

Regional Development Based on System Integration Paddy Rice Farming and Livestock Buffaloes in Humbang Hasundutan Regency

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Abstract-This study was conducted to assess the regional development based on system integration paddy rice farming and livestock buffaloes in Humbang Hasundutan. This study uses analysis of linear regression with SPSS. The results showed; a) system integration paddy rice farming and livestock buffaloes more efficient than non-integration farming, with a value of R/C ratio of paddy rice and buffaloes in integration farming is $2.4795 > R/C$ ratio of non integration farming, b) physical factors such as system integration farming that variable; land area, livestock breeds, and livestock seeds have a positive and significant impact to regional development, c) social factors is a variable system integration farming that variable; labor and the level of education farmers have a positive and significant impact to regional development, while social variables; dependents of farmers have a negative effect to regional development, d) economic factors such as variable system integration; capital of farming and output prices have a positive effect and significant to regional development, while the variable input prices a negative affect to regional development. Based on the research results suggested: a) the government of Humbang Hasundutan training the farmers in managing systems integration paddy rice and livestock, b) the government of Humbang Hasundutan provide quality seeds and reasonably priced, and counseling about how to make a good farming, c) the government of Humbang Hasundutan providing education and training to improve traffic farmers to development farming which increased revenue to regional development, d) the government of Humbang Hasundutan helped farmers to obtain capital more flexible farming and should maintain the stability of output prices of agricultural products.

Keywords-*integrated farming system; paddy rice; buffaloes; revenue; regional development.*

I. INTRODUCTION

The agricultural sector has an important role in the national economic development and has an important role as the main employer, producer of the staple food, agricultural commodities as a determinant of price stability, the driving exports and agricultural commodities as material manufacturing industry. Regional development is a development process that is intended to make a change towards a better development for communities, governments, and environment in the region by utilizing a variety of resources such as agriculture sector (Riyadi and Baratakusumah, 2003).

Development of the agricultural sector can be done in various policies, including the development of technology in agriculture and agribusiness. Gumbira (2001) in Juangsana (2013) convey the technological development in agriculture and agribusiness is expected to be one important factor in the development of agriculture that contributes to; a) increase productivity and efficiency; b) introduce appropriate new technologies, c) provide added value.

Agricultural development can be done through intensification, extension, diversification, and rehabilitation in an integrated manner with the aim to increase farmers' income. Agricultural development to increase farmers' income can be done with a variety of approaches that have relevance to physical factors, namely; land use, fertilizer, seed, plant cultivation, plant protection. Social factors such as; labor, farmer education and institutional level. Economic factors such as; capital, farmers income, interest rates, inflation

and the form factor of development, roads, and irrigation (Nainggolan *et al.*, 2016).

Diabel *et al.*, (2008), said that physical factors such as; fertility of soil, topography, land use, and social factors such as; management activities of farmers and shape affect the productivity of up to 10% of the farms are managed. Boix and Zinck (2008) also expressed over the planning of physical factors, namely; good land use affect monoculture farming systems for food commodities, helping farmers may use the land effectively.

In the framework of agricultural development, the government has made agricultural development policies with the aim of increasing the capacity of farmers through agricultural development, namely the formulation of objectives; a) increase the income and standard of living of farmers through the development of agribusiness systems, b) develop activities competitive agribusiness and sustainable, c) to realize the food security system that is based on the diversity of food and local food cultures, d) increasing job opportunities and businesses for society through the development of agribusiness (Setyowati, 2012).

The agricultural sector has an important role in people's income and development of Humbang Hasundutan Regency because the agricultural sector contributes significantly to GDP region. The agricultural sector contributed 52.79% (in The year 2012), and 53.6% (in Year 2014) to the GDP Humbang Hasundutan Regency, with an average growth rate of 3.83% for 2009-2014 (BPS, Humbang Hasundutan Dalam Angka, 2015).

Agus (2006); Ugwumba (2010), said the integrated farming system (IFS) was able to improve the productivity of rice farming and improve the income of farmers. Rice production can be increased from the usual 5-6 tonnes/ hectare up to 7.6 to 8 tons/ hectare. Chili productivity can be increased from 0.5 kg/plant up to 0.7 kg/plant (Nurcholish, 2011), even the integrated farming system (IFS) is more reliable if the constituent components is a local resource (Salikin, 2003).

