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IDENTIFIED OF TOBACCO INDUSTRY DEVELOPMENT IN EAST JAVA: ERROR CORRECTION MODEL APPROACH AND THE TRIPLED LAYER BUSINESS CANVAS MODEL APPLICATION

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Abstract

The agricultural sector is one of the main sectors in the Indonesian economy in addition to the industrial sector and the trade sector. In addition to the purpose of meeting the basic needs of the community, the agricultural sector also contributes to the Indonesian economic structure. In 2018, BPS (Central Statistics Agency) noted that the agricultural sector contributes 14% to GDP (Gross Domestic Product). East Java Province has enormous potential for the development of the agricultural sector today. Agriculture is still a leading sector for the economy of East Java in the digital era as it is today. Tobacco is one of the agricultural derivatives commodities that have an important contribution in the economy. Based on data from the Central Statistics Agency (BPS) from 2010-2016, there are four regions with large tobacco production in East Java, namely Jember, Probolinggo, Situbondo and Bojonegoro, which account for 2.01% of Java's Gross Regional Domestic Product (GRDP) East in 2016 with a gross added value of Rp. 27,321 billion. Business competition in the current digital economy era requires industry to be able to try to increase production capacity in the face of competition with similar industries. The purpose of this study is to analyze the factors that influence the development of the tobacco industry both in the short and long term and provide recommendations for sustainable and competitive tobacco industry development policies. This study uses the Panel Vector Error Correction Model (PVECM) method and the preparation of industrial development recommendations based on the Triple Layered Business Model Canvas (TLBMC). The results showed that the level of GRDP and land productivity were the main factors influencing the development of the tobaccoindustries and canvas in TLBMC capable of being the basis for supporting the development of the tobacco industry that is more holistic in the orientation of sustainable innovation business by considering three perspectives namely economic, environmental, and social impacts.

Keywords : *Panel Vector Error Correction Model, Tobacco of industriy, Triple Layer Business Model Canvas*

INTRODUCTION

Indonesia is one of the largest countries in the world with a population reaching 260 million in 2017. Indonesia is also blessed by a vast variety of natural resources (SDA), ranging from mineral materials, food commodities, fisheries and marine, oil and gas, etc. Supposedly, with this very diverse wealth of natural resources can be used for the welfare of the Indonesian people with management and exploration for the common interest. The agricultural sector is one of the main sectors in the Indonesian economy in addition to the industrial sector and the trade sector. In addition to the purpose of meeting the basic needs of the community, the agricultural sector also contributes to the structure of the Indonesian

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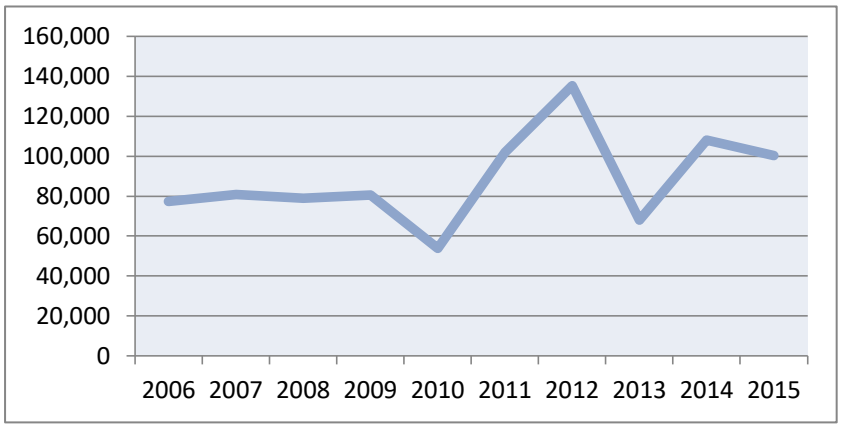
economy. In 2018, BPS (Central Bureau of Statistics) noted that the agricultural sector contributed 14% of GDP (Gross Domestic Product).

Agriculture sector is business activities that include food crop cultivation, horticulture, plantations, fisheries, forestry, and livestock. The agriculture sector (food crops, plantation, livestock, forestry, and fisheries sub-sector) is one of important sector as a source of income for most Indonesians. In addition, agricultural sector in a broad sense is also a producer of raw materials for the industrial sector, as well as users of inputs produced by the industrial sector, as well as users from the transport and trade services sector. In this case, the agricultural sector is one of the important sectors in boosting the national economy.

East Java Province has enormous potential for developing the agricultural sector at this time. Agriculture is still leading sector for the East Java economy in the digital era like today, one of which is tobacco. Tobacco is one of the plantation commodities that have a strategic role in the national economy, which is a source of state income through foreign exchange, excise, taxes, and sources of income for farmers, and plays a role in creating employment. Based on data from the Badan Pusat Statistik (BPS) from 2010-2016, there were four regions with considerable tobacco production in East Java, namely Jember, Probolinggo, Situbondo and Bojonegoro, which accounted for 2.01% of the Java Gross Regional Domestic Product (GRDP) East in 2016 with gross value added of Rp. 27,321 billion. When seen in commercial aspect, tobacco commodities are raw materials for domestic industries so that their existence needs to be maintained and further enhanced. Tobacco is a product that is very sensitive to cultivation methods, planting locations, weather, and processing methods.



Source: Badan Pusat Statistik, proceed

Figure 1: Total East Java Tobacco Production in 2006-2014 (Tons)

Tobacco commodity and processed tobacco products have high economic value, which is a high source of income for both the community and the government. In the tobacco industry, tobacco is the main raw material. In that, the supply of tobacco as raw materials ought to be maintaining for industrial sustainability. Standardizing program must be applied to both tobacco and processed tobacco products, where it aims to maintain tobacco quality and the level of customer satisfaction. Based on the data above, tobacco production in East Java fluctuates from year to year. This is because tobacco is one of the agricultural commodities that are sensitive to cultivation methods, planting locations, seasons / weather, and processing methods. The total tobacco production in East Java in 2010 and 2013 experienced a significant decline, which recorded only 53,695 tons and 67,861 tons respectively. Then increase in production in 2011-2012, recorded respectively at 101,777 tons and 135,412 tons.

