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Factors affecting the income of Cassiavera farmers in Kerinci Regency

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ABSTRACT

Cassiavera's contribution to the regional economy of Kerinci Regency is 5.58%, 6.35% to the gross value added, and 21.23% the contribution to regional exports. Cassiavera's lands are mostly controlled by "white-collar farmers" or in The local language is called "land lord". If there is an increase in the price of Cassiavera, then the "white-collar farmers" will benefit, not the cultivators or "black-collar farmers". "Black-collar farmers" are those who actually work on Cassiavera lands, only labor or wage farmers with a piece-work or daily system. The increase in Cassiavera prices does not directly increase the welfare of Cassiavera farmers. This study aims to analyze and determine the factors that affect the income of Cassiavera farmers in Kerinci Regency. The analytical method used is descriptive Crosstab method and multiple linear regression with Ordinary Least Square (OLS). The results of the Crosstab tabulation show that there is a relationship between Cassiavera's age, education, labor and land area with Cassivaera's farm income, while the number of stems has no relationship with Cassivaera's farm income. The results of this regression indicate that, partially Cassiavera age, labor and land area have a significant and significant effect on the income of Cassiavera farmers in Kerinci Regency, while the number of stems and education have no effect on the income of Cassiavera farmers. Simultaneously, all variables of Cassiavera age, number of stems, education, labor and land area have a significant effect on farmers' income.

Keywords:
Cassiavera's age, Income, Land area, Number of stems, Workforce

1. Introduction

Cassiavera is one of the popular spices used in cooking, besides that it is also used as an ingredient in medicinal products, beverages, and perfumes. besides that, it is also used in the cosmetic, pharmaceutical and cigarette industries. In the pharmaceutical world, Cassiavera has antibacterial, antifungal, antiviral, antioxidant, and antitumor properties, lowers blood pressure, cholesterol, and contains low aliphatic compounds [1]. The many benefits of Cassiavera that have the potential to be developed.

As the largest Cassiavera exporter in the world, Indonesia has areas that produce Cassiavera, including Sumatra, which is 97.3 percent, and Kalimantan, 0.16 percent [2]. According to Alimah [3] Cassiavera producing areas in Indonesia are mostly located in West Sumatra and Jambi Province. Kerinci Regency is the largest district in Cassiavera development with a planting area of 40,762 ha and the production value reaches 52,980 tons (64.92%) of the total national production. According to Erfit [4] and Nurhayani et al. [5], Indonesia's Cassiavera production center is in Kerinci Regency which is a supplier of 80 percent of total Cassiavera exports. Land is an important factor in agricultural activities, the wider the area of land, the more plants will be planted [6].

Table 1. Cassiavera plantation area by regency/city in Jambi Province 2010–2018 (ha)

Regency/City	Year					
	2010	2012	2014	2016	2017	2018
Kerinci	40.771	40.962	40.861	40.762	40.687	40.637
Merangin	4 983	5.017	4.339	4.233	4.282	4.190
Sarolangun	633	633	633	584	580	580
Bungo	233	233	233	232	54	24
Kota Sungai Penuh	-	347	329	321	321	324
Provinsi	41.637	47.192	46.395	46.132	45.924	45.755

Source: Jambi Province in figures, multiple years

Cassiavera's contribution to the regional economy of Kerinci Regency in the formation of output is 5.58%, to the gross value added of 6.35%, and the contribution to the formation of regional exports is 21.23%., It is seen that Cassiavera has an important and dominant role in the formation of regional exports. Overall Cassiavera is one of the important factors that can play a role in the regional economy of Kerinci Regency. Based on data from BPS-Statistics of Kerinci Regency [2], production reached 80,699 tons with an area of 40,637 ha and the price of Cassiavera has increased in the last two years where previously it was Rp. 4,000 per kg, in 2018 the price reached Rp. 35,000 per kg. This is because the Cassiavera commodity has been included in Geographical Indications, or product guarantee certification. Most of the farmers switched to more profitable crops and did not have to wait long to wait for the harvest. Merangin Regency is the second Cassiavera-producing district, but its production is much lower than Kerinci.

