren sugar processing business could be done by anyone despite not having a high education. The low education level of respondents caused a lack of knowledge and the application of management concepts in the practice of aren sugar processing business. Next, their business scale was hardly ever increase since the beginning do.

The number of family dependent can be a motivation to run a business. A number of family dependents of respondents were varied There was the respondents who did not have dependents up to 8 people of dependent. Table 1 also showed that the number of family dependents in small category (0-3 people) was dominated. The number of family dependents reflected their economic burden (clothing, food, house, and education) to be borne by respondent.

Almost respondents were in the category of small business experience (0-15 years). The average experience of respondents in aren sugar business were in middle category (age productive). It could be explain that aren sugar processing business was not a heritage business. The respondents obtained skills to process aren sugar from migrants from South Sulawesi.

Number of aren tree tapped showed economic side of respondent. The number of aren trees were tapped by almost respondents were in the small category (0-7 trees). An aren tree have abundant sap, ranging between 10-30 liters per day (twice tapping, morning and afternoon). Therefore the respondents considered it sufficient just to rely on wild aren tree with the average number of aren trees tapped only 7 tree per day.

3.2. Farmer’s motivation

Farming was a culture of Kolaka District community, especially in the plantation sector. However, they did not cultivate of aren plants. It was because nature has placed aren tree in abundance. Aren tree grows wild around the plantation community. Aren trees were a source of raw materials in the processing of aren sugar. The abundance of availability of aren trees in production central areas did not make 100% of the people did aren sugar processing business. It was varied motivation of people to join in aren sugar processing business. The indicator of motivation in this study, among others; motive of imitation, economic, security, affiliations, awards, and self-actualization. The motivation level of respondent and the social-economic characteristic for each motivation level could be seen in Table 2.

Table 2 showed that almost respondent (68.33%) have motivation in low category, and very few (3.33%) respondent with high motivation. It mean that the actual aren sugar processing business was not an option the main livelihood for the villagers in Kolaka District. They prefer plantations (such as, clove, cocoa, pepper), and produce aren sugar their leisure time.

There was the same average number of family dependents for the respondent in low and high motivation level. The average number of family dependents in the medium level of motivation have one person different with the other level. It mean that the dependent variations of respondent was relatively homogeneous, so it just have little contribution for motivation varied of respondents.

Respondent with low motivation levels have the highest average for the characteristic of business experience and age. Aren sugar processing business requires high energy, while increasing age could reduce respondent’s energy in conducting a series of activities to process aren sugar. It was as a

deduction motivation of farmer in practice the aren sugar processing business. The low motivation of respondent was also shown with the least amount of aren trees which were tapped every day than respondents who have medium and high motivation. It mean respondent with low motivation levels did not devote more time and energy than respondent in medium and high level of motivation. Table 8 also showed that the average education of respondent in high motivation level was the highest compare than motivation level. Although, they only have basic education of 9 years. The low education of respondents caused the limited employment opportunities so that they rely on their own livelihoods in the field of plantation and processing of aren sugar.

**Table 2. Characteristics of Respondents base on the Level of Motivation**

| Level of Motivation | Average Social-economic Characteristics | Aren tree taped (year) |
|---------------------|-----------------------------------------|-----------------------|
|                     | Age (year) | dependents (people) | education (year) | Business experience (year) |  |
| Low (68.33%)       | 47.63 | 3.00 | 7.60 | 19.10 | 6.50 |
| Medium (28%)       | 42.71 | 2.00 | 7.53 | 15.59 | 8.41 |
| High (3.33%)       | 44.00 | 3.00 | 9.00 | 17.50 | 8.50 |

The value of total motivation of respondents as in Table 3 was determined by six motive types underlying respondent did aren sugar processing business, including the motive of imitation, economic, security, affiliations, awards, and self-actualization. The six motive types of respondent clearly were be showed in the Table 3.

**Table 3. Six Motive Types of Respondent**

| Types of Motive | Criteria | Low | Medium | High |
|-----------------|----------|-----|--------|------|
|                 | Number (people) | Percent (%) | Number (people) | Percent (%) | Number (people) | Percent (%) |
| Motive of Imitation | 25 | 41.67 | 32 | 53.33 | 3 | 5.00 |
| Motive of Economic | 15 | 25.00 | 40 | 66.67 | 5 | 8.33 |
| Motive of Security | 33 | 55.00 | 26 | 43.33 | 1 | 1.67 |
| Motive of Affiliation | 44 | 73.33 | 16 | 26.67 | 0 | 0.00 |
| Motive of Award | 40 | 66.67 | 17 | 28.33 | 3 | 5.00 |
| Motive of Self-actualization | 48 | 80.00 | 11 | 18.33 | 1 | 1.67 |

The results of this study answers the phenomenon of decreasing the number of aren sugar processing business at the sites. Motivation of respondent that was varied in the category of high, medium and low could be caused by a variety of socio-economic characteristics.