Preston (2000) says the integrated farming system (IFS) is a management system of the crop, livestock, and fish with the environment to produce a product optimally. Sutanto (2002); Supangkat (2009), delivering an integrated farming system (IFS) has the advantage both in terms of ecological and economic aspects, namely; farming is environmentally friendly, energy efficient, more diversification of farming, diversification of products higher and better labor absorption (Nainggolan *et al.*, 2016).

Humbang Hasundutan as a potential area for development of the agricultural sector, there are

farmers to cultivate paddy rice commodity that is integrated with the livestock with a total 8,937 households. Farming is managed by the concept of agricultural integration between paddy rice farming as a core business with livestock buffaloes in household scale and spread in 10 districts. This system is a farm managed by the farmers for generations as a local wisdom. This farm work force in families with limited capital, with management scheme by local wisdom (Nainggolan *et al.*, 2016).

BPS (2014) show that the rate of growth of productivity of commodity paddy rice on Humbang Hasudutan fluctuated 2009-2012. Year 2009 recorded 1.0%, rising to 1.48% in 2010 and fell to 0.10% in 2011 and rose to 0.60% in 2012, with an average growth rate of 0.80% and smaller than the average rate of growth of productivity of paddy rice is 2.14% of North Sumatera (BPS Sumatera Utara, 2014), thus the much needed agricultural development planning to improve agricultural productivity and more comprehensive agricultural development in accordance with the potential and agro-ecological conditions of the region in order increase the income of farmers in Humbang Hasundutan Regency.

Elizabeth and Darwis (2003) stated there are some things that the strength of the farmers in increasing their income, namely; a) motivation owned by farmers in farming rice and the desire of farmers to increase their income, b) experience of farmers to manage rice farming, c) availability of labor in the family to process the farming, d) marketing that is easy for the product of farm, for example, consumers come to the location of the farm to buy the product of farmers. Furthermore Yanti, *et all* (2010) convey some internal factors that affect farmers' income increase in paddy rice, namely; a) access to capital for farmers needs of the means of production factors, b) ease of getting quality seeds and fertilizers, c) the economic value of rice and good marketing for the revenue farmers. Based on the above research is conducted to assess the regional development based on system integration paddy rice and livestock buffaloes in Humbang Hasundutan Regency.

II. RESEARCH PURPOSES

Based on the background described, the goal of this research is:

1. To determine the efficiency of system integration paddy rice farming and livestock buffaloes and non-integration in Humbang Hasundutan Regency.
2. To determine the influence of physical factors, namely; land area, paddy rice seeds, livestock breeds, livestock feeds, paddy rice fertilizer and pesticide in the system integration paddy

rice farming and livestock buffaloes to the regional development in Humbang Hasundutan Regency.

3. To determine the influence of social factors, namely; labor, education of farmer, dependent of farmers in the system integration of paddy rice farming and livestock buffaloes to the regional development in Humbang Hasundutan Regency.
4. To determine the influence of economic factors, namely; farm capital, input prices, output prices in the system integration paddy rice farming and livestock buffaloes to the regional development in Humbang Hasundutan Regency.

III. RESEARCH METHODS

This research was conducted in Humbang Hasundutan, determined purposive as well as this region is an agricultural area with the potential to be developed in the framework of regional development.

The population in this study were farmers paddy rice farming with livestock buffaloes in the scale of households by 8,937, spread over 10 districts in Humbang Hasundutan, there are District of Pakkat (1,663 households), Onan Ganjang (708 households), Sijamapolang (233 households), Doloksanggul (1,456 households), Lintong Nihuta (1,150 households), Paranginan (560 households), Baktiraja (152 households), Pollung (1,242 households), Parlilitan (1,342 households) and Tarabintang (428 households), (BPS Humbang Hasundutan, 2015), The sample in this study was determined by using a formula Slovin;

$$n_c = \frac{N}{1 + Ne^2}$$

Where; n_c = sample size, e = interval error (0.1), N = Population. The samples obtained are rounded 99.98 up to 100 samples. Total sample (respondents) who will be interviewed for each district is determined in proportion to the sampling method is purposive (Sugiyono, 2006), with the details; District of Pakkat (19 respondents), Onan Ganjang (8 respondents), Sijamapolang (3 respondents), Doloksanggul (16 respondents), Lintong Nihuta (13 respondents), Paranginan (6 respondents), Baktiraja (2 respondents), Polling (14 respondents), Parlilitan (15 respondents) and Tarabintang (5 respondents).