Income is a reward from the relationship between the factors of production of land, labor, capital and management, or the remainder of the reduction in the value of the receipts obtained with the costs incurred. Then the analysis of farm income is used to determine the success of the farming itself. This analysis can describe the current state of farming so that it can evaluate the planning of farming activities in the future [7]. According to [8] the concept of revenue, cost and income is closely related to the appearance of the farm. Revenue is defined as the value of the total farm product in a certain period of time, whether sold or not sold.

Cassiavera's ownership in Kerinci Regency is mostly "white-collar farmers" (Cassiavera owners whose main jobs are not farmers, for example as officials, bureaucrats, politicians, officials and civil servants) Cassiavera's lands are mostly controlled by "white-collar farmers" or in The local language is called “landlord”. If there is an increase in the price of Cassiavera, then the "white-collar farmers" will benefit, not the cultivators or "black-collar farmers". “Black-collar farmers” are those who actually work on Cassiavera lands, only labor or wage farmers with a piece-work or daily system. The increase in Cassiavera prices does not directly increase the welfare of Cassiavera farmers. The farmers referred to in this study are farmers whose Cassiavera land is privately owned and managed by themselves. According to Menggala [9], farmers in Talang Kemuning have other sources of income apart from Cinnamon, some of the problems they face are on-farm and off-farm. And to be able to increase farmers' income can be done by increasing farmers' knowledge about standards.

2. Materials and Methods

The type of data used in this study is in the form of primary data and is supported by secondary data. Primary data are collected directly from the objects observed either through questionnaires or interviews, then processed, compiled, and classified. The data was obtained through a survey method by filling out questionnaires given to respondents and added to the results of interviews. The data used are Cassiavera age, number of stems, farmer education, number of workers, land area and income. Secondary data is obtained in the form that has been published by the first party, namely the party who collects, processes, and publishes the data. In this study, the secondary data sources were literature, articles, journals related to research and the Central Bureau of Statistics (BPS), which were taken either directly or through official agency websites.

The location selection was based on the amount of Cassiavera production in Jambi Province. The location selection was determined in Kerinci Regency because Kerinci Regency is the largest Cassiavera producing area and the results of this plantation are expected to improve the welfare of the community. The population in this study are farmers who own Cassiavera and have sold their Cassiavera in one year. The sampling technique in this study was carried out through the purposive sampling method [10,11]. Purposive sampling is a sampling technique with certain considerations that are considered relevant or can represent the object to be studied. The number of samples used in this study was 100 samples.

This study uses the Income Function Analysis Model. The Income Function Analysis Model is the model used to see the variables that affect Casasiavera's income are as follows**.**

$$LnCFI = ß_0+ß_1CP_1+ß_2AGE_2+ß_3ROD_3+ß_4EDU_4+ß_5LR_5+ß_6LL_6+e \quad (1)$$

Where:

CFI = Cassiavera farmer income (Rp)
CP = Cassiavera Price (Thousand Rupiah)
AGE = Cassiavera Age (years)
ROD = Number of Rods (Stems)
EDU = Head of Family education (years)
LR = Number of workers in the family
LL = Farmer's land area (ha)
$ß_{1-6}$ = Regression coefficient of each factor of production
$ß_0$ = Intercept (constant)
e = Error term.

Classical assumption test includes linearity test, normality test, multicollinearity test, heteroscedasticity test and autocorrelation test to get valid estimation results and meet the BLUE criteria (best linear unbiased estimator). If the classical linear assumptions are met, the results obtained with OLS are BLUE (Best Linear Unbiased Estimator) [12]. In this study, hypothesis testing was used to determine the partial test (t test) and simultaneous test (F test) of each equation model. Coefficient of

Determination (R2), The coefficient of determination aims to determine how far the ability of the regression model to explain the dependent variation.

3. Results and Discussion

3.1. The Relationship Between the Number of Stems and Farm Income

Based on the results of the cross-tabulation analysis between the number of goods and income, it is known that the two have no relationship, it can be seen in Table 2.

