Influence of Supporting Aspects and Agribusiness Main in Improving the Welfare of Corn Farmers in the Development of Simalungun Regency – Indonesia

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Abstract - **This study aims to analyze the effect of supporting aspects and the main aspects of agribusiness on production and the effect of production aspects on the welfare of corn farmers in Simalungun Regency based on three regional categories with low, medium and high production levels. From primary data processing to 270 farmer respondents and analyzed using the Structural Equation Modeling (SEM) method, the results show that positive and significant supporting aspects affect production and production aspects positively and significantly affect welfare, while the main aspects with indicators of road accessibility, environment and technology has a positive but not significant effect on production. This shows that this aspect has not been optimally applied and supports the increase in corn production in Simalungun Regency.**
Keywords - **Agribusiness, Main Support, Production, Welfare**

I. INTRODUCTION

The realization of people's welfare is the goal of a development (Miraja, 2010). Supporting this statement, Soekirno (1985) stated that one indicator of development success is an increase in economic growth, where the higher the level of economic growth, the higher the level of welfare of a society. According to Sirojuzilam (2015) in real terms fluctuations in economic growth can be known from the level of Gross Regional Domestic Product (GRDP).

Simalungun Regency Gross Regional Domestic Product (GRDP) data based on business fields based on current prices in 2016 stated that the agricultural sector contributed 51%, this shows that the agricultural sector is the economic driving sector in Indonesia. According to (Damayanti, 2013) the development of a region's leading commodity is one of the efforts that can be made in terms of increasing the contribution of the agricultural sector to the GRDP. Tarigan (2009) states that superior commodities that have comparative advantages need to be developed in order to encourage the creation of competitive advantages so as to be able to compete and provide high profits, where the development can be carried out integrated in the agribusiness system from upstream and downstream so that it is expected to be able to increase economic growth territory and community welfare.

According to Sarasutha (2002) the main commodity of food crops is corn. Judging from the aspect of exploitation and the use of the results, corn is the main crop commodity in Indonesia. The concept of the three pillars in regional development and agribusiness aspects can be combined and matched in building a model of corn agribusiness development in Simalungun Regency. According to Triutomo (2001) Indonesia's development is highly dependent on three main elements namely, the availability of Natural Resources (SDA), the ability of Human Resources (HR) and the use of technology. Meanwhile, according to Rahim (2007) in the concept of agribusiness consists of several interrelated subsystems namely, production input subsystem, production subsystem, processing subsystem, marketing subsystem and supporting subsystem.

Supporting subsystems are the scope of government efforts to support agribusiness efforts such as counseling / education / training, fertilizer subsidies and production input assistance that supports farming activities from environmental aspects that produce technology and improve road accessibility. While the production subsystem is an activity in farming that produces a variety of agricultural products that include all forms of small and large-scale production organizations that in the process require various types of financing. (Firdaus, 2012).

Extension services are developed in harmony with the spirit of regional autonomy and decentralization which are encouraged to become the responsibility and authority of local governments by making effective human and institutional resources available, location and commodity specific services and include upstream, on-farm and downstream agribusiness systems and even supporting sectors (Pambudy, 2009). As is the case with what Pasaribu (2009) stated that the implementation of agricultural extension must be effective and efficient by involving more extension workers, farmers and business actors by using methods and techniques that are participatory and systemic in nature by justifying independent, private and government agricultural extension workers.

The existence of aid programs provided by the government will motivate farmers to do business. The assistance can be in the form of the provision of superior seeds, assistance in the provision of fertilizers and pesticides, which can be an additional capital for farmers in production. In 2010 the government provided subsidized fertilizers distributed by PT.Pupuk Sriwijaya including Urea, SP-36, ZA and NPK fertilizers, with effective use directed at the application of balanced fertilizers and recommended technical use standards (Ministry of Agriculture, 2010).

In Indonesia, maize plants can grow from the lowlands to the mountains with an altitude between 1,000 - 1,800m above sea level, while the optimum height of planting ranges from 0 - 600m above sea level (Karya Tani Mandiri Team, 2010). In addition to environmental factors, another thing that is also important is the accessibility of farming roads. According to Arifin (2005), one of the infrastructures that is the locomotive of other sectors in the economy is the road. Farm road conditions will affect general agribusiness activities due to the perishable nature of agricultural commodities.

