THE ROLE OF INSTITUTIONAL INNOVATION IN MADUKISMO SUGAR INDUSTRY TOWARD THE SUGARCANE FARMING PRODUCTION IN THE PROVINCE OF JOGJAKARTA

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ABSTRACT

This research aims are, first analyzing the factors affecting farmers' opportunities to adopt sugarcane farming organization as considered by Madukismo SP and the second determining the transactional cost of *TR Kemitraan,* the organization of *TR KSU*, and the organization of sugarcane farming as Autonomy (*TR Mandiri).* Research's findings is farmers' opportunity to adopt Madukismo SP's sugarcane farming organizational innovation has been simultaneously affected by sugarcane land wide transaction cost, rendement, the experience of managing sugarcane farming, and respondent education. Considering the transaction cost charged against sugarcane farmers, the farmers with the farming of *TR Mandiri* bear the higher transaction cost than farmers who adopt the farming of *TR KSU* and *TR Kemitraan*.

Keywords: Multinomial logistic regression, transaction cost, sugarcane farming as business cooperation *(TR KSU)* and sugarcane farming as partnership *(TR Kemitraan),* sugarcane farming as Autonomy (TR Mandiri).

BACKGROUND

The national sugar industry problems had been happening since 1970's that involves the production aspects such as sugarcane farming, consumption, sugar industry efficiency, the merchandise and international trade. The production aspect problems related with the decreasing ability of to fulfill the sugar production in the country. The national sugar problems are likely the chronic illness that cannot be found yet the receipt to solve (Prabowo, 2000).

The decreasing of sugar production and the productivity are caused by some factors such as under minimum sugarcane cultivation, the cultivation under optimum time, the sugarcane farm majority is dry farm that having lower productivity than land rice, Ratoon crop proportion is higher (more than 60%), seed quality is not optimum, cut down of carry system *(sistem tebang*

angkut) is not optimum and the relationship disruption between sugarcane factory and the farmer (Muslim, 2003; Siagian, 2004).

One of problem that happened in Madukismo Sugarcane factory is the total production of sugar has not been fulfilling yet toward Jogjakarta society. These problems is related with the implementation of Inpres No 5 year 2008 about the discontinuous of implementation Inpres No 9 year 1975 which support by Inpres No 5 year 1997 (The development program of society sugarcane). Responding those government policies, PG Madukismo had done the organization innovation as an effort to encourage the farmer cultivating the sugarcane. The areal development and sugarcane production in the year of 1995-2007 is described in table 1.

Table 1: The Farm Extent and Sugarcane Production in the area of PG Madukismo

Year	Area (ha)	Sugarcane Production (ku)		Rendemen	Crystal*(Hablur)* Production (ku)	
		Total	per ha	(%)	Total	per Ha
1995	6.828,35	4.720.776	691	6,62	312.532,28	45,77
1996	6.644,03	4.097.256	617	6,91	282.926,06	42,58
1997	5.684,90	3.671.786	646	7,22	265.077,45	46,63
1998	5.525,00	4.530.089	820	5,45	246.709,87	44,65
1999	5.005,00	2.879.971	575	6,75	194.390,00	38,84
2000	5.100,00	3.602.784	706	6,47	233.185,00	45,72
2001	4.613,00	3.163.667	686	6,23	197.144,93	42,74
2002	4.869,90	3.657.298	751	6,55	239.503,50	49,18
2003	4.799,76	3.686.441	765	6,70	246.810,00	51,42
2004	4.295,00	3.585.520	835	6,61	236.897,48	55,16
2005	5.472,03	4.684.056	856	6,5	304.234,72	55,6
2006	5.967,67	4.756.231	797	6,72	319.767,67	53,58
2007	7.000,13	5.600.107	800	6,8	381.068,24	54,44

Source: PG Madukismo,2008.

Based on table 1, it shows that the farmer responses to cultivate the sugarcane had decreases on average. There is a decreasing as 2.532,65 during 1995-2004. It is assumed that if each of farmer cultivated the sugarcane extensively 0,5 ha therefore there was around 500 farmers leaving the sugarcane cultivation and replacing with other cultivations. Related with the implementation of Inpres No 5 year 1998 (the discontinuous of implementation Inpres No 9 year 1997 about the development program of society sugarcane) had responded the farmer by displacing their sugarcane cultivation. The increasing of sugarcane cultivation farm extent and

rendemen has been effecting the raised of sugarcane and crystal *(hablur)* production including the sugarcane production per hectare.

The institutional innovation had corporate with the farmer implementing the sugarcane cultivation giving the minimum income guarantee (JPM); in fact it was able to decrease the sugarcane reduction tendency. The farmer who acquired the JPM is the farmer who had adopted the institutional innovation through sugarcane farming as business cooperation *(TR KSU)* and sugarcane farming as partnership *(TR Kemitraan)*. The amount of JPU that was received by the farmer had adjusted by their potential farm. In the implementation of TR KSU that should be done in the class I of crop farm, JPM which received is higher than the implementation of TR KSU in the non class I of crop farm. Otherwise, the farmer who had done the sugarcane farming as Autonomy (TR Mandiri) was not getting the JPM. The detail of the sugarcane farm extent that corporate with PG Madukismo institutional innovation is given in the table 2.

Table 2: The Sugarcane Farm Extent that Corporate with PG Madukismo Institutional Innovation

Year	TR KSU			TR Partnership		
	Farm Extent	Production	Production per ha	Farm Extent	Production	Production per ha
	(ha)	(ku)	(ku)	(ha)	(ku)	(ku)
1998	-	-		3345,81	2638684	78865,33
1999	146,08	130141	89088,86	2983,85	1434475	48074,64
2000	230,6	208664	90487,42	3311,19	2046785	61814,18
2001	114,01	89768	78736,95	3033,97	1740318	57361,08
2002	146,79	139321	94911,78	3132,78	1695120	54109,13
2003	194,5	167302	86016,45	2989,55	1671087	55897,61
2004	116,67	110296	94536,73	2583,79	1411059	54611,98
2005	166,77	139533	83667,93	2636,21	1590862	60346,56
2006	309,11	255034	82505,90	2538,38	1357066	53461,89
2007	336,59	295847	87895,36	2563,43	1597194	62306,91

Source: PG Madukismo, 2008

Based on the table above, it shows that there had been acquiring a significant responses from farmers since PG Madukismo innovated their institutional cultivation. The existence of JPM that received by the farmer in their sugarcane cultivation through institutional adopted innovation wills minimalist the risks of harvest failed or bad implication. The extent productivity

toward TR KSU institutional cultivation is higher because it should be done in the class I of crop farm and dry farm. The sugarcane farmer who supplied their sugarcane toward PG Madukismo in the province of Jogjakarta is spread in the fourth *Kabupaten,* which are: *Kabupaten* Bantul, Gunung Kidul, Kulon Progo dan Sleman and some of *Kabupaten* in the province of Central Java such as *Kabupaten* Kebumen, Purworejo, Magelang and Temanggung.

The purpose of this study is to analyze the factors affecting the farmer opportunity determining the sugarcane institutional cultivation choice related with the PG Madukismo institutional innovation of sugarcane cultivation had done and determining the transaction costs toward the institutional cultivation such as the sugarcane farming as business cooperation *(TR KSU)*, sugarcane farming as partnership *(TR Kemitraan)*, and the sugarcane farming as