Table 2. Rod-income chi-square test

Related Variables	Asymp.Sig	Df	Probability
Number of Rods with income	0.55	1,064	0.55 (>0.05)

Source: Data processed using Eviews 8.0

Based on the results of the crosstab table calculation, it can be seen that the number of Cassivera stems is not related to income, indicating that the large number of stems is not accompanied by the amount of income. The large number of trees if not maintained properly will also not produce maximum production.

3.2. The Relationship Between Education and Farm Income

Based on the results of the crosstabulation analysis between education and Cassiavera's income, it is known that both have a relationship, it can be seen in Table 3.

Table 3. Education-income chi-square test

Related Variables	Asymp.Sig	Df	Probability
Education with income	0.011	224	0.011 (<0.05)

Source: Data processed using Eviews 8

Based on the results of the crosstab table calculation, it can be seen that with 42 farmers with high school education and there are 7.1% income of Rp. 900,000,000,-. There are 4 farmers who have graduated, from 4 farmers there is 1 farmer who has a farming income of Rp. 1,560,000,000,-. Through education, one's knowledge will increase which will be useful for learning skills. Someone who has high education is faster to carry out modern farming activities or adopt new innovations compared to farmers who have low education.

3.3. The Relationship Between Cassiavera Labor and Farm Income

Based on the results of the cross tabulation analysis between labor and Cassiavera farm income, it is known that both have a relationship, it can be seen in Table 4. Based on the results of the crosstab table calculations show that the largest workforce is 20 people or 18%. The highest workforce is 230 people with an income level of Rp. 4,300,000,000,-. While the lowest workforce is as many as 2 people with an average farm income of Rp. 130,000,000, -. In the production process, labor is needed according to the work to the maximum level, because if there is an excess of labor, it will reduce farmers' income.

Table 4. Labor-income chi-square test

Related Variables	Asymp.Sig	Df	Probability
Labor with income	0.000	1,512	0.000 (<0.05)

Source: Data processed using Eviews 8

3.4. The Relationship of Cassiavera Land Area to Farm Income

Based on the results of the crosstabulation analysis between land area and Cassiavera farm income, it is known that the two have a relationship, which can be seen in Table 5.

Table 5. Land area-income chi-square test

Related Variables	Asymp.Sig	Df	Probability
Labor with income	0.000	1,512	0.000 (<0.05)

Source: Data processed using Eviews 8.0

Based on the results of the crosstab table calculations show that the largest Cassivera land area is 2 ha, which is 39% and there are 17% of farmers having a land area of 3 ha and 20% of farmers having an area of 1 ha. The largest land area is 9 ha with a farm income of Rp. 4,300,000,000, -. From the point of view of efficiency, the larger the area of land cultivated, the higher the production and income per unit area. The larger or more land area, the greater the productivity of the products produced and have an impact on increasing farmers' income. Increased rice production can be carried out with intense agricultural activities, intensification in the implementation of agriculture is land management or land area aged 10 years, namely as much as 24% average income of Rp. 900,000,000,-. At the age of 30 years Cassiavera there is 1 farmer who has an income of Rp. 4,300,000,000,-. And there is 1 farmer whose age Cassiavera is 5 years with an income of Rp. 70,000,000, -, this indicates that the age of 5 years old Cassiavera does not yet have a high selling value.

3.5. Income Function Analysis Regression Results

Regression results obtained from processing using Eviews 8.0, the estimation results are obtained as follows:

Table 6. Regression results

Variables	Coefficient	t-statistics	Probabilita	R-squared	F-statistics (Prob)
C	-1523,118	-2,844124	0,0055	0,6856	41,0020
AGE	137,4152	5,751560	0,0000		0.0000
ROD	-60,55683	-0,099780	0,9207		
EDU	13,15845	0,503360	0,6159		
LR	12,57074	3,959408	0,0001		
LL	516,3417	2,538732	0,0128		

