Arabica Coffee Agribusiness in Prigen District, Pasuruan Regency.

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ABSTRACT

Arabica coffee is an exotic commodity whose demand continues to grow every year. Agribusiness is an important aspect of the development of Arabica coffee commodities, agribusiness consists of four subsystems namely production facilities subsystem, on-farm subsystem, processing subsystem, and marketing subsystem. This study aims to analyze the effect of each subsystem on the income of Arabica coffee agribusiness and the influence between agribusiness subsystems on Arabica coffee agribusiness. This study used the PLS-SEM method with Warp-PLS software. The test results show that there is a positive and significant influence between the production facilities and infrastructure subsystem variables on the Arabica coffee agribusiness income, the marketing subsystem variable to the Arabica coffee agribusiness income variable, the production facilities and infrastructure subsystem variable, the influence of the farming subsystem variable on the processing subsystem variable, the processing subsystem variable on the marketing subsystem variable. Then it is known that there is a positive influence and no significant effect or a weak level of significance between the farming subsystem variables on the Arabica coffee agribusiness income variable, and there is a negative influence and there is a significant influence between the processing subsystem variables on the income variable of Arabica coffee agribusiness.

Keywords– Agribusiness, Agribusiness Subsystem, Income, Arabica Coffee, SEM-PLS.

INTRODUCTION

Coffee is a plantation commodity that plays an important role in the national economy. This can be seen from the role of the coffee plantation sector in providing employment and increasing foreign exchange through exports. The coffee agro-industry can provide jobs as collectors' traders to coffee exporters, large plantation workers, and coffee processing industrial workers.

The coffee commodity has relatively bright prospects in the future, this is especially given the international market prospects which tend to increase, thus creating opportunities for Indonesia to increase its market share for coffee exports, both specialty types and processed coffee products. The development of specialty coffee with certain geographical indications and the diversification of processed coffee have a very crucial meaning because they can become Indonesia's superior indigenous commodities that have high competitiveness in the international market. The demands of world coffee consumers who want coffee products *back to nature* like *roasted coffee* and specialty coffee which is becoming an interest in big cities in the world, making coffee have even brighter prospects in the future (Winarno *et al.*, 2017).

Agribusiness is an activity that is intact and cannot be separated from one activity to another, starting from the production process, product processing, marketing, and other activities related to agricultural activities (Soekartawi, 2007). In the agribusiness system, subsystem 1, namely the provision of production facilities and infrastructure in the upstream sector. Subsystem 1 consists of procuring raw materials, fertilizers, and production equipment. Continuity and raw material resources are identified as very strong factors in the procurement of raw materials for the processing industry (Suryaningrat, 2016). According to Rahim and Retno Dwi Hastuti (2008), farming is a science that studies how farmers manage inputs or factors of

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production (land, labor, capital, fertilizer, seeds) effectively, and efficiently, and continue to produce high production so that their income increases. The agribusiness processing subsystem is the post-harvest handling of agricultural products that makes or creates raw materials into finished products and converts raw materials into finished products, which have added value through processing techniques (Rahim & Hastuti, 2005).

Table 1 The Largest Coffee-Producing Countries in 2020

No	Country	Production (million sacks @ 60kg)
1.	Brazil	63.4
2.	Vietnam	29
3.	Colombia	14.3
4.	Indonesia	11.95
5.	Ethiopia	7.37
6.	Honduras	6.1
7.	Uganda	5.62
8.	Mexico	4
9.	Peru	3.8
10.	Guatemala	3.75

Sumber: (International Coffee Organization, 2020)

Indonesia is ranked 4th (fourth) in the world as a coffee producer in 2020, producing 11.95 million 60kg sacks. Production data for the world's 10 largest coffee-producing countries in 2020 is presented in Table 1 (International Coffee Organization, 2020).

The demand for Arabica coffee is increasing every year, so the opportunity must be taken advantage of. The Directorate General of the Ministry of Agriculture responded by holding a development program for Arabica coffee to be able to increase Arabica coffee production to a minimum of 30% of the total Arabica and Robusta coffee production within the next 10 years. Currently, Indonesia is recorded as having a variety of specialty coffees, such as Toraja coffee, Kalosi coffee, Java coffee, Gayo coffee, Mandheling coffee, Bali Kintamani coffee, Flores Bajawa coffee, Baliem Coffee, and others (Directorate General of Plantations, 2014).