Production is the result of multiplication between harvested area and level of productivity, so that the pattern of production development is influenced by the development of harvested area and productivity. The development of maize production in Indonesia tends to fluctuate but in general has increased significantly, where in the period 1969 - 2015 the highest production was achieved in 2015 which amounted to 26.667 million tons with an average positive growth of 6.05% per year (Ministry of Agriculture, 2016).

Suryanto, et al (2005) states that community welfare is a condition where basic needs are met which can be reflected in decent housing and adequate clothing and food needs. According to Tajidan, et al (2013) that a strategy that can benefit and improve the welfare of farmers is to reduce the involvement of marketing institutions that block direct links between farmers and companies, change the pattern of profit sharing and adjust the purchase of agricultural inputs with the sale of output in accordance with market prices.

II. RESEARCH METHOD

A. Research methods

The research method used is the case study method, namely research conducted by looking directly at spaciousness. In obtaining data the author uses qualitative and quantitative research methods. Descriptive qualitative research method is a pattern of

approach taken in solving problems using descriptive-analysis design. Through a descriptive-analysis approach it is expected to provide an overview of the phenomena that occur and a deeper interpretation of the relationship of these phenomena will be obtained.

B. Location Determination Method

This research was conducted in Simalungun Regency which is one of the corn production centers in North Sumatra Province. Determination of the location of the study was carried out using the One Stage Cluster Sampling method with a sample fraction of 30% to obtain 9 (Nine) districts from 31 districts in Simalungun Regency. Determination of the location is done purposively with the principle of representation of districts with high, medium and low scale production.

C. Sample Determination Method

The population in this study were farmers who carried out corn farming in Simalungun Regency. According to Supriana (2016) a good sample must meet an adequate size or size according to the nature and purpose of the study. By using convenience sampling techniques or purposive sampling, the number of samples consisted of 270 farmers distributed in nine districts.

D. Method of collecting data

Data collected in this study consisted of primary and secondary data. Primary data obtained using the method: field research, which goes down directly to the field and conduct interviews with respondents using a list of questions (questionnaire), observations and documentation. Whereas secondary data was obtained through literature studies such as the Central Statistics Agency, the Simalungun District Agriculture Office, the Office of Manik Maraja Village Head, and other supporting sources including: community leaders, local government officials (Village Secretary, RT Chairperson) or other parties in harmony with this research.

E. Data analysis method

The basic method of analysis used is the mixed methods method is a research approach that combines or associates qualitative and quantitative forms (Cresswell, 2015). While the data analysis technique used is using SEM (Structure Equation Modeling) analysis with the help of a Likert scale (Riduwan, 2002).