Source: Data processed using Eviews 8.0

Based on the results of the regression test (table 2) it is known that the constant (C) of -424.32 means that if Cassiavera's age, number of parents, education, labor and

land area do not change, the income is -424.32. Cassiavera's age has a significant effect on income. This can be seen from the value of t-count > t-table (1.7047 > 1.66123) and the probability of the Cassiavera age variable being smaller than the 10 percent alpha level (0.091 < 0.10) meaning H1 is accepted which means the variable age of Cassiavera farmers significant effect on the income variable. With the regression coefficient of the Cassiavera age variable is 11.17. This means that every 1 year increase in Cassiavera's age will increase the income of Cassiavera farmers by 11.17 percent. The number of stems has a significant effect on income. It can be seen from the value of t-count > t-table (2.238 > 1.66123). And the probability of the variable number of stems is smaller than the alpha level of 5 percent (0.035 < 0.05). it means that H1 is accepted, which means that the variable number of stems has a significant effect on the income variable. With the regression coefficient of the variable number of Cassiavera stems is -0.045. This means that each increase in the number of Cassiavera stems will reduce Cassiavera farming income by 0.045 percent.

Education. Education has no significant effect on income. It can be seen from the value of t-count < t-table (0.5379 < 1.66123). And the probability of the education variable is smaller than the 5 percent alpha level (0.591>0.05). it means that H0 is accepted, which means that the education variable has no significant effect on the income variable.

Labor has a significant effect on income. This can be seen from the value of t-count > t-table (8,164 > 1.6123). And the probability of the labor variable is smaller than the 5 percent alpha level (0.000 < 0.05). it means that H1 is accepted, which means that the labor variable has a significant effect on the income variable. With the regression coefficient of the labor variable 12.26. This means that each additional 1 person in the workforce will increase the income of Cassiavera farmers by 12.5 percent. Land area has a significant effect on income, this can be seen from the value of t-count > t-table (8.8089> 1.66123). And the probability of the water content variable is smaller than the 5 percent alpha level (0.000 < 0.05). it means that H1 is accepted, which means that the land area variable has a significant effect on the income variable. With the regression coefficient of the land area variable is 275.6530. This means that every additional 1 hectare of land area will increase income by 275.65 percent.

3.6. Classic Assumption Test

First test, linearity test. It was found that the value of the F-statistics is smaller than the F table used, namely (1.2115 < 2.70) meaning, the data used in this study is linear. Second test, the normality test show that the value of Jarque Bera (JB) has a smaller value than the value of X2 Table (108.8165 < 116.5110) so it can be concluded that the data is normally distributed. The third test, by using the Serial Correlation LM Test statistic available in the Eviews program, it can be seen that, the value of Obs*R-Squared is smaller than X2 table (5.0032 < 116.5110), then H1 is accepted and H0 is rejected, the conclusion is with a confidence level of 95 percent, it can be said that there is no autocorrelation in the regression model. Fourth test, the multicollinearity test. Based on the correlation matrix for the variables. The last test, heteroscedasticity test. Obs*R-squared < X2 table (48.09418 < 116.5110) it can be concluded that the data does not have heteroscedasticity problems as seen from the results of Obs*R-squared which is smaller than the value of X2 table.From the results of the classical assumption test that has been carried out, it can be concluded

that the data are free from classical assumptions, both linearity test, normality test, autocorrelation test, multicollinearity test and heteroscedasticity test. So it can be continued with regression testing.

3.7. Hyphothesis Test

3.7.1 Partial Test (t-Test)

This test was conducted to determine whether each independent variable of Cassiavera age, number of stems, farmer education, labor and land area had an effect or not on the dependent variable. Based on the results of the regression test (table 5.6) it is known that Cassiavera's age has a significant effect on income. This can be seen from the value of t-count > t-table (5.75156 > 1.66123) and the probability of Cassiavera's age variable being smaller than the 5 percent alpha level (0.0000 < 0.05) meaning H1 is accepted which means Cassiavera's age variable has an effect significant to the income variable. With the regression coefficient of the Cassiavera age variable is 137.4152. This means that every 1-year increase in Cassiavera's age will increase the income of Cassiavera farmers by 137.4 percent.

The number of stems has no significant effect on income. It can be seen from the value of t-count < t-table (0.099780 < 1.66123). And the probability of the water content variable is smaller than the 5 percent alpha level (0.9207 > 0.05). it means that H1 is rejected, which means that the variable number of stems has no significant effect on the income variable. Education has no significant effect on income. It can be seen from the value of t-count < t-table (0.50336 < 1.66123). And the probability of the water content variable is smaller than the 5 percent alpha level (0.6159>0.05). it means that H1 is rejected, which means that the variable number of stems has no significant effect on the income variable.