Table 2 Total Pasuruan Regency Coffee Production 2018-2019

Subdistrict	Total Coffee Production (tonnes)	
	2018	2019
Tutur	658,36	688,47
Tosari	18,3	45,02
Lumbang	59,66	88,98
Prigen	109,75	183,27
Puspo	162,26	88,2
Purwodadi	256,9	44,49
Purwosari	55,21	163,47
Pasrepan	35,11	63,53

Source: (BPS Pasuruan Regency, 2019).

There are 24 sub-districts in Pasuruan district, 8 of which produce coffee and only 6 sub-districts whose production is increasing. The highest increase in coffee production from 2018 to 2019 was in Purwosari District with 108.26 tons of coffee, Prigen District ranked 2nd with an increase in productivity of 73.52 tons in 2019. (BPS Pasuruan, 2019).

The problem in this study is that the productivity of Arabica coffee in Prigen District is still not optimal, this can be seen in Table 1.2, with Arabica coffee productivity that is less than optimal, the fulfillment of coffee market needs is not fulfilled properly so that the income of Arabica coffee farmers in Prigen District is less than optimal. Apart from this, Arabica coffee farmers in Prigen District also face problems related to the quality of coffee products which must be able to compete in the coffee market. Meanwhile, Pasuruan Regency has several sub-districts that produce Arabica coffee, giving rise to competition for Arabica coffee productivity to hook the increasing Arabica coffee market. Because of this, I, as a writer, am interested in conducting research with the title "Agribusiness of Arabica Coffee in Prigen District, Pasuruan Regency".

This study aims to analyze the effect of the agribusiness subsystem on arabica coffee agribusiness income and analyze the influence of production facilities and infrastructure subsystem on the farming subsystem, the effect of the farming subsystem on the processing subsystem, the influence of the processing subsystem on marketing subsystem on arabica coffee agribusiness in Prigen District, Pasuruan Regency.

Research method

This research was conducted in Prigen District, Pasuruan Regency. The object of this research is Arabica coffee agribusiness. The time in this research was carried out from February 2023 – March 2023. The method used was to make observations, and conduct interviews through questions on the questionnaire that had been prepared. How to take samples in this study using the method of *snowball sampling* with a total sample of 50 Arabica coffee farmers who manage coffee from upstream to downstream. Data analysis in this study used two methods, descriptive analysis, and PLS-SEM analysis. Descriptive analysis is used to describe the results of the PLS-SEM analysis. SEM-PLS analysis is used to analyze the influence of the production facilities subsystem, farming subsystem, processing subsystem, and agribusiness marketing subsystem on Arabica coffee agribusiness income and the influence between agribusiness subsystems. SEM-PLS stages are the outer model, evaluation of the measurement model, inner model, and variable significance effect test.

A research variable is an attribute, trait, or value of a person, object, organization, or activity that has certain variations determined by the researcher to be studied, then conclusions are drawn (Sugiyono, 2016). The research variables are defined as follows:

Table 3 Exogenous Variable Measurement Scale

No.	Variable Name	Indicator
1	Subsystem I ( )	1. Seeds 2. Fertilizer 3. Agricultural equipment 4. Plant medicine
2	Subsystem II ( )	1. plant maintenance 2. harvest

3	Subsystem III ( )	1. Agro-industry 2. Value added 3. Processing
4	Subsystem IV ( )	1. Price 2. Product 3. Promotion 4. Location
5	Coffee Agribusiness Revenue ( )	*1.* Income

RESULTS AND DISCUSSION

Measurement Model Evaluation (outer model)

Convergent Validity

Table 4 Outer Loading Value

Variable	Indicator	*Outer Loading*
Production Facilities Subsystem (X1)	X1.1	0,986
	X1.2	0,986
	X1.3	0,752
	X1.4	0,986
On Farm Subsystem (X2)	X2.1	0,867
	X2.2	0,867
Processing Subsystem (X3)	X3.1	0,749
	X3.2	0,918
	X3.3	0,919
Marketing Subsystem (X4)	X4.1	0,585
	X4.2	0,883
	X4.3	0,923
	X4.4	0,855
Agribusiness Revenue (Y)	Y1.1	1.000

Source: Primary data processed (2023)

Table 5 AVE (Average Variance Extracted)

Variable	AVE (*Average Variance Extracted*)
Production Facilities Subsystem (X1)	0,870
On Farm Subsystem (X2)	0,752
Processing Subsystem (X3)	0,749
Marketing Subsystem (X4)	0,676
Agribusiness Revenue (Y)	1.000

Source: Primary data processed (2023)

Table 6 shows the validity testing indicators that have met the valid requirements, namely value *loading factor* greater than 0.7, but in the X4.1 indicator the value is below 0.7 which is equal to 0.585, table 7 shows that the X4.1 indicator does not increase *average variance extracted* (AVE) above its limit (*threshold*). That is, each indicator can represent the variables used with good accuracy.