3.2.1 Motive of imitation. Respondents produced aren sugar tend to be motivated by a desire to imitate people in the vicinity who had previously pursue the processing of aren sugar. Table 3 showed that the imitation motive of respondents was dominant on the medium criteria. Respondents more imitating aren sugar processing business conducted community around their homes (67.00%) than to imitate their parents (13.33%). It could be explained that many parents of respondents who were not background as aren sugar processor. Aren sugar processing was a new experience for the respondent. Firstly, they known it after seeing the community comes first in the Village of Talowe Ponrewaru and Langgomali. Almost respondents were immigrants from South Sulawesi. Respondents decided to run aren sugar processing business despite not having a heritage of expertise. Their decision were also due to the abundant availability of aren trees as a source of raw materials in their surroundings.

3.2.2 Motive of economic. The desire of respondents obtained economic benefits to meet the physical needs (food, drink, and home) was an encouragement for them in aren sugar processing business. Physical needs was the most fundamental thing in Maslow's hierarchy of needs. Table 3 showed that the almost motivation of respondents in aren sugar processing business have economic motive in the medium category. Only 8.33% of respondents who reasoned that aren sugar processing business provides high gain so that it became the main livelihood. It could be explained that the economic
motive was more based on the grounds that the aren sugar processing business just requires small capital. It was because the main raw material source (aren sap) obtained free of charge from the natural resources around the respondents. The main auxiliary material for aren sugar processing such as firewood was for free (no fee), as well as labor because they used family labor (wife) only [4]. The benefit of aren sugar processing business could not be said to be high. However, regardless of aren sugar produced by respondents always sold out (95% of respondents). It supported also by the low risk category of aren sugar [6]. According to [8] palm sugar domestic industry was financially feasible. Therefore, aren sugar processing business was very helpful respondents to meet their daily basic needs. This was become a major economic motive to pursue the respondents in aren sugar processing business.

3.2.3 Motive of security. Not only the physical needs that was required by respondents but also security needs. It mean safety education for their children as well as savings for their unexpected needs. Security motive have become one of their reasons to pursue the aren sugar processing business. Table 3 showed that the almost security motive of respondents were in low category (55.00%). It could be explained that only 37% of respondents were motivated to produce aren sugar for reasons of profit that could be used as educate funds for their children. Thus, more respondents who did not feel safe enough with profit from aren sugar processing business to education needs of their children or for their unexpected needs. Respondents were often owed to an aren sugar broker. As a result, aren sugar produced was a form of debt payments so that they no longer accept cash. It caused the respondents could not feel the profit from their aren sugar processing business.

3.2.4 Motive of affiliation. Fulfillment of social needs (affiliates) were further needs that must be met in addition to physical needs and safety. The desire of respondents to interact and cooperate with other farmers was a major driving force to pursue the aren sugar of processing business. Table 3 showed that the affiliation motive of respondent mostly low category (73.33%) even none of the respondents were categorized as high (0.00%). However, there was 3.00% of respondents were motivated to practice aren sugar processing business that could be interconnected with other farmers, especially when sap tapping activity so as to tighten the brotherhood. There were also 7% of respondents who were motivated to practice aren sugar processing business in order to meet and cooperate with other farmers. In this condition they did aren sugar processing business together. This was usually done by the respondents with plantation land (cocoa, clove, pepper) adjacent.

3.2.5 Motive of award. A power to obtain the best results so as to create a sense of pride or valued by others was essential for the existence of the respondents pursued aren sugar processing business. Table 3 showed that the motive of awards of respondent mostly were in low category (66.67%). It mean that aren sugar processing business was not something to be proud of but it did not considered low. In other words that aren sugar processing business was not the main job but also a marginal job. Aren sugar production was done every day by respondents, but just sidelines of their gardening activities.