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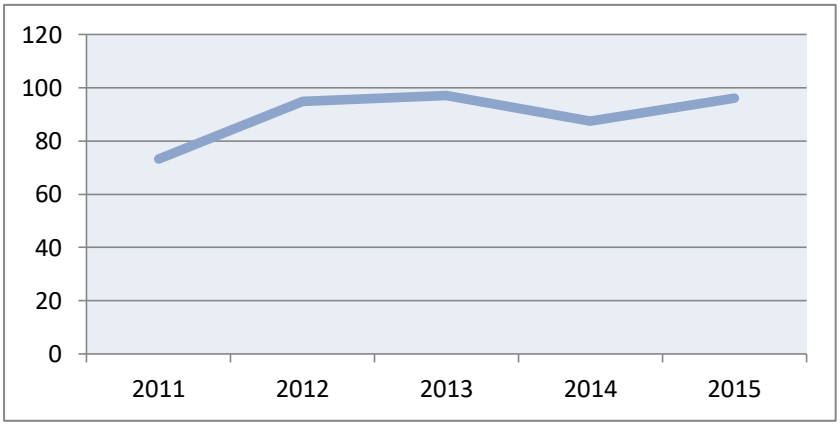
The tobacco industry has a significant role in tax and tax revenues, labor payments, receipts and frequencies for companies. The development of industrial products must also be able to make the industry grow well. The tobacco industry is a labor-intensive industry, currently the results and its relevance to raw materials, specifically tobacco, cloves, and other industries as a potential labor absorbing industry. The main problem of the industry is the lack of a healthy competition climate, distorted consumer prices, unbalanced and low needs. Each situation makes the appearance (performance) of the current industry results still not optimal.



Source: Badan Pusat Statistik, proceed

Figure 2: Production Output Value produced by Tobacco Processing Industry in East Java in 2011-2014 (Trillion IDR)

The tobacco products industry produces a number of processed tobacco products, such as cigarettes and cigars. Tobacco process production in East Java shows an upward trend in 2011-2014. Where in 2012 processed tobacco production in East Java was recorded at Rp 96.98 trillion, higher than the previous two years where in 2011 and 2012 it was recorded at Rp 73.13 trillion and Rp 94.86 trillion. In 2014 processed tobacco production in East Java fell to Rp. 87.50 Trillion and then increased in 2015 to Rp. 96.12 Trillion. Even though it shows an upward trend, the tobacco industry is experiencing various pressures that can affect their business structure.

In the 21st century, there are a number of pressures that pose a threat to the sustainability of all businesses or industries, including the tobacco processing industry. A number of factors underlie the emergence of these pressures, mainly due to technological developments. An industry must be able to make an innovation or the latest breakthrough in maintaining the existence and continuity of operations of an industry. An organization is required to be more active in dealing with various pressures and various possible risks, such as economic uncertainty (domestic and global), economic and social inequalities, climate changes and environmental damage, scarcity of natural resources and technological developments. On the one hand, these challenges can be increasing risks. In other, the same challenges can be an opportunities for an organization to engage in sustainability innovation - oriented.

In long term for micro tobacco industry, government had roadmap or detailed framework related to planning and optimizing the tobacco products industry going forward. A roadmap or detailed framework regarding the tobacco products industry has been arranged in such a way as to support the continuity of business in a sustainable manner, where it does not only race to achieve profit but also pay attention to health and environmental aspects. Based on the roadmap that has been prepared, the vision of the tobacco products industry is the

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creation of an industry that is oriented to aspects of public health, in addition to the absorption of labor and state income. The tobacco products industry is designed to increase competitiveness and apply standardization from both the quality of the products produced and the inputs or raw materials used.

In achieving the goal of a sustainable tobacco industry, a business model is needed that can integrate the process of creating economic, environmental and social values into one of their core business goals. This is in line with Keraf's (2002) explanation that sustainable development is an effort to synchronize, integrate and give equal weight to three aspects, namely economic, socio-cultural and environmental aspects. So that, in achieving the goals of a sustainable tobacco industry, it must cover all three aspects that must be considered in their business model. Debermann (2005) argues that the sustainability of an agricultural industry can be measured by the stability of production, which in terms of the level of production of tobacco and its processed products.

In describing business structure, it is usually poured in a concept called a business model. A business model describes the rationale for how organizations create, deliver and capture a value. A business model must be able to explain a concept that contains the description, description and strategy of an organizational structure. One of the most widely used business model tools is the Business Model Canvas (BMC). BMC is a business model tool where an organization can describe and manipulate business models easily to then create new strategic alternatives. In the Business Model Canvas there are nine basic building blocks that show how to think about the various strategies applied by an organization in the future in maintaining the sustainability of their business. The nine blocks are divided into four main areas, namely customer (customer), offer (supply), infrastructure (infrastructure), and financial sustainability (financial sustainable).

Osterwalder and Pigenur (2010) explicitly developed a canvas business model or Business Canvas Model (BMC) by integrating environmental (environmental) and social (social) impacts into a business model, where the addition of two layers is placed parallel to the economic layer. Triple Layer Business Model Canvas (TLBMC) is a practical and easy-to-use tool that supports creative development, visualization, and communicating sustainable business model innovations (Stubbs and Cocklin, 2008). TLBMC adopts a triple-bottom line approach to the sustainability of an organization (Elkington, 1994), which explicitly handles and integrates economic, environmental and social value creation as the core for an organization's business model. Innovation should be able to bring up a "new way of conveying and capturing values, which will change the basis of competition".

TLBMC can help an organization visualize and communicate existing business models, collect and process data into an explicit information, and creatively explore the potential for more explicitly oriented to sustainability. Shrivastava and Statler (2012), states that TLBMC can bridge the process of developing innovation and business structure on an ongoing basis to support individuals and organizations creatively and holistically seeking sustainability-oriented change as a way to overcome current challenges. Thus, it becomes important to elaborate the development of the tobacco products industry through the application of the Triple Layer Business Model Canvas concept in achieving a sustainable and sustainable industry. Concept development is done by first analyzing the factors that influence the tobacco products industry.

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LITERATURE REVIEW

Tobacco and the role in the economy

According to the Central Agency for Plantation Research and Development (2008) tobacco is a commodity that has high economic value. As raw material for medicines, cigarettes and tobacco cigars provide income for the state through excise and foreign exchange exports. Excise is obtained from tax on tobacco sales, while foreign exchange arises because of international trade activities. In addition to contributing to national income, the tobacco industry in various regions also contributes to PAD. Hastari (2009) explains that the tobacco industry is controversial. This is due to the contradictory effects caused by tobacco. On the one hand, tobacco contributes to national income and employment; on the other, it also adversely affects health. According to Nitasari (2010) the upstream to downstream tobacco industry is able to contribute 6.4 million workers.

Triple Layered Bussiness Model Canvas (TLBMC)

The concept of the Triple Layered Business Model Canvas (TLBMC) is one of the efforts in business development. The business model in this article is interpreted as the rationale for how a company creates, gives, and captures value (Osterwalder and Pigneur, 2010). In particular, the concept of the company here includes 3 aspects, are:

1. How are the main components and functions, or parts, integrated to provide value to customers;
2. How these parts are interconnected within the company and throughout the supply chain and its network of stakeholders; and
3. How companies generate value, or create profits, through these interconnections.

The business model tool is a development method using the outside-inside and inside-outside approach (Chesbrough and Garman, 2009). The outside-inside approach is used to explore opportunities for innovation by seeing companies through various types of idealized business models (Bocken et al., 2014). This allows companies to explore innovations that might result from the adaptation of their current business model towards a particular basis.