TYPES AND SOURCES OF DATA

The data used in this study are primary data obtained from the field through interviews using questionnaires. And secondary data is derived from sources from the publication of the Badan

Pusat Statistik (BPS) Humbang Hasundutan, the results of research, journals and other official publications.

DATA ANALYSIS METHOD

The analytical method used in this study are;

- a) To determine the efficiency of paddy rice farming and livestock buffaloes in system integration and non integration in Humbang Hasundutan Regency, analyzed by models R/C-ratio, with criterion $R/C > 1$; farming is feasible, $R/C = 1$; BEP (break-even point) and $R/C < 1$; farming is not feasible.

- b) To analyze the influence of physical factors; land are, paddy rice seeds, livestock breeds, livestock feed, fertilizer and pesticide in the system integration paddy rice and livestock buffaloes to the regional development in Humbang Hasundutan used multiple linear regression analysis, with the formula:

$$Y = a + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + e \dots \dots \dots 1)$$

Y = Regional development with indicators of farmers' income in system integration of paddy rice and buffaloes.

- a = constant
- X_1 = land area
- X_2 = paddy rice seed
- X_3 = livestock breeds
- X_4 = livestock feed
- X_5 = paddy rice fertilizer
- X_6 = pesticide
- e = error term

- c) To analyze the influence of social factors; labor, education of farmer, dependent of farmers in system integration paddy rice farming and livestock buffaloes to the regional development in Humbang Hasundutan, used multiple linear regression analysis, with the formula:

$$Y = a + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + e \dots \dots \dots 2)$$

Y = Regional development with indicators of farmers' income in system integration of paddy rice and buffaloes.

- a = constant
- X_1 = labor
- X_2 = education of farmers
- X_3 = dependent of farmers
- e = error term

- d) To analyze the influence of economic factors; farm capital, input prices, output prices of paddy rice farming and livestock buffaloes in systems integration to the regional development of Humbang Hasundutan used multiple linear regression formulae:

$$Y = a + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + e \dots \dots \dots 3)$$

Y = Regional development with indicators of farmers' income in system integration of paddy rice and buffaloes.

a = constant

X1 = capital of farming

X2 = input prices

X3 = output prices

e = error term

IV. RESULTS AND DISCUSSION

The Level of Efficiency System Integration Paddy Rice Farming and Livestock Buffaloes in Humbang Hasudutan

Cost of Production Paddy Rice Farming and Livestock Buffaloes In System Integration

The total cost of production is the sum of the factors of production used in paddy rice farming and livestock buffaloes in one year, which includes variable cost and fixed cost. The cost of production paddy rice farming and livestock buffaloes in Humbang Hasundutan Regency as in Table 1.

Table 1. The Cost of Production Paddy Rice Farming and Livestock Buffaloes in Humbang Hasundutan.

Component	Paddy rice farming/ ha/ year (Rp)	Livestock buffalo/ year (Rp)	Non integration (paddy rice + livestock) farmers/ year (Rp)	Paddy rice and Livestock buffaloes In systems integration/ year (Rp)	% Cost ratio of Integration and non integration farming
Fixed Cost (Rp)	5.428.199,30	4.710.500,00	10.138.699,30	7.110.959,44	0,7014
Variable Cost (Rp)	2.493.217,40	5.431.333,30	7.924.550,70	6.369.640,56	0,8038
Total cost (Rp)	7.921.416,70	10.141.833,30	18.063.250,00	13.480.600,00	0,7463

Sources: Primary data, processed in 2016.

Based on the results of data processing as well as in Table 1 it can be seen that the average total cost for the farming of paddy rice is Rp. 7,921,416.70 per ha per year and the average total cost of livestock buffaloes is Rp. 10,141,833.30 per year. If farmers manage the farm with the system integration between paddy rice and livestock buffaloes, the average total cost paid by farmers is Rp. 13,480,600.00 per year and if the farmers manage non-integration of farming the farmer will have to pay Rp. 18,063,250,00 per year for paddy rice farming and livestock with a household scale. This means farming systems integration can save farmers' production costs incurred for each year indicated by the cost ratio between the integrated farming system (IFS) with non-integration farming of 0.7463.