Discriminant Validity

On testing *cross-loading*, compare values *loading* between indicators and their latent variables, and values *loading* between indicators and other latent variables.

Figure 2 Cross-Loading Value

	X1	X2	X3	X4	Y	Type (as defined)	SE	P value
X1.1	(0.986)	-0.098	-0.015	0.145	-0.136	Reflective	0.097	<0.001
X1.2	(0.986)	-0.098	-0.015	0.145	-0.136	Reflective	0.097	<0.001
X1.3	(0.752)	0.384	0.058	-0.572	0.533	Reflective	0.106	<0.001
X1.4	(0.986)	-0.098	-0.015	0.145	-0.136	Reflective	0.097	<0.001
X2.1	0.334	(0.867)	-0.445	-0.026	-0.107	Reflective	0.101	<0.001
X2.2	-0.334	(0.867)	0.445	0.026	0.107	Reflective	0.101	<0.001
X3.1	0.443	-0.124	(0.785)	0.345	0.028	Reflective	0.105	<0.001
X3.2	-0.191	0.067	(0.929)	0.079	-0.215	Reflective	0.099	<0.001
X3.3	-0.187	0.038	(0.912)	-0.378	0.194	Reflective	0.100	<0.001
X4.1	0.484	-0.754	-0.458	(0.585)	-0.005	Reflective	0.113	<0.001
X4.2	-0.586	0.120	0.267	(0.883)	-0.120	Reflective	0.101	<0.001
X4.3	-0.150	0.013	0.149	(0.923)	0.368	Reflective	0.099	<0.001
X4.4	0.436	0.378	-0.124	(0.855)	-0.271	Reflective	0.102	<0.001
Y	0.000	0.000	0.000	0.000	(1.000)	Formative	0.096	<0.001

Source: Primary data processed (2023)

Figure 2 displays the value loading each value loading between indicators and latent variables is higher than the value loading between indicators and other latent variables. That is, each indicator measures its variable.

Reliability Test

Table 6 Value of Composite Reliability and Cronbach's Alpha

Variable	*Composite Reliability*	*Cronbach's Alpha*
Production Facilities Subsystem (X1)	0,964	0,946
Farming Subsystem (X2)	0,858	0,670
Processing Subsystem (X3)	0,909	0,848
Marketing Subsystem (X4)	0,890	0,831
Agribusiness Revenue (Y)	1,000	1,000

Source: Primary data processed (2023)

The results in Table 8 show that the value *composite reliability* for each variable is above the value of 0.7. While the value of *Cronbach's alpha* for each variable is also above the value of 0.7, one variable in this study has a value of *Cronbach's alpha* below 0.7, which is equal to 0.670 for the variable farming subsystem. *Composite reliability* is considered better in estimating the internal consistency of a variable (Ghozali and Latan, 2015), so even though Cronbach's *alpha* of the farming subsystem variable is below 0.7, which is equal to 0.670, the composite reliability value is above 0.7 so that it can be stated that the measurement used in this study is reliable.

Measurement Model Evaluation (Inner Model)

1. **R Square**

Testing*R Square* aims to see the relationship between constructs, the significance value of R^2, and research models. Criteria*R Square* According to Ghozali & Latan (2015), if the value*R Square* 0.75 stated strong, 0.50 moderate, and 0.25 weak. Here are the results of *Square* using the WarpPLS Version 7.0 application.

Table 7 Nilai R Square dan R Square Adjusted

Variable	*R Square*	*R Square Adjusted*
Farming Subsystem (X2)	0,464	0,453
Processing Subsystem (X3)	0,381	0,368
Marketing Subsystem (X4)	0,633	0,625
Agribusiness Revenue (Y)	0,894	0,885

Source: Primary data processed (2023)

2. **Q Square**

Measurement *Q Square* is aimed at measuring how strong an indicator can be the predictive power of a model without a sample. According to Hair et al (2017), the value description *Square* are 0.02, 0.15, 0.35, these values show that the exogenous variable has *predictive relevance* small, medium, and large for endogenous variables. Here are the results *Q Square* calculated using the Warp-PLS application.