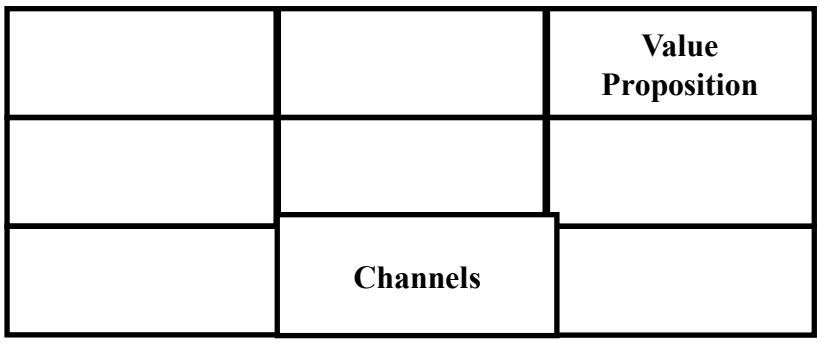

Figure 3: Analysis of Osterwalder & Pigneur (2010), Canvas Business Model, which formed the economic layer of the Three-Layer Canvas Business Model.

The Triple Layered Business Model Canvas (BMC) is a tool to support the creative exploration of sustainable business models and sustainability wider innovation-oriented. TLBMC complements and extends the original economic-oriented canvas business concept Osterwalder and Pigneur (2010) with new canvas layers that explore environmental and social value creation. This additional layer is sequential with the original canvas business model by highlighting interconnections that support social and environmental impacts separately, and expanding them by drawing connections in three layers to support an integrated triple bottom

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line perspective from corporate impacts (Glaser, 2006). Thus, TLBMC is proposed to creatively explore the sustainability of business products, processes, and innovation models to support better companies in overcoming sustainability challenges. Components in TLBMC-based social development include Local Communities, Good Governance, Social Value, Social Culture, End Users, Employees, Scale of Outreach, Social Impact and Social Benefits.

TLBMC-based Environmental Development Model

The canvas model business development model with environmental analyze has similarities to the canvas model business model in general. The main objective of adding environmental factors in TLBMC is an effort to generate benefits for the environment that are greater than the negative impacts caused (Joyce, 2016). The development of TLBMC enables users to better understand where the biggest environmental impacts of the company are in the business model and provide insight into how companies can focus their attention when creating environmentally oriented innovations. Components in developing TLBMC-based environments include Supplies and Outsourcing, Production, Functional Value, End-of-Life, Use Phase, Material, Distribution, Enviromental Impacts dan Enviromental Benefits.

TLBMC-based social development model

The social approach in TLBMC is as a mitigation of the social impacts caused by the company. It aims to provide a better understanding in observing the social impact that the company has on and innovation enhancing the development model for the social impacts it presents. The TLBMC social layer is built on a stakeholder management approach to explore the social impact that the company has (Freeman, 1984). Similar to environmental canvas layers, social canvas layers expand the original canvas business model by filtering the organization's business model and social impact through stakeholder perspectives. Given that certain organizational stakeholders can vary based on context and significance, the stakeholder layer is intended to be broad and flexible to use.

RESEARCH METHODS

Research design

This research begins with a study of the factors that influence the development of the tobacco industry and analyze the concept of applying the Triple Layered Business Model Canvas both theoretically and empirically from various sources. After that, the selection of several variables will be used in this study. This research uses the Panel Vector Error Correction Model analysis approach to know the effect and pattern of causality relationships between variables both in the short and long term. The application of the Triple Layered Business Model Canvas concept can be used to formulate policy of tobacco products industry.

Scope, Types and Data Sources

This study uses Panel data in the form of annual time series data for the period 2006 - 2015 for all variables and cross sections taken from four districts in East Java. Election of four districts, among others, the districts of Jember, Probolinggo, Pamekasan and Bojonegoro based on districts that have the highest tobacco production in the East Java region. The variables used in this study are the amount of tobacco production, the area of tobacco plantations, tobacco land productivity, tobacco inflation that is proxied by the implicit GDP price index movement in the food, beverage and tobacco manufacturing sector and the amount of Gross Regional Domestic Product for the manufacturing sector food, beverages and tobacco. Variable data on tobacco production, tobacco plantation area and

tobacco productivity are obtained from the official website of the Ministry of Agriculture (www.pertanian.go.id) while the gross regional domestic product variable data and implicit price index are obtained from the Badan Pusat Statistik.

Data Analysis Method

In accordance with the purpose of this study, namely analyzing the relationship between variables of tobacco production with variables that have an influence on the development of the tobacco industry which proxied by output tobacco product. The model used to describe the relationship pattern in this study is the Panel Vector Error Correction Model (VECM) model.

The concept of the Vector Error Correction Model is a form of Vector Auto Regression (VAR) that is structured and has relationships between variables in long term. The concept of the Vector Error Correction Model can describe the relationship between variables by combining variable behavior and relations between variables in the short term (Badriyah, 2016). Estimate VECM approach in panel data as framework based likelihood to analyze the contingency in VECM in panel data (Groen dan Keibergen, 1999).

The PVECM equation can be obtained through modification of the VECM equation from each individual in the panel (Anderson, Qian and Rasche, 2006). In the VECM model it is known if there are a number of p non-stationary variables with cross section i and time series t arranged in vector form p x 1, so $y_{it} = (y_{it1}, y_{it2} \ldots\ldots y_{itp})$. Next to difference from *y*t write $\Delta y_t = y_t - y_{t-1}$ and matrix difference variable non-stationer ini lag to *k* write as $X_{it} = (\Delta y'_{i,t-1}, \Delta y'_{i,t-2}, \ldots \ldots, \Delta y'_{i,t-(k-1)})$.

The PVECM equation (k) in this study adopts the model from Anderson et all (2006) which is formulated as follows:

$$\Delta y_t = \delta d_t + \alpha\beta' y_{t-1} + \Gamma X_t + \varepsilon_t \text{ untuk } t = 1, 2, 3, \ldots\ldots T \quad \ldots\ldots(1)$$