3.2.6 Motive of self-actualization. Meeting of the highest needs base on popularity Need Theory is self-actualization needs. It could also motivate respondents in aren sugar processing business. Table 3 showed that mostly the self-actualization motive of respondents were at low category (80.00%). It mean aren sugar processing business could not be used as self-actualize place for the respondents. Only about 1.67% respondent who have high motive of self-actualization because of his awareness that aren sugar was a healthy sweetener and white sugar substitute. It was suitable with the result of [4] that palm plants that are free of artificial fertilizers and pesticides, the excellence nutrient content of aren sap and brown sugar and the uniqueness aroma of brown sugar.

Aren sugar processing business actually has great potential developed as a prestigious or competitive business as a container self-actualization for the respondents. In connection with that some things that can be done to improve business competitiveness is important to pay attention to customer behavior of aren sugar and or palm sugar. It has been investigated that the behavior of brown
sugar customers was influenced by age, and income of customer, texture of brown sugar, and dummy for purchasing reason [7]. [3].

4. Conclusion and Recommendation
Based on the results and discussion before, we could conclude some of the following (1) average state of socio-economic characteristics of aren sugar farmer that were in the category of productive age, which was 46.12 years old, has fulfill basic education category (9 years education), low category of dependents as many as three people, the average experience of aren sugar processing business during 18 years, and the average aren trees were tapped as much as seven trees, every day, (2) Farmer’s motivation in aren sugar processing business in low category, with the indicator is the motive of imitation, economic, security, affiliations, awards, and self-actualization. Economic motive give main contribution for the total value of farmer’s motivation.

Some things that could be recommended of the results of this study, namely (1) Farmers need to increase motivation in aren sugar processing business because of its healthy side, abundant available of sap from an aren tree, and its daily contribution, (2) Government need to increase attention to the increase in business scale, performance, and quality of aren sugar, also human resources quality in order to increase motivation for doing aren sugar processing business. It can be done by partnering with the universities and nongovernmental organizations.

References
[1] BPS Sultra 2016 Sulawesi Tenggara dalam Angka (Southeast Sulawesi in number) (Kendari : Badan Pusat Statistik. Kendari)
[2] Luanmase, C.M., S. Nurtini, F.T, dan Haryadi 2011 Analisis Motivasi Beternak Sapi Potong bagi Peternak Lokal dan transmigran serta Pengaruhnya terhadap pendapatan di Kairatu, Kabupaten Seram Bagian Barat (Cow farm motivation analysis for local farmers and transmigrants and its effect on income in Kairatu, West District of Seram). *Buletin Peternakan*. **35(2)** 113-123
[3] Abdullah WG, Rianse U, Iswandi RM, Taridala SAA, Rianse IS, Zulfikar ZL, Widayati W, Baka LR, Abdi AL, Cahyono E 2014 Mathematical Model of Factors Influencing the Consumption of Brown Sugar in Southeast Sulawesi, 2014 *Proceedings of the 2th International Conference on Mathematical, Computational and Statistical Sciences (MCSS '14)* 421-428
[4] Abdullah WG, Rianse U, Iswandi RM, Taridala SAA, Rianse IS, Zulfikar LZ, Baka LR, La Abdi A, Cahyono E, Widayati W and Baka WK 2015 Potency of natural sweetener: Brown sugar. *WSEAS Transaction on business and economics* **12** 99-110
[5] Abdullah WG, Rianse U, Iswandi RM, Taridala SAA, Rianse IS, Zulfikar ZL, Abdi AL, Widayati W, Baka WK, Cahyono E 2015 Economics of Aren Brown Sugar Production in Indonesia: Supply Analysis at Farm Level. *Proceedings of the 4th International Conference on Agricultural Science, Biotechnology, Food and Animal* (ABIFA '15) 332-339
[6] Abdullah WG, Rianse U, Iswandi RM, Taridala SAA, Yunus L,Fausayana I, Dirgantoro MA, Rianse IS 2016 Mapping and Preference of Marketing Risk of Eco Sweetener ‘Aren Sugar’. *International Journal of Environmental Science* **1** 133-139
[7] Baka WK, Rianse U, Sidu D, Widayati W, Cahyono E, Rianse IS, Zulfikar L, Abdi AL and Baka LR 2016 Customer Behaviour Model of Brown Sugar Commodity *Int. J. Business Innovation and Research* **11(3)** 444-60
[8] Rianse IS, Abdullah WG, Midi LO, Hartono S, Suryantini A, Jamhari, Widayati W. Financial, Economic and Environmental Feasibility Analysis of Palm Sugar Domestic Industry in Kolaka, Indonesia. *International Journal of Economics and Management Systems* **1** 104-109