III. RESULTS AND DISCUSSION

The results of tests conducted by using SEM on the effect of aspects of corn farming production as a potential mediator of the main aspects and supporting aspects in the management of corn farming on the welfare of farmers in Simalungun District obtained the model presented in Figure 1.
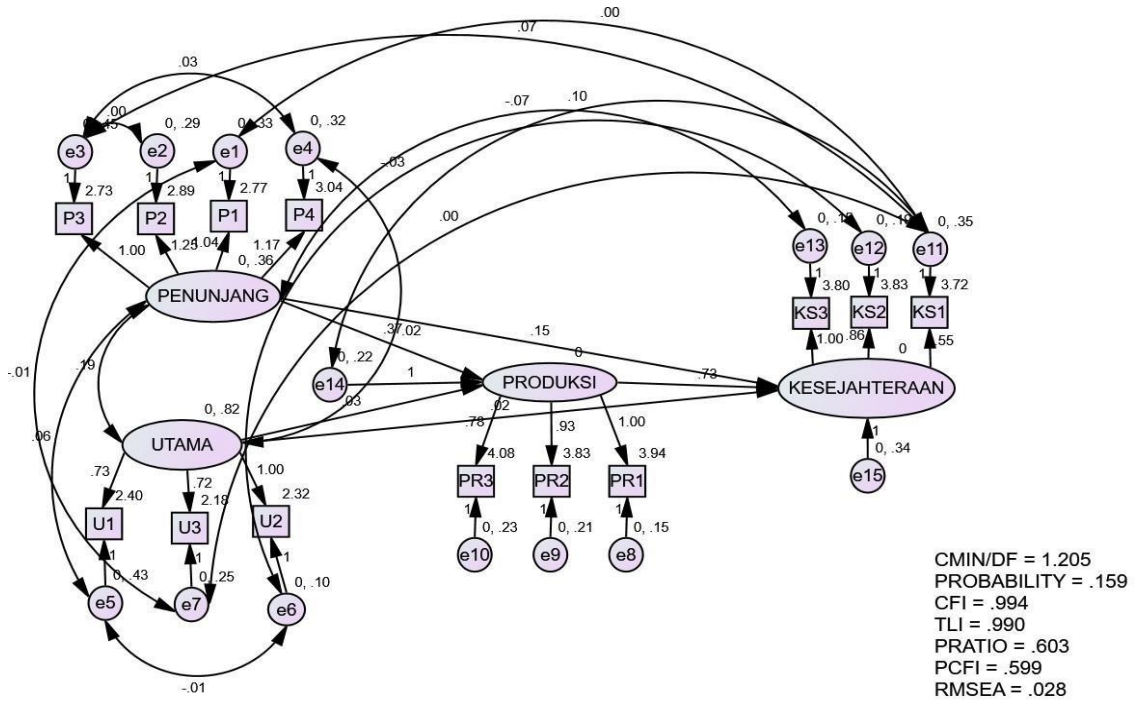
Fig1. Model of the Effect of Agribusiness Aspects on Farmer Welfare

The loading factor value (for reflexive indicator) and loading factor (for reflective indicator) shows the value of each indicator used as a measurement of each latent variable. The indicator with the biggest loading factor / weight shows that the indicator is a measure of the strongest variable (dominant). The model construct presented is a model that is produced by having a goodness of fit model then the index values will be compared with the critical value (cut off value) of each index.

Counseling reflects supporting aspects, production input assistance, subsidies and farming experience. The main aspects are reflected by the accessibility of roads, environment and technology. The production aspect is reflected by an increase in output, an increase in land productivity and an increase in labor productivity while the welfare construct is reflected by the efficiency of production costs, an increase in income and an increase in product prices. The overall Goodness of Fit test results show that 7 (seven) criteria used are CMIN / DF, Probability, CFI, TLI, P-Ratio, PCFI and RMSEA all show good models. According to Gudono (2015), the best criteria used as an indicator of goodness are used absolute model fit with CMIN / DF values less than 2, Probability more than 0.05, CFI more than 0.9, TLI more than 0.9, P-Ratio more than 0.5, PCFI more than 0.5 and RMSEA between values 0.05 - 0.08. In this study the value of the whole indicator has met the cut-off value; therefore the SEM model used in this study is suitable and feasible to use so that interpretation can be made for further discussion. Estimated value of the influence of aspects of agribusiness on the welfare of farmers can be seen in Table 1.

TABLE I
ESTIMATES VALUES AND SIGNIFICANCE OF VARIABLE EFFECT

			Estimate	S.E.	C.R.	P
Production	<---	Main Support	0.074	0.049	1.506	0.132
Production	<---	Additional Support	0.208	0.051	4.062	***
Welfare	<---	Production	0.692	0.11	6.307	***
Welfare	<---	P Additional Support	0.189	0.074	2.549	0.011
Welfare	<---	Main Support	0.011	0.062	0.185	0.853
P2	<---	Additional Support	0.865	0.07	12.41	***
P1	<---	Additional Support	0.664	0.085	7.852	***
U3	<---	Main Support	0.88	0.119	7.423	***
PR1	<---	Production	1			
PR2	<---	Production	0.955	0.091	10.493	***
PR3	<---	Production	0.785	0.083	9.502	***
P3	<---	Additional Support	1			
P4	<---	Additional Support	0.741	0.079	9.346	***
U1	<---	Main Support	0.771	0.062	12.356	***
U2	<---	Main Support	1			
KS2	<---	Welfare	0.868	0.07	12.445	***
KS1	<---	Welfare	0.54	0.069	7.8	***
KS3	<---	Welfare	1			