Where:

$$\Delta y_t = \begin{bmatrix} \Delta y_{1t} \\ \Delta y_{1t} \\ \vdots \\ . \\ \Delta y_{Nt} \end{bmatrix};\ \delta = \begin{bmatrix} \delta_1 \\ \delta_1 \\ \vdots \\ . \\ \delta_N \end{bmatrix};\ \alpha = \begin{bmatrix} \alpha_{11} & & & \\ & \alpha_{22} & & \\ & & \ddots & \\ & & & \alpha_{NN} \end{bmatrix};\ \beta \begin{bmatrix} \beta_{11} & & & \\ & \beta_{22} & & \\ & & \ddots & \\ & & & \beta_{NN} \end{bmatrix}; \ldots\ldots(2)$$

$$y_{t-1} = \begin{bmatrix} \Delta y_{1t} \\ \Delta y_{1t} \\ \vdots \\ . \\ \Delta y_{Nt} \end{bmatrix};\ \Gamma = \begin{bmatrix} \Gamma_{11} & \Gamma_{12} & & \Gamma_{1N} \\ \Gamma_{21} & \Gamma_{22} & & \Gamma_{2N} \\ & & \ddots & \\ \Gamma_{N1} & \Gamma_{N1} & & \Gamma_{NN} \end{bmatrix};\ X_t = \begin{bmatrix} X_{1t} \\ X_{2t} \\ \vdots \\ . \\ X_{Nt} \end{bmatrix};\ \varepsilon_t = \begin{bmatrix} \varepsilon_{1t} \\ \varepsilon_{2t} \\ \vdots \\ . \\ \varepsilon_{Nt} \end{bmatrix};\ y_{it} \begin{bmatrix} In\ (OUT)_{(j,p,pb,k)t} \\ In\ (AREA)_{(j,p,pb,k)t} \\ In\ (DPDRB)_{(j,p,pb,k)t} \\ In\ (PDRB)_{(j,p,pb,k)t} \\ In\ (PRO)_{(j,p,pb,k)t} \end{bmatrix} \ldots\ldots(3)$$

Information:

Δy_t	= *difference* matrix p observed variable
y_{t-1}	= *lag* matrix 1 observed variable
δ	= parameter determinant model component matrix
d_t	= vector determinant component to t
$\alpha\beta'$	= long-term equation coefficient matrix
α	= adjustment diagonal matrix
β	= cointegration diagonal matrix
Γ	= dynamic matrix of short-term equations
X_t	= matrix difference is observed in operator lag k
ε_t	= *error term* matrix

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OUT = Output of Tobacco Production at time t
AREA = Area of tobacco plantations at time t
DPDRB = The growth rate of the PDRB implicit price index in the food, beverage and tobacco manufacturing sector at time t
PDRB = Gross Domestic Product in the food, beverage and tobacco manufacturing sector at the time t
PRO = Productivity of tobacco land at time t
j = Jember
p = Pamekasan
pb = Probolinggo
b = Bojonegoro
t = Time

RESULT AND DISCUSSION

Analyze Vector Error Correction Model (VAR)

Stationary test / Unit root test

Tests carried out in two stages, namely testing at the 1st level and the level difference. Each variable is tested starting from the level, if it is not stationary at this level it is continued at the 1st difference level. Stationary test using the PP-Fisher method. The advantage of the PP-Fisher method compared to the ADF-Fisher method is that the PP-Fisher method is able to capture changes in the data structure that occurs in a variable. Furthermore, the results of the PP-Fisher stationarity test imply that not all variables are stationary at the level, but at the 1st difference level shows all variables are stationary. The results of stationarity tests at the level using the Phillip-Perron test are presented in the table below.

Table 1. Phillip-Perronlevel Test

Variable	Statistical Value	PP-Fisher	Information
Area	Statistik	9.14646	Non- stationary
	(Prob)	0.3301	
Out	Statistik	36.0774	Stationary
	(Prob)	0.0000	
DPDRB	Statistik	14.6493	Non- stationary
	(Prob)	0,0663	
PDRB	Statistik	5.09464	Non- stationary
	(Prob)	0.7474	
PRO	Statistik	18.8479	Stationary
	(Prob)	0.0157	

Source: Author data, processed

Because all variables are not stationary at the level level, testing stationarity continues to the 1st difference level. Stationarity test results at the 1st difference level using the Phillip-Perron test are presented in the table below.

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Table 2. The 1st difference Phillip-Perron Test Results

Variable	Statistical Value	PP-Fisher	Information
Area	Statistik	34.6269	Stationary
	(Prob)	0.0000	
Out	Statistik	57.2309	Stationary
	(Prob)	0.0000	
DPDRB	Statistik	55.7267	Stationary
	(Prob)	0.0000	
PDRB	Statistik	46.9921	Stationary
	(Prob)	0.0000	
PRO	Statistik	45.4746	Stationary
	(Prob)	0.0000	

Source: Author data, processed

Cointegration Test

Cointegration tests are carried out to determine whether each variable in the model is cointegrated. This cointegration test step uses the Kao Residual Cointegration Test. A cointegrated model is said to be based on probability values generated from the ADF with the provision that if the probability value is smaller than alpha 5% or 0.05 means that there is cointegration or long-term relationship between variables. Conversely, if the probability value is greater than the alpha value of 5% or 0.05, it means that there is no cointegration between variables.

Table 3. Cointegration Test Results Using the Kao Residual Cointegration Test

ADF	t-Statistic	Prob.
	-3.6357	0.0001
Residual variance	0.02396	
HAC variance	0.00817	

Source: Author data, processed

Determination of Optimal Lags

Before estimating PVECM, it is necessary know the optimal lag to determine the exact time-period of a variable affecting other variables that provide optimal results. Determination of optimal lag is important because the impact of changing a variable on other variables does not occur at the same time due to lag or lag. Optimal lag test using Lag Test Length Criteria by looking at criterion values on Likelihood Ratio (LR), Final Prediction Error (FPE), Akaike Information Crition (AIC), Schwarz Information Crition (SC), and Hannan-Quin Crition (HQ). The table of the optimal lag test results found that the optimal lag is there is a lag 1 which is marked with the most * symbol according to the choice criterion.

Table 4. Lag Optimal Test Result

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-52.8745	NA	2.56e-05	3.617158	3.846179	3.693072
1	14.34078	109.2249*	1.87e-06*	0.978701*	2.352829*	1.434186*
2	32.72789	24.13309	3.20e-06	1.392007	3.911240	2.227061

Source: Author data, processed

Granger Causality Test

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Granger causality test is important to see the reciprocal relationship between variables with the Granger Causality Test method. Between variables are said to occur causality, the value of f count is more than the value of F-table or H0 is rejected and H1 is accepted and vice versa. It is known that the value of f - table in this study is 2.64. then the results of testing causality between variables with lag length 1 are presented in the following table:

Table 5. Pairwise Granger Causality Test Result

Null Hypothesis:	F-Statistic	Prob.	Criteria
AREA does not Granger Cause OUT	4.01469	0.0534	*
OUT does not Granger Cause AREA	2.13295	0.1536	-
DPDRB does not Granger Cause OUT	0.06963	0.7935	-
OUT does not Granger Cause DPDRB	0.63013	0.433	-
PDRB does not Granger Cause OUT	0.15088	0.7002	-
OUT does not Granger Cause PDRB	0.10927	0.7431	-
PRO does not Granger Cause OUT	5.301	0.0278	*
OUT does not Granger Cause PRO	3.95201	0.0552	*
DPDRB does not Granger Cause AREA	0.00104	0.9745	-
AREA does not Granger Cause DPDRB	0.30375	0.5853	-
PDRB does not Granger Cause AREA	3.07682	0.0887	*
AREA does not Granger Cause PDRB	0.1123	0.7397	-
PRO does not Granger Cause AREA	1.74621	0.1954	-
AREA does not Granger Cause PRO	5.91775	0.0206	*
PDRB does not Granger Cause DPDRB	0.54375	0.4661	-
DPDRB does not Granger Cause PDRB	1.54867	0.2221	-
PRO does not Granger Cause DPDRB	1.91807	0.1754	-
DPDRB does not Granger Cause PRO	0.58445	0.45	-
PRO does not Granger Cause PDRB	0.01368	0.9076	-
PDRB does not Granger Cause PRO	1.67369	0.2047	-