Labor has a significant effect on income. This can be seen from the value of t-count > t-table (3.9594 > 1.6123). And the probability of the labor variable is smaller than the 5 percent alpha level (0.0001 < 0.05). it means that H1 is accepted, which means that the labor variable has a significant effect on the income variable. With the regression coefficient of the labor variable 12,57074. This means that each additional 1 person in the workforce will increase the income of Cassiavera farmers by 12.5 percent. Land area has a significant effect on income, this can be seen from the value of t-count > t-table (2.538732 > 1.66123). And the probability of the water content variable is smaller than the alpha level of 5 percent (0.0128 < 0.05). it means that H1 is accepted, which means that the land area variable has a significant effect on the income variable. With the regression coefficient of the variable land area is 516.3417 This means that every additional 1 hectare of land area will increase income by 516.3 percent.

3.7.2 Simultaneous Test (F-Test)

The F test was carried out to test and determine whether the variables of water content and quality together influenced the price of Cassiavera. Based on the results obtained (table 5.12), it is known that the calculated F value is 41.00204 greater than the F table value is 2.10 and the calculated F probability is less than the 5 percent confidence level (0.0000 < 0.005). So, it can be concluded that F-count > F-table means that H1 is accepted, all independent variables (Cassiavera age, number of stems, labor, land area and education) together have an influence on the dependent variable of Cassiavera farmers' income.

3.7.3 Coefficient of Determination (R^2)

Based on Table 2, the results of R2 are 0.6856 or 68.56 percent. This shows that the variables of Cassiavera age, number of stems, education, labor, and land area in explaining the income variable of Cassiavera farmers are 68.56 percent, while the remaining 31.44 percent is explained by other variables not examined.

3.8. Discussion

3.8.1 Effect of Cassiavera Age on Farmer's Income

Casiavera's age has a significant and positive effect on the income variable of Cassiavera farmers in Kerinci Regency. Harvest age greatly affects Cassiavera bark production, the older the bark, the thicker the bark and the higher the quality [13]. The high quality will increase the price thus increasing the income of Cassiavera farmers. To get good quality in terms of stick shape, your ideal harvest age is 6–12 years. This is because the skin is not so thick that it easily rolls well. It's just that Cassiavera aged 6–12 years is still low in oil content. High oil content is obtained from plants that are more than 15 years old, for example plants over 20 years old, the oil content is around 3.5–4.5 percent.

3.8.2 Effect of Number of Trees on Farmer's Income

The number of trees has no effect on the income of Cassiavera farmers. Although the number of trees is not much, but the age of Cassiavera is old or the quality is good, then the selling price will be high [14]. The large number of trees if not maintained properly will also not produce maximum production. Production yields also depend on the type of plant, the height of the planting site, cultivation techniques and processing of the harvest. Thinning is a maintenance activity, this is intended to reduce dense plants, so that sunlight enters the interior and so that plants grow well.

3.8.3 The Effect of Education on Farmers' Income

Education has no significant effect on income. The education of Cassiavera farmers in the research area varies from elementary school graduation to college graduation, the income of Cassiavera farmers cannot be related to the education of the farmers. If the variety of education is not accompanied by experience and training on Cassiavera cultivation, it will not help the level of competence in farming much. The results of this study have similarities with the allocation theory proposed by Lester Thurow in 1974, John Meyer in 1977 and Randall Collins in 1979. This theory states that the level of education is not always in accordance with the quality of the work, so that people with high or low education do not differ in their productivity in completing the same work.

3.8.4 Effect of Labor on Farmers' Income

Labor has a significant and positive effect on the income variable of Cassiavera farmers in Kerinci Regency. The amount of labor used in a farming activity is very influential on farm income, the large number planted in a large area makes the use of labor increase [15]. The large number of workers in Cassiavera farming will facilitate farming activities, such as planting, clearing the surrounding land, until

harvesting is done effectively which will have an impact on Cassiavera production and can increase the income of Cassiavera farmers.