By looking at the p-value (column P) in the form of three asterisks (***), which means that the value is very small (<0.001). According to Dachlan (2014) if the sign is displayed that way then the population parameter is significantly zero. Based on Table 1 it is known that the supporting aspects reflected by counseling (P1) have an estimated value of 0.664, production input assistance (P2) has an estimated value of 0.865, subsidies (P3) have an estimated value of 1,000 and experience (P4) has an estimated value of 0.741 and all indicators significant at the 5% level which means that counseling, production input assistance, subsidies and experience can explain the supporting aspects. The main aspects reflected if road accessibility (U1) has an estimated value of 0.771, the environment (U2) has an estimated value of 1,000 and technology (U3) has an estimated value of 0.880, which indicates that all indicators can explain the main and significant aspects at the 5% level.

The production aspect is reflected by an increase in output (PR1) with an estimated value of 1,000, an increase in land productivity (PR2) with an estimated value of 0.955 and an increase in labor productivity (PR3) with an estimated value of 0.785 which means that overall indicators can explain the production aspects and are significant in 5% level.

The welfare construct is reflected by the efficiency of production costs (KS1) with an estimated value of 0.540, an increase in income (KS2) with an estimated value of 0.868 and an increase in product prices (KS3) with an estimated value of 1,000 which means that overall the indicators used are significant at the 5% level and can explain the construct of welfare.

Ferdinand (2002) and Kusnendi (2007) state that an indicator is declared valid if the estimated value of the standardized factor-loading coefficient (standardized factor loading) is not less than 0.40. Thus overall indicators used in the research model can be declared valid.

In testing the effect of supporting aspects on production obtained inner loading coefficient of 0.208 with a p-value of <0.001 (***) which means that the p-value <0.05, then there is a significant direct effect of 5% between supporting aspects towards production. The positive loading coefficient of inner loading indicates that the relationship between supporting and production aspects is also positive. This means that the higher the level / intensity of farmers in supporting aspects, the higher the level of production that will be obtained by farmers.

In testing the effect of the main aspects on production, the inner loading coefficient value is 0.074 with a p-value of 0.132, which means that the p-value> 0.05, so there is no direct effect between the main aspects of production.

Climate that includes rainfall and temperature is one of the environmental factors that become one of the determining factors in the production of an agricultural commodity where there is a fairly strong relationship between corn productivity and rainfall. The average monthly rainfall needed ranges from 85-200 mm / month during the planting period where changes in rainfall will be able to affect production. The results showed that there was an increase in average rainfall in Simalungun District, which was 314 mm with the highest rainfall occurring in December, which was 560 mm while the lowest rainfall occurred in June, amounted to 115 mm.

Technological indicators consisting of basic technology components, namely the use of superior varieties, quality & healthy seedlings, population & spacing according to the recommendations and fertilization of local specifications are still not well implemented. This is due to the high price of seeds, which causes farmers to prefer to use derived seeds that they make themselves from previous harvests. As for the choice of technological components, namely soil processing, the use of organic materials, the manufacture of drainage channels, weeding, pest control of plant diseases and handling of harvest & post-harvest levels of application are also still relatively low. Farmers who tend to engage in dry land do not have a good drainage system so they only expect irrigation from nature. The farmers sell their crops to the agents in the form of wet pipettes at a lower price level compared to the condition of dry pipettes, but farmers prefer to sell in the form of wet shells due to the limitations of the drying floor and the risk of mold on corn which can lead to lower prices and levels farmers' income.

In testing the effect of production aspects on welfare obtained inner loading coefficient of 0.692 with a p-value of <0.001 (***) which means that the p-value <0.05, then there is a significant direct effect of 5% between supporting aspects towards production. The positive loading coefficient of inner loading indicates that the relationship between production and welfare aspects is also positive. This means that the higher the level / production, the higher the level of welfare of farmers.

IV. CONCLUSIONS AND RECOMMENDATIONS

From aspects that directly affect the welfare of corn farmers, supporting aspects are positive and significant affect on production and production aspects positively and significantly affect welfare, while the main aspects with indicators of road accessibility, environment and technology have a positive but not significant effect on production. This shows that this aspect has not been optimally applied and supports the increase in corn production in Simalungun Regency.