Source: Author data, processed

PVECM Estimate Test

As previously explained, the analysis tool used to analyze the relationship of the variables used in this study is the Vector Error Correction Panel. PVECM estimation is done with lag 1 according to the results of the optimal lag test. Furthermore, to carry out the significance test of each variable, the calculation of the t-table value is used to determine the value of t-statistics. With a confidence level of 5% or 0.05, the variable is declared significant if it has a t-statistical value> 1.68957 or <-1.68957. Table 5 is a summary of the significant variables with the estimation of the PVECM model (2):

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Tabel 6. Panel Vector Autoregression Estimate Result

Variable	Coefficient	t-statistics
OUT(-1)	1	
AREA(-1)	-0.781289	-1.86743*
DPDRB(-1)	-0.07313	-1.41766
PDRB(-1)	-0.058335	-0.48933
PRO(-1)	-1.005311	-2.72067*

Sort-Term

Error Correction:	D(OUT)	D(AREA)	D(DPDRB)	D(PDRB)	D(PRO)
D(OUT(-1))	-0.372159	0.053537	-2.1261	0.31321	-0.25648
	-0.3516	-0.22875	-3.32479	-0.4064	-0.30414
	[-1.05848]	[0.23404]	[-0.63947]	[0.77068]	[-0.84330]
D(AREA(-1))	-0.203413	-0.43159	2.833368	-0.18287	0.078671
	-0.52331	-0.34047	-4.94855	-0.60489	-0.45268
	[-0.38870]	[-1.26760]	[0.57256]	[-0.30233]	[0.17379]
D(DPDRB(-1))	0.010279	-0.0172	-0.50706	-0.03294	0.050638
	-0.02285	-0.01486	-0.21604	-0.02641	-0.01976
	[0.44992]	[-1.15698]	**[-2.34702]***	[-1.24743]	[2.56227]
D(PDRB(-1))	-0.438203	-0.46532	0.772897	-0.28026	-0.07595
	-0.21035	-0.13686	-1.9891	-0.24314	-0.18196
	[-2.08322]*	**[-3.40011]***	[0.38857]	[-1.15267]	[-0.41741]
D(PRO(-1))	-0.399118	-0.16269	4.240306	0.019812	-0.42306
	-0.24632	-0.16026	-2.32923	-0.28471	-0.21307
	[-1.62033]	[-1.01521]	**[1.82047]***	[0.06959]	**[-1.98553]***
R-squared	0.769959	0.708703	0.72294	0.326408	0.665354
Adj. R-squared	0.611806	0.508437	0.532461	-0.13669	0.435285
Sum sq. Resids	0.545743	0.231011	48.80014	0.729141	0.408359
S.E. equation	0.184686	0.120159	1.746427	0.213474	0.159757
F-statistic	4.868434	3.538803	3.795386	0.704843	2.891974
Log likelihood	15.39908	27.43466	-47.5077	11.34301	19.4591
Akaike AIC	-0.242792	-1.10248	4.250549	0.046928	-0.53279
Schwarz SC	0.328153	-0.53153	4.821493	0.617872	0.038152
Mean dependent	0.007143	0.003571	-0.69536	0.121071	-0.02786
S.D. dependent	0.296421	0.171382	2.554123	0.200228	0.212592
Determinant resid covariance (dof adj.)			5.05E-07		
Determinant resid covariance			3.07E-08		
Log likelihood			4.35E+01		
Akaike information criterion			1.53E+00		
Schwarz criterion			4.63E+00		

Information: (*) signicant at alpha 0.05

From the estimation results of the Vector Error Correction Panel Model in table 5 it is known that in the long-term equation there are two variables, namely the variable area of

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plantation area and productivity that significantly affects tobacco production at a significance level of 5%. All coefficients of each independent variable are negative, meaning that changes in each variable will reduce the level of tobacco production in the long run. For variables, tobacco plantation area and long-term land productivity are negative for tobacco production. justification of the influence can occur due to the pattern of climate change and environmental conditions that reduce the level of production of tobacco products and there is the possibility of people switching from tobacco to other plantation commodities.

Whereas for the estimation results in the short term it is known that the dependent variable of tobacco production is significantly influenced by the GDP variable in lag 1 with a coefficient value of 2.08322. this is in line with the research of Ashar and Firmansyah (2015) that GRDP has a negative relationship with the consumption of tobacco products industry products, while for tobacco plantation area variables as the dependent variable are significantly affected only by lag 1 PDRB variables with a negative coefficient of 0.4653.

Furthermore, the estimation result with the dependent variable implicit GRDP price growth rate are significantly affected by the variable itself in lag 1 and is influenced by the variable productivity of tobacco land. The coefficient value of the variable influence itself is negative while the productivity variable of tobacco land is positive in lag 1. This means that an increase in tobacco land in the previous year period can increase the productivity of tobacco production. The increase in production could reflect an increase in economic activity, which was responded to by the market with the increase in the rate of price growth reflected in the level of implicit GRDP price.

In addition, the results of the estimation of the dependent variable of tobacco land productivity in the short term are influenced by the variables directed at the lag 1. From the estimation results show the amount of the coefficient of determination from Adj. R-square by making the variable production of tobacco products in a given year period as a function of all variables in the previous year shows the magnitude of the number 0.611806. this means that the output variable of tobacco production is able to be explained by all variables in period 1 and 2 by 61.2 percent. The ability of all variables to explain the variable production of tobacco products is also strengthened by the statistical F value of 4.868434.

IRF (Impuls Response Function)

After PVECM estimation, the grave method is needed to be able to show the dynamic structure of PVECM clearly through the Impulse Response Factor (IRF). IRF Indicates the magnitude of the response of an endogenous variable to changes that occur in other variables in the model. Therefore, the IRF can be used to determine how an unexpected change or shock affects other variables. The IRF can be used to examine how the influence of a surprise standard deviation from one innovation variable on the value of endogenous variables at present or for the future (Arianto, et al. 2010).