3.8.5 Effect of Land Area on Farmer's Income

Land area has a significant and positive effect on the income variable of Cassiavera farmers in Kerinci Regency. The larger the area planted, the more production will be produced so that farmers' income will also increase. The area of agricultural land can affect the efficiency or inefficiency of an agricultural business, the use of inputs will be more efficient if the land used is wider. On the other hand, the narrower the land used, the less efficient the farming will be.

4. Conclusion

Based on the results and discussion of this research, several important conclusions can be drawn as follows. The age of Cassiavera affects the production of Cassiavera bark, the older it is, the thicker the bark and the higher the quality. The high quality will increase the price thus increasing the income of Cassiavera farmers. Labor affects farmers' income. Usually, small farmers will need a little labor and on the other hand large farmers will need a large workforce. The number of plants planted requires more labor, making it easier for farming activities which will have an impact on Cassiavera production and can increase the income of Cassiavera farmers. Land area affects farmers' income. The wider the Cassiavera plantation area, the greater the amount of production which has an impact on increasing farmers' income. The number of trees has no effect on the income of Cassiavera farmers. Although the number of trees is not much, but the age of Cassiavera is old or the quality is good, then the selling price will be high. The large number of trees if not maintained properly will also not produce maximum production. The education of Cassiavera farmers in the research area varies from elementary school graduation to college graduation, the variety of education is not accompanied by experience and knowledge in managing farming the results will also not be optimal. Farmers who have low education but have skills and often attend Cassiavera cultivation training will be more helpful in producing both in terms of care and harvesting processes.

References

1. Bandara T, Uluwaduge I, Jansz ER. Bioactivity of cinnamon with special emphasis on diabetes mellitus: A review. Int J Food Sci Nutr. Taylor & Francis; 2012;63:380–6.
2. BPS-Statistics of Kerinci Regency. Kabupaten Kerinci dalam angka. Kerinci; 2018.
3. Alimah D. Studi pengusahaan kayu manis di hulu sungai selatan, Kalimantan Selatan. Galam. 2015;1:9–19.
4. Erfit. Studi tentang kinerja sektor pertanian Provinsi Jambi tahun 2005-2009. J Paradig Ekon. 2014;9:25–32.
5. Nurhayani, Rosmeli. Guncangan harga dan pangsa pasar ekspor kayu manis Kabupaten Kerinci. J Sains Sosio Hum. 2019;3:189–97.
6. Dirgasová K, Bandlerová A, Lazíková J. Factors affecting the price of agricultural land in Slovakia. J Cent Eur Agric. Journal of Central European Agriculture;

2017;18:291–304.
7. Soeharjo, Patong D. Sendi-sendi pokok ilmu usahatani. Bogor: Departemen Ilmu-Ilmu Sosial Ekonomi IPB; 1973.
8. Soekartawi. Prinsip dasar ekonomi pertanian: teori dan aplikasi. Jakarta: Raja Grafindo Persada; 1993.
9. Menggala SR, Damme P V. Improving Cinnamomum burmannii Blume value chains for farmer livelihood in Kerinci, Indonesia. Eur J Nat Sci Med. 2021;4:92–121.
10. Effendy RS. Peranan pendidikan dan produktivitas sektor pertanian terhadap penurunan tingkat kemiskinan di Jawa Tengah. Media Ekon dan Manaj. 2017;32:108–18.
11. Sugiyono. Metode penelitian bisnis, pendekatan kuantitatif, kualitatiff, kombinasi, dan R&D. 3rd ed. Bandung: CV Alfabeta; 2018.
12. Gujarati DN. Basic Econometrics. New York: McGraw-Hill; 2003.
13. Baguna FL, Kaddas F. Analisis rantai nilai dan kontribusi pendapatan terhadap pemanfaatan HHBK kayu manis di Pulau Tidore. J Inov Penelit. 2021;1:1787–94.
14. Rismunandar, Paimin FB. Kayu manis: budidaya dan pengolahan. Jakarta: Penebar Swadaya; 2009.
15. Mawardati. Analisis pendapatan usahatani kelapa sawit perkebunan rakyat di Kabupaten Aceh Utara. J AGRIFOR. 2016;1:19–29.