REFERENCES

[1] Arifin, B. 2005. Pembangunan Pertanian : Paradigma Kebijakan dan Strategi Revitalisasi.Gramedia Widiasarana Indonesia. Jakarta.

[2] Creswell, J.W. 2015. Research Design Pendekatan Kualitatif, Kuantitatif dan Mixed. Yogyakarta. Pustaka Pelajar.

[3] Damayanti. Syaad, A. dan Rahmanta. 2013. Analisis Pengaruh Komoditi Jagung terhadap Pengembangan Wilayah di Kabupaten Dairi. *Jurnal Ekonom Volume 16 Nomor 2.*

[4] Firdaus, M. 2012. Manajemen Agribisnis. Bumi Aksara. Jakarta.

[5] Kementerian Pertanian. 2010. Peraturan Menteri Pertanian. Nomor : 49/ Permentan/SR.130/9/2010 Tentang Kenutuhan dan Harga Eceran Tertinggi (HET) Pupuk Bersubsidi untuk Sektor Pertanian.

[6] Kementerian Pertanian. 2017. Pedoman Pelaksanaan Kegiatan Jagung 2017. Direktorat Jenderal Tanaman Pangan. Jakarta

[7] Miraza, B.H. 2010. Khazanah Ruang dalam Kebijakan Publik. USU Press. Medan.

[8] Pambudy, R. 2009. Peningkatan Produksi dan Produktivitas Pangan untuk Kemakmuran Petani, Peternak dan Nelayan Indonesia. CLDS (Center for Labor & Development Studies) Bekerjasama Dengan Forum BULOG. Jakarta.

[9] Pasaribu, B. 2009. Revitalisasi Penyuluhan Pertanian Melalui Pemberdayaan Sertifikasi dan Pendidikan Profesi, CLDS (Center for Labor & Development Studies) Bekerjasama Dengan Forum BULOG. Jakarta.

[10] Rahim, A. dan Diah, R.D.A. 2007. Ekonomika Pertanian : Pengantar, Teori dan Kasus. Penebar Swadaya. Jakarta.

[11] Riduwan. 2002. Skala Pengukuran Variabel-Variabel Penelitian. IKAPI. Jawa Barat.

[12] Sarasutha, I.G.P. 2002. Kinerja Usahatani dan Pemasaran Jagung di Sentra Produksi. *Jurnal Penelitian dan Pengembangan Pertanian. 21 (2) : 39-47.*

[13] Sirojuzilam. 2015. *Pembangunan Ekonomi Regional*. Medan. USU-Press.

[14] Sukirno, S. 1985. *Ekonomi Pembangunan*. Jakarta. LPEF – UI. Bima Grafika.

[15] Supriana, T.. 2016. Metode Penelitian Sosial Ekonomi. USU Press. Medan.

[16] Susanto, A.N. dan M.P. Sirappa . 2005. Prospek dan Strategi Pengembangan Jagung untuk Mendukung Ketahan Pangan di Maluku. *Jurnal Litbang Pertanian Volume 24 Nomor 2.*

[17] Tajidan, Budi, S., M.Muslich, M., A.Wahib, M. 2013. The Strategy of Business Process Integration and Competitive Advantage in a Supply Chain Collaboration with the Outcome Corn Farmers' Welfare in West Nusa Tenggara Province – Indonesia, *International Journal of Science and Research (IJSR) Volume 2 Issue 11. November 2013. ISSN (Online) : 2319- 7064.*

[18] Tarigan, R. 2012. Perencanaan Pembangunan Wilayah. Jakarta. Bumi Aksara.

[19] Tim Karya Tani Mandiri. 2010. Pedoman Bertanam Jagung. Nuansa Aulia. Bandung.

[20] Triutomo, S. 2001. Pengembangan Wilayah Melalui Pembentukan KAPET. Tiga Pilar Pengembangan Wilayah; Sumber Daya Alam, Sumber Daya Manusia, Teknologi: Penyunting Alkadri, Muchdie, Suhandojo. Badan Pengkajian dan Penerapan Teknologi (BPPT). Jakarta.