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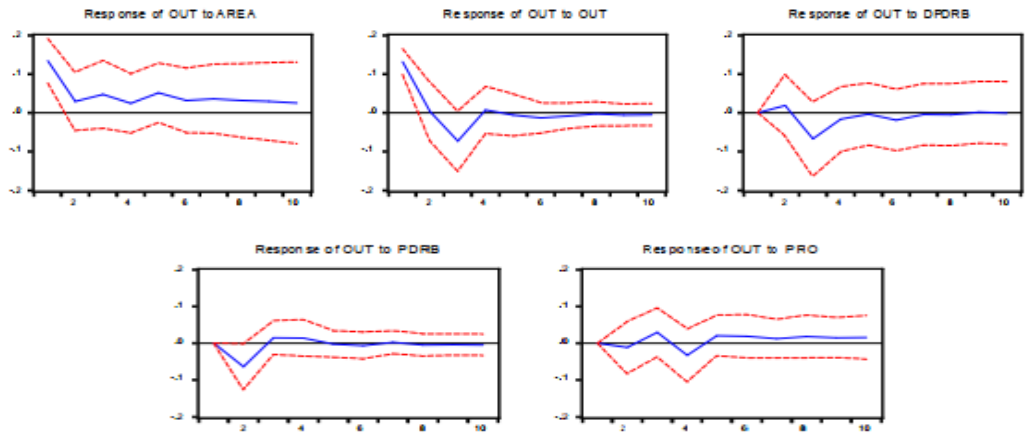

Figure 4: IRF Output Rate From Shock AREA, OUT, DPDRB, PDRB, PRO.

Furthermore, the IRF can also be used to see the contemporary influence of a dependent variable if it gets shocks or innovations from an independent variable of one standard deviation. Based on the analysis from the picture above, it can be seen that:

1. In the shock variable, the Tobacco plantation area was responded to from the beginning to the 10th period by the amount of tobacco production output. This shows that there is a short and long term relationship between the variable area of the plantation and the variable amount of tobacco production output.
2. In the shock variable the amount of production affects the variable amount of production since the beginning of the period and tends to be stable in the 10th period. This shows the shock in the variable output number affects the production output capacity itself in the short and long term
3. In the PDRB variable shock was responded from the beginning and was stable in the 10th period by the amount of tobacco production output. This shows that there is a short-term and long-term relationship between the GRDP variables and the variable number of Tobacco production output.
4. In the DPDRB variable shock was responded from the beginning and was stable in the 10th period by the amount of tobacco production output. This shows that there is a short and long term relationship between the DPDRB variable and the variable number of tobacco production output.
5. In shock, land productivity variables were responded to early on and were stable during the 10th period by the amount of tobacco production output. This shows that there are short and long term relationships between the variables of land productivity and the variable number of output of tobacco production.4.1.6*Variance Decomposition*

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The following is the output of the variance decomposition in the PVECM model:

Tabel 7. Variance Decomposition in PVECM Model

Period	S.E.	OUT	AREA	DPDRB	PDRB	PRO
1	0.188085	100.0000	0.000000	0.000000	0.000000	0.000000
2	0.202032	88.01176	0.816246	0.864260	9.964952	0.342778
3	0.232359	67.08878	14.06821	9.056065	7.935690	1.851250
4	0.237019	65.35044	13.77454	9.192468	7.985870	3.696680
5	0.243563	63.67538	15.80673	8.724333	7.572269	4.221283
6	0.247531	61.94679	16.98349	9.014902	7.396524	4.658288
7	0.250558	61.09268	18.08386	8.821484	7.228230	4.773752
8	0.253287	60.44680	18.60228	8.671931	7.111663	5.167331
9	0.255482	59.84272	19.19511	8.525886	7.014020	5.422260
10	0.257330	59.32901	19.59763	8.405311	6.944428	5.723624

Based on the results of the Variance Decomposotion test shows that in the second period, the Out (Output) variable is more dominantly influenced by itself with a percentage of 88.01 percent, while the remaining 11.9 percent is influenced by other variables. In the fifth period, Out variables affect themselves by 63.69 percent, while the remaining 36.31 percent is influenced by other variables, especially Area and DPDRB variables. For the tenth period, the Out variable affects itself by 59.33 percent, while the remaining 40.67 percent is influenced by other variables, especially the Area variable with a contribution of 19.60 percent.

Thus, it can be said that there is a decrease in the effect of variable Out on itself along with the increase in the level of the period and an increase in the level of influence of other variables on the variable Out. Another variable that predominantly affects the Out variable is the Area variable and DPDRB, where the area and inflation rate for tobacco commodities have a dominant influence on the level of output of processed tobacco production. For Pro and GRDP variables also affect Variable Out but with a smaller percentage.

Discussion

The results of the analysis of the development of the tobacco industry, which is proxied by tobacco production output, are largely influenced by tobacco land area, price level, GRDP in the tobacco processing industry and tobacco productivity. From the results of the PVECM estimation it is known that there are short-term and long-term relationships between variables. The results of the PVECM estimation indicate that there are short and long-term relationships between variables. The development of tobacco production output is significantly affected by variable plantation area and implicit GRDP price rates that reflect the movement of the tobacco industry. The influence of tobacco plantation area on the output of tobacco industry production can occur due to differences in the direction of land use for planting tobacco against sunlight. this is in line with the research of Mamat et al. (2006) which states that the productivity of tobacco planted with the direction of the east slope is significantly higher than the average production on the slope to the northeast and north. In addition, according to Mamat et al (2006) an increase in tobacco production to support the sustainability of the tobacco industry can be done with land use that has an elevation above 1,000m in direction

In addition, the level of implicit price of GRDP in the food processing industry, beverages and tobacco has an influence on the tobacco industry production. Empirically, this can be reflected in the increase in cigarette excise rates or other tobacco industry products that led to an increase in the price of cigarettes in the market. This is in line with the results of the

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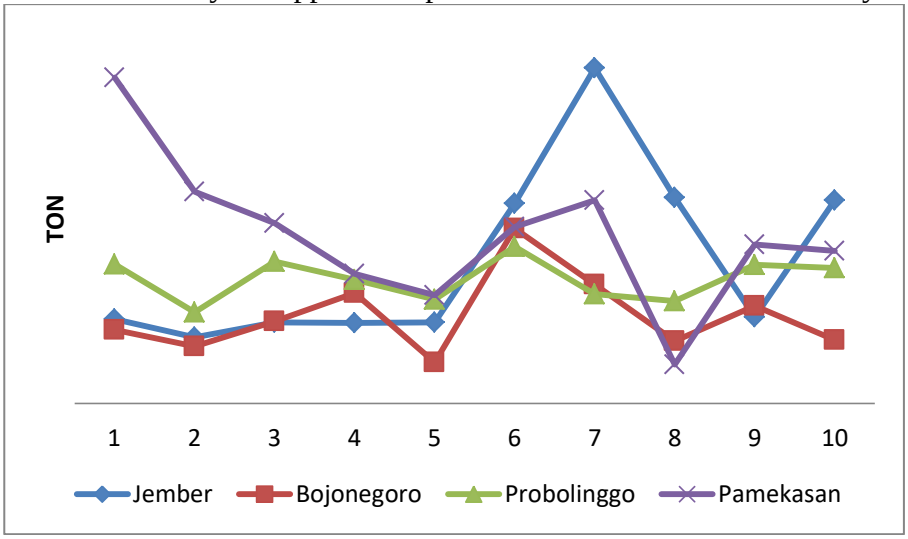
empirical study by Fadillah and Kiswara (2012) which found a positive influence between the unit tax on the price of cigarette products so that the increase in cigarette prices then affected the absorption of tobacco farmers, employment and the contribution of the tobacco industry to regional domestic products gross. Tobacco excise tariff policy is needed which prefers the labor-intensive tobacco industry to support competitiveness of the tobacco industry.