Revenue, Farmer Incomes, and Level of Efficiency Paddy Rice Farming and Livestock Buffaloes in System Integration

Soekartawi (2006) convey revenue is the total value of production by operating activities multiplied by the price. Revenue of farmers depends on the amount of production and the selling price. Farmers' income is the result of a reduction revenue to the cost of factors of production incurred by farmers. Production sector is the utilization factors of production used as inputs for farm production process (Sofyan, 2007).

The efficiency of farming is an attempt to achieve the goal by using the business production factor in minimal. Efficiency is the ratio between the cost of production with the output. If the result of farming farmers revenue is greater than the cost will reflect a good ratio and if the higher this value, the farm will be more efficient.

Based on analysis of the data result; revenue, farmers' income and the level of efficiency of paddy rice farming and livestock buffaloes in system integration in Humbang Hasundutan Regency as in Table 2.

Table 2. Revenue, Income of Farmers and Level of Efficiency of Paddy Rice Farming and Livestock Buffaloes in System Integration in Humbang Hasundutan Regency.

Component	Revenue (Rp)	Total Cost (Rp)	Income of farmers (Rp)	R/C Ratio
Paddy rice farming	23.323.000,00	7.921.416,70	15.401.583,30	2,9443
Livestock buffalo	22.882.534,25	10.141.833,30	12.740.700,95	2,2563
Paddy rice and livestock buffalo integration farming	33.425.540,00	13.480.600,00	19.944.940,00	2,4795
Non integration (paddy rice and livestock)	39.205.533,35	18.063.250,00	21.142.283,35	2,1705

Sources: Primary data, processed in 2016.

Based on the analysis of data, as in Table 2 result that the average revenue of farmer from paddy rice farming Rp. 23,323,000.00 per ha/year, and buffaloes Rp. 22,882,534.25 per year. Then

the average revenue farmers for paddy rice and livestock buffaloes in systems integration is Rp. 33,425,540.00 per year while the revenue farmers

with non-integration are Rp. 39,205,533.35 per year.

The average total cost of paddy rice farming Rp. 7.921.416.70 per ha per year, livestock buffaloes is Rp. 10,141,833.30 per year. For farming integration paddy rice and livestock buffaloes are Rp. 13,480,600.00 per year and average total cost of farming non-integration are Rp. 18.063.250,00 per year derived from paddy rice and livestock.

Based on the analysis of data, as in Table 2 also result that the average income of farmers for paddy rice farming Rp. 15,401,583.30 per ha per year with R/C ratio of 2.9443. The revenue of the livestock buffaloes is Rp. 12,740,700.95 with R/C ratio of 2.2563. Then the average income of farmers with system integration paddy rice farming and livestock buffaloes is Rp. 19,944,940.00 per year with R/C ratio of 2.4795. Furthermore, the average income of farmers with integration farming is Rp. 21,063,250.35 per year with a value of R/C ratio of 2.1705.

Thus if it is seen by the R/C ratio of the paddy rice farming is still more efficient than livestock farming, which is indicated by the value of R/C ratio of paddy rice farming 2.9443 > of the value of the R/C ratio of buffaloes livestock is 2.2563. And within their data processing results as in Table 2 indicate that in Humbang Hasundutan

Regency, system integration paddy rice and livestock buffaloes are more efficient than if the farm is managed non-integration farming, which is indicated by the value of R/C ratio systems integration paddy rice farming and livestock buffaloes 2.4795 > of the value of the R/C ratio non-integration farming is 2.1705.

Influence of Physical Factors System Integration Paddy Rice Farming and Livestock Buffaloes to Regional Development in Humbang Hasundutan

Rustiadi (2011) said one of the indicators of regional development based on the development process is income. Regional development in Humbang Hasundutan Regency in the context of the integrated farming system (IFS) is the use of parameters farmers' income. Farmers' income is influenced by many factors which are categorized into physical, social and economic among others; land area, rice production, the use of labor, the use of seed capital, fertilizers, pesticide for paddy rice farming and livestock feeds.

Based on the results of data analysis known physical factors of paddy rice farming and livestock buffaloes in integrated farming systems to the regional development in Humbang Hasundutan, as in Table 3.

Table 3. Results of the analysis of the influence of physical factors of paddy rice farming and livestock buffaloes in the system integration to the regional development in Humbang Hasundutan Regency.

No	Variable	Coefficients	t	Sig	Adjusted R-squared
1.	Intersep	781,4			0.948
	X1 (land area)	0,487*	11,431	0,02	
	X2 (paddy rice seeds)	0,535	6,154	0,80	
	X3 (livestock breeds)	0,155*	12,235	0,01	
	X4 (livestock feed)	0,289*	10,124	0,03	
	X5 (paddy rice fertilizer)	0,785	9,518	0,85	
	X6 (pesticide)	0,837	8,965	0,99	

Notes: * significant at $\alpha = 5\%$

The results of the analysis of data as in Table 3 obtained regression model as follows: $Y = 781.4 + 0,487X1 + 0,535X2 + 0,155X3 + 0,289X4 + 0,785X5 + 0,837X6$.

Results showed data analysts adjusted R^2 value of 0.948 means that 94.8% of independent variables affect to dependent variable, in the sense of the variable land area, paddy rice seeds, livestock breed, livestock feed, fertilizer, and pesticide give the effect of 94.8% to the regional development in Humbang Hasundutan Regency seen from the level of farmers' income and the remaining 5.2% due to other factors beyond the variables to be estimated.

Based on the analysis of data as in Table 3 is result that the variable of land area has a positive

effect with the coefficient of 0.487 and significant at $\alpha = 5\%$, with a value of 0.02 t sig to the regional development in Humbang Hasundutan Regency, meaning that if the land area that is managed by farmers increasing the income of farmers in systems integration farming will increase, thus increasing income, illustrate the regional development in the region, as submitted Rustiadi, (2011) which states that one of the indicators of regional development based on the development process is revenue.

Then based on the analysis of data as in Table 3, that variable livestock breeds have a positive and significant impact to regional development in Humbang Hasundutan with coefficient 0.155 and significant at $\alpha = 5\%$, with a

value of t sig 0.01, meaning that if the livestock breeds available and at an affordable price farmers in Humbang Hasundutan it will impact on increasing the income of farmers which describes to regional development in the region.

Then variable livestock feed significant and positive impact to regional development, which is based on the level of significance result variable livestock feed has a coefficient of 0.289 and significant at $\alpha = 5\%$, with a value of 0.03 t sig to regional development, where if livestock feed is available with both the will have an impact on increasing the income of farmers in the system

integration, increase the income of farmers, emphasizing the regional development in Humbang Hasundutan.

Influence of Social Factors in Systems Integration Paddy Rice Farming and Livestock Buffalo to The Regional Development in Humbang Hasundutan

Based on the results of data analysis known social factors paddy rice farming and livestock buffaloes in system integrated to the regional development in Humbang Hasundutan as in Table 4.

Table 4. Results of the analysis of the influence of social factors paddy rice farming and livestock buffaloes in the system integration to the regional development in Humbang Hasundutan Regency.

No	Variable	Coefficients	t	Sig	Adjusted R-squared
1.	Intersep	527,8			0.968
	X1 (labour)	0,765*	12,553	0,03	
	X2 (education of farmer)	0,886*	11,345	0,04	
	X3 (dependent of farmers)	-0,650	8,234	0,08	

Notes: * significant at $\alpha = 5\%$

Based on the analysis of data as in Table 4 was obtained regression model as follows:
 $Y = 527.8 + 0.765X1 + 0.886X2 - 0.650X3$

Results showed data analysts adjusted R^2 value of 0.968 means that 96.8% of independent variables such as variable labor, education of farmers, dependent of farmers influence to the regional development in Humbang Hasundutan seen from the level of farmers' income and the remaining 3.2% due to factors other than the variable to be estimated.

Based on the analysis of data as in Table 4 result variable labour has a positive effect with the coefficient of 0.765 and significant at $\alpha = 5\%$, with a value of 0.03 t sig to the regional development in Humbang Hasundutan Regency, this can be interpreted if the labour available well then it will have an impact on regional development that can be seen from the increase in the income of farmers in Humbang Hasundutan, according to research results Tarmizi (2012) which states that the integrated system of paddy rice and livestock has a positive impact on regional development in Serdang Bedagai, which indicated by the increase in paddy rice production in integrated farming system (IFS) and increased use of labor in the family.

Then the variable education of farmers is also positive and significant impact on regional development in Humbang Hasundutan, as indicated by the coefficient of 0.886 and significant at $\alpha = 5\%$, with a value of t sig 0.04, meaning that if the level of education of farmers getting better will positively affect the regional development marked by the increasing income of farmers in Humbang Hasundutan Regency. Then the social variable dependents of farmers have a negative effect to the regional development of the area, but not significant with coefficient -0.650, meaning that if the dependents of farmers are increasing, then it will not have a negative impact on the regional development Humbang Hasundutan Regency.