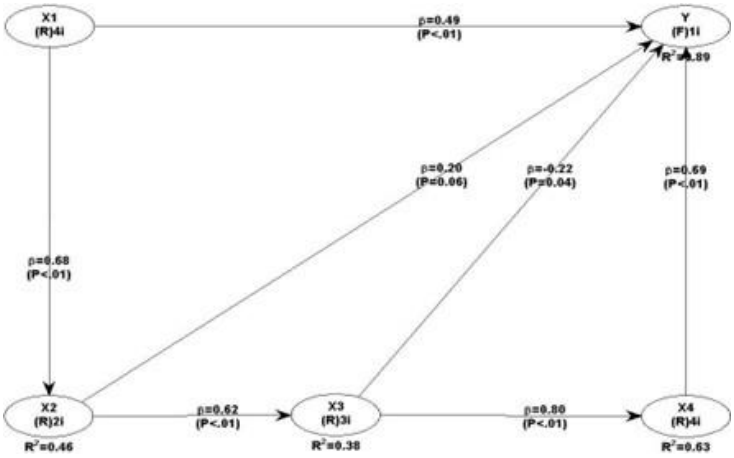
Table 8 Value *Q Square*

Variable	*Q Square*
Farming Subsystem (X2)	0,465
Processing Subsystem (X3)	0,336
Marketing Subsystem (X4)	0,605
Agribusiness Revenue (Y)	0,692

Source: Primary data processed (2023)

3. Analysis SEM-PLS

Figure 3 Variable Effect Measurement



Source: Primary data processed (2023)

The Effect of Agribusiness Subsystem on Arabica Coffee Agribusiness Income

1. The path coefficient value of X1 to Y is 0.492, and the *p-value* X1 against Y of <0.001. From the test results, it is known that there is a positive and significant influence between the production facilities and infrastructure subsystem variables on the Arabica coffee agribusiness income variable.
2. Testing the effect of the farming subsystem variable (X2) on arabica coffee agribusiness income (Y) obtained a path coefficient value of 0.204 and *p-value of* 062 which means > 0.05. From the test results it is known that there is a positive influence and no significant effect or a weak level of significance between the farming subsystem variables on the Arabica coffee agribusiness income variable, this is because the *p-value* <0.10 which means it has a weak significance.
3. Testing the effect of the processing subsystem variable (X3) on arabica coffee agribusiness income (Y) obtained a path coefficient value of -0.225 and *p-value of* 045 which means <0.05. From the test results, it is known that there is a negative influence and there is a significant influence between the processing subsystem variables on the arabica coffee agribusiness income variable.
4. The results of testing the influence of the marketing subsystem variable (X4) on arabica coffee agribusiness income (Y) obtained a path coefficient value of 0.695 and *p-value* <0.001 which means <0.05. From the test results, it is known that there is a positive and significant influence between marketing subsystem variables on Arabica coffee agribusiness income variables.
5. The path coefficient value of X1 to X2 is 0.681, and the *p value* X1 to X2 of <0.001. From the test results, it is known that there is a positive and significant influence between the production facilities and infrastructure subsystem variables on the farming subsystem variables.
6. The path coefficient value of X2 to X3 is 0.617, and the *p value* X2 against X3 of <0.001. From the test results, it is known that there is a positive and significant influence between the farming subsystem variables on the processing subsystem variables.
7. The path coefficient value of X3 to X4 is 0.796, and the value*p value* X3 against X4 of <0.001. From the test results, it is known that there is a positive and significant influence between the processing subsystem variables on the marketing subsystem variables.

CONCLUSION

From the test results, it is known that there is a positive and significant influence between production facilities and infrastructure subsystem variables (X1) on arabica coffee agribusiness income variable (Y),

marketing subsystem variables (X4) on arabica coffee agribusiness income (Y), facilities and infrastructure subsystem variables production (X1) to farming subsystem variables (X2), between farming subsystem variables (X2) to processing subsystem variables (X3), processing subsystem variables (X3) to marketing subsystem variables (X4). Then it is known that there is a positive effect and no significant effect or a weak level of significance between the farming subsystem variable (X2) on the arabica coffee agribusiness income variable (Y), and there is a negative influence and there is a significant influence between the processing subsystem variable (X3) on arabica coffee agribusiness income variable (Y).

ACKNOWLEDGMENT

because the subsystems influence each other and are connected, therefore the researcher suggests Arabica coffee agribusiness actors to improve the agribusiness system and maximize the role of each agribusiness subsystem. The farming and processing subsystem is a major concern in the development of agribusiness systems to increase Arabica coffee agribusiness income in the Prigen District. The use of appropriate technology in farming and processing will increase the role of a subsystem.

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