Source: Author data, processed

Figure 5: Total Tobacco Production in the period 2006 - 2015

So far the development of tobacco production tends to fluctuate. These fluctuations largely illustrate the downward trend in production. According to cakrawabawa et all (2014) the decline in tobacco production can be caused by changes in weather conditions and natural disasters such as high rainfall. On the other hand, according to the PVECM test results it is known that the decline in tobacco production is also influenced by the productivity of tobacco land. this is in line with the test of causality that between tobacco production variables and tobacco land productivity variables have a causal relationship that is feedback causality meaning that there is a two-way relationship that allows both variables to influence each other. Therefore, in order to develop the tobacco industry it is necessary to focus on increasing productivity both for land and labor and it is important to maintain price stability especially so that the imposition of excise tax that is already relatively high does not add to the burden of the tobacco industry in running a business.

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Triple Layer Business Model Canvas Identification Result

<table>
<tr>
<td rowspan="2">Partners
1. Petani tembakau dan perusahaan penyedia bahan baku.
2. Retailer
3. Instansi terkait</td>
<td>Activities
1. Produksi
2. Promosi dan pemasaran
3. Research and Development (R&D)</td>
<td rowspan="2">VALUE PROPOSITIONS
1. Produk hasil tembakau yang bermutu tinggi dan rendah nikotin.
2. Inovasi dan defferensiasi produk.</td>
<td>CUSTOMER RELATIONSHIP
1. Event and Sponsorship
2. Member Loyalty</td>
<td rowspan="2">CUSTOMER SEGMENTS
1. Masyarakat pecandu rokok aktif.
2. Masyarakat kelas menengah.</td>
</tr>
<tr>
<td>RESOURCES
1. Modal Kerja
2. Brand</td>
<td>CHANNELS
1. Retailer
2. Promosi</td>
</tr>
<tr>
<td colspan="3">COSTS
1. Produski
2. Promosi dan pemasaran
3. Distribusi
4. Research and Development (R&D)</td>
<td colspan="2">REVENUES
1. Peningkatan kualitas mutu produk melalui inovasi dan produktivitas
2. Differensiasi produk</td>
</tr>
</table>

Figure 6: Model of Economic-Based Business Development

<table>
<tr>
<td rowspan="2">SUPPLIES AND OUTSORCING
1. Pembibitan tanaman tembakau
2. Alat produksi utnuk efisiensi pengolahan tembakau mentah
3. Menjalin kemitraan dengan petani tembakau</td>
<td>PRODUCTION
Penggunaan model oven portabel-horisontal dalam proses pengolahan tembakauPartners</td>
<td rowspan="2">FUNCTIONAL VALUE
1. Peningkatan Pengembangan produk hasil pengolahan tembakau yang bersifat herbal
Customer Relationship</td>
<td>END-OF-LIFE
1. Penggunaan kemasan produk yang mudah di daur ulang.
2. Inovasi Rokok rendah nikotin</td>
<td rowspan="2">USE PHASE
1. Pemanfaatan limbah hasil produksi.

Optimalisasi penggunaan energi dan air.Revenue</td>
</tr>
<tr>
<td>MATERIALS
1. Pemanfaatan pupuk organik dalam menjaga struktur tanah.
Pemanfaatan limah tembakau menjadi barang dengan nilai ekonomis tiggiCost</td>
<td>DISTRIBUTION
1. Penyederhanaan tata niaga tembakau untuk memotong panjangya jalur distribusi.
2. Penyederhanaan rantai distribusi temabakau melalui kemitraan dan klusterisasi.</td>
</tr>
<tr>
<td colspan="3">ENVIRONMENTAL IMPACTS
1. Penggunaan batu bara dalam proses pembakaran gasifikasi dapat mengotori lingkungan.
Pecemaran lingkungan yang disebabkan oleh limbah hasil produksi tembakau.Resources</td>
<td colspan="2">ENVIRONMENTAL BENEFITS
1. Mengurangi penggunaan bahan kimia yang dapat mencemari lingkungan.
2. Pengurangan hasil residu berupa karbo/emisi dalam proses pengeringan tembakau.

Customer Segments</td>
</tr>
</table>

Figure7: Model of Social Based Business Environmental

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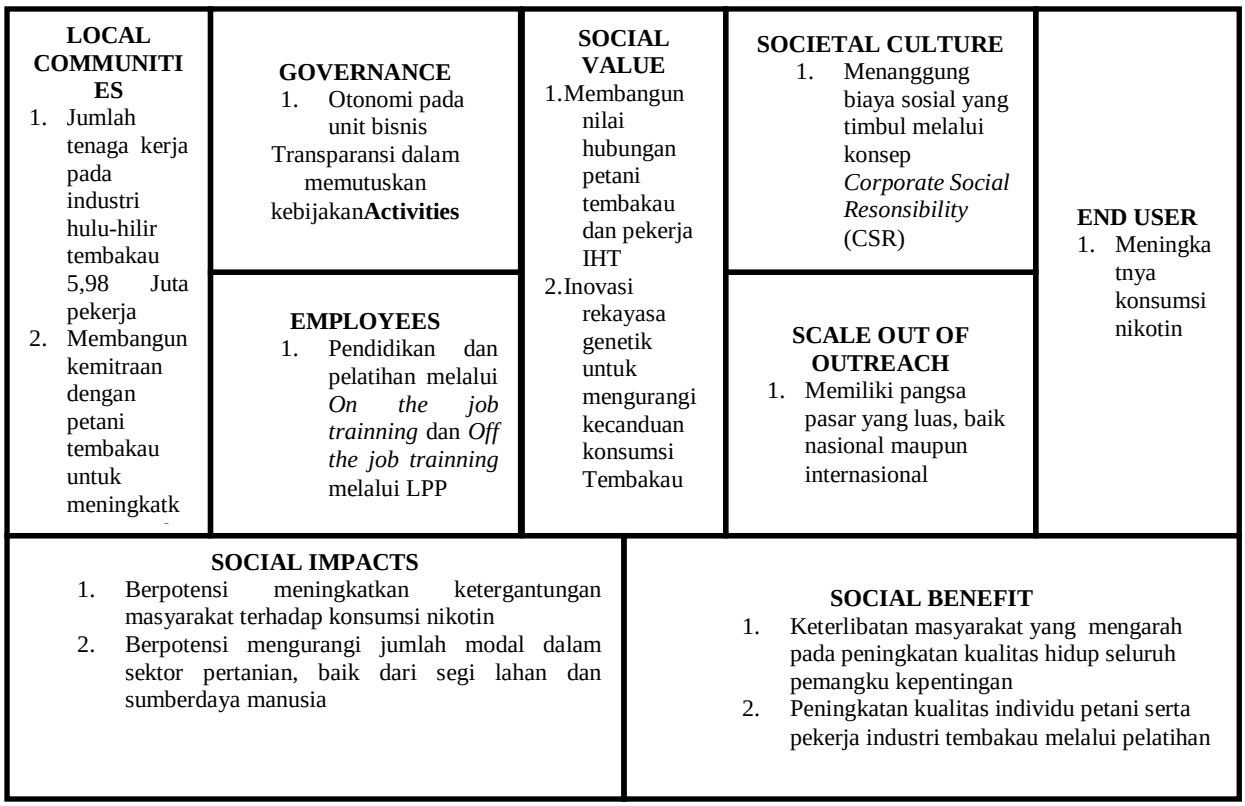