Influence of Economic Factors Integration Paddy Rice Farming and Livestock Buffaloes in System Integration to Regional Development in Humbang Hasundutan Regency

Based on the results of data analysis known economic factors paddy rice and livestock buffaloes in system integrated on regional development in Humbang Hasundutan as in Table 5.

Table 5. The results of the analysis of the influence of economic factors paddy rice and livestock buffaloes in system integration to the regional development in Humbang Hasundutan Regency.

No	Variable	Coefficients	t	Sig	Adjusted R-squared
1.	Intersep	567,6		-	0.958
	X1 (capital of farming)	0,870*	13,359	0,03	
	X2 (input prices)	-0,543	7,876	0,09	
	X3 (ouput prces)	0,876*	10,393	0,04	

Notes: * significant at $\alpha = 5\% = 0.05$

The results of the analysis of data as in Table 5 is obtained regression model as follows:

$$Y = 567.6 + 0.870X1 - 0.543X2 + 0.876 X3$$

Results showed data analysts adjusted R² value of 0.958 means that 95.8% of the variable capital of farming, input prices, output prices to give effect to the regional development in Humbang Hasundutan seen from the level of farmers' income, the rest of 4.20% due to other factors which are not included in the estimation.

Based on the analysis of data as in Table 5 result the variable capital of farmers has a positive effect with the coefficient of 0.870 and significant at $\alpha = 5\%$, with a value of 0.03 t sig to the regional development as seen from the income level of farmers in systems integration in Humbang Hasundutan Regency, meaning that if the capital of farming increase will have a positive impact for the regional development an indicated by the increased incomes, system integration paddy rice and livestock buffaloes in Humbang Hasundutan Regency.

Then the variable input prices has a negative influence but not significant to the regional development in Humbang Hasundutan, as indicated by the coefficient of -0.543, meaning that if the price of inputs, in this case, the price of fertilizers, pesticide, seed and feed increases than will impact on the level the income of farmers in the paddy rice farming and livestock buffaloes in system integration in Humbang Hasundutan Regency.

Meanwhile output prices have a positive impact and significantly to the regional development as seen from the level of farmers' income, and based on the level of significance is unknown output price variable has a coefficient of 0.876 and significant at $\alpha = 5\%$, with a value of 0.04 t sig to the regional development, meaning the price output, in this case, the price of grain, buffalo selling price, the price of meat and buffalo milk price increases then the income level of farmers in systems integration will increase which also depicts the regional development in Humbang Hasundutan Regency.

V. CONCLUSIONS

Based on the results of data processing and discussion that done, so the conclusions that can be drawn is:

1. System integration paddy rice and livestock buffaloes in Humbang Hasundutan more efficient than the non-integration, which is indicated by the value of R/C ratio of paddy rice in systems integration with livestock buffaloes is 2.4795 > of the value of the R/C ratio of non-integration with value 2.1705.
2. Physical factors such as variable systems integration; land area, livestock seeds and livestock seeds have a positive and significant impact on the regional development in Humbang Hasundutan Regency.
3. Social factors such as variable farming systems integration; labor and education of farmers have a positive effect and significant to the regional development, while that dependent of farmers as social variables has the negative effect to regional development in Humbang Hasundutan Regency.
4. Economic factors such as variable farming systems integration; capital of farmers and output prices have as positive effect and significant to the regional development, while the economic variable input prices have negatively affect to the development in Humbang Hasundutan Regency.

VI. RECOMMENDATIONS

Based on the results of data processing and the discussion that has been done, it is recommended:

1. For the government, Humbang Hasundutan must conduct training the farmers in managing their farms in system integration between paddy rice farming and livestock.
2. The government of Humbang Hasundutan should play a role provide quality seed and affordable for farmers, in addition to the necessary counseling for farmers or ranchers about how to be a goog farming.
3. The government of Humbang Hasundutan should provide education and training to

improve traffic farmers in managing and developing farming that have an impact on increasing the income of farmers and development farming wich increased to regional development in Humbang Hasundutan Regency.

4. For the government of Humbang Hasundutan role in helping farmers to obtain capital more flexible farming and the government is also expected to contribute to maintaining price stability in the output of agricultural products in Humbang Hasundutan Regency.

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