Figure 8: Model of Social Based Business Development

Tripled Layer Business Model Canvas (TLBMC) is an easy-to-use tool to support the creation of innovation, creativity and a sustainable business model, where there are 3 layers or layers in the business model, namely Economy, Social and Environment. We provide a recommendation regarding the development of the tobacco industry (IHT) in the future which is not only oriented to economic aspects, but also social and environmental aspects. Based on the 2006-2020 IHT roadmap that has been compiled, the vision of the tobacco products industry is the creation of an industry that is oriented to the aspects of public health, in addition to the absorption of labor and state revenues. So, in the recommendation of developing the tobacco products industry using TLBMC based on the prepared roadmap.

In maintaining sustainability and existence, we need an innovation and development of tobacco products, both in terms of quality, taste, nicotine levels, and so on. This innovation can be done through the process of a market research and development needs. Therefore, a special institution / division is needed that focuses on Research and development (R & D). The tobacco products industry needs to conduct a partnership or collaboration with various parties in achieving the prepared roadmap. Partnerships with tobacco farmers are needed to improve the quality standardization of tobacco as the main raw material that can be done through empowerment and training. Tobacco farmers must be encouraged to utilize organic waste that can be used as fertilizer in maintaining soil structure and fertility, thereby reducing the use of chemicals that pollute the environment. Apart from the aspect of farmers, efforts to reduce environmental pollution must also be carried out in terms of the production process. Examples of the use of methods The use of horizontal portable oven models in tobacco processing is more environmentally friendly and fuel efficient.

The tobacco industry does not have to be fixated on traditional methods alone. Innovation, technology and development need to be done to respond to the dynamic Tobacco

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market. It also aims to answer the challenges of global economic competition, where the current barriers to access to trade between countries are increasingly eroded. This domestic tobacco industry must respond to the phenomenon to be able to maintain the existence of Indonesian Tobacco on the international market. The TLBMC-based Tobacco industry development model is one of the answers to the challenge. The development of economic, social and environmental berbabasi also in line with the vision of sustainable development carried by various countries in the world.

CONCLUSION AND RECOMMENDATION

Conclusion

The results of the PVECM estimation show that there is a short-term relationship between the development of the tobacco industry which proxied by the output of tobacco products and gross regional domestic products in the food, beverage and tobacco processing industries. There was relationship between the variable output of tobacco production and the area of tobacco plantations and the productivity of tobacco land in long term. Variable area of tobacco plantation and implicit index of GDP is the main variable that significantly influences the development of the tobacco industry based on the results of the decomposition variance for 10 periods. This implies that the pattern of development of the tobacco industry in the four regions of Jember, Bojonegoro, Probolinggo and Pamekasan greatly influenced by the tobacco productivity and the rate of price change. Therefore, increasing tobacco productivity by continuing to stabilize prices is important considering that needs stimulus to increase tobacco production in long run.

The exploration results of the application of the Triple Layered Business Model Canvas (TLBMC) towards the development of the tobacco industry illustrate that the future pattern of development of the tobacco industry needs to be oriented not only to economic aspects, but also social and environmental aspects. This is important to support the strengthening of social benefits to the community as well as to mitigate the negative impacts generated by the tobacco industry. In addition, Research and Development (D & D) activities need to improve and support the existence of the tobacco industry through various results of research and development of market needs. Strengthening innovation is important to improve competitiveness to face global competition. Development of several aspects was needed in a roadmap that was made specifically for the development of the tobacco industry in East Java. Thus, an increase in the performance of the tobacco industry can accelerate economic growth in East Java by increasing the amount of contributions both to Gross Regional Domestic Products and through the application of labor.

Suggestion

From the discussion above, the author attempts to formulate a number of recommendations related to the development of the Tobacco industry:

1. The tobacco industry requires development that is oriented to the Sustainable Development Goals (SDGs) to adjust to the direction of the current global economic development. Environmental and social issues are a major concern at this time, so that strong integration is needed between management companies, the government, tobacco farmers and all stakeholders involved.
2. The issue of economic equality in the attention of all groups. Tobacco is one of the mainstay commodities for Indonesia's international trade today. One of the problems is the issue of inequality between farmers and entrepreneurs in the tobacco industry. therefore, the government needs to support the development of a good trade system in order to cut down the distribution channels that provide high economic costs in the

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trade process of the tobacco industry.Pemerintah daerah perlu membuat *roadmap* pembangunan industri tembakau yang berkelanjutan dengan menggunakan instrumen pengembangan berbasis Ekonomi, Sosial dan Lingkungan melalui model *Triple Layered Business Model Canvas*

3. Determination of excise tax policy by the government should be adjusted to the conditions of the tobacco products industry so as not to kill the tobacco products industry
4. The need for socialization and sharing knowledge further by the Government daerag to educating tobacco growers in order to productively use tobacco fields that one of them through high-elevation determination tobacco growing areas to produce quality tobacco products.
5. In order to reduce social impact on consumption of tobacco industry products, creative tobacco industry players are expected to produce substitute products for the tobacco industry and find new tobacco varieties that have low nicotine and tar content.
6. The Government Needs to appeal to the tobacco industry players in the framework of mastering technology for the development of the tobacco industry related to the reduction of risks or impacts, innovation processes to standardize products with low levels of nicotine tar, expanding partnerships between tobacco farmers and tobacco industry players, and improvement of human capabilities.
7. Regulation for the input side of the tobacco products industry is done by increasing the welfare of farmers through increasing farmer productivity and tobacco land, implementing good agriculture practices (GAP), increasing partnership programs and intensifying and diversifying tobacco businesses.
8. Regulations for the short-term output side of local governments towards the tobacco industry are focused on creating a conducive business climate and creating business certainty. Whereas in the long term it is necessary to prioritize related impacts in the environment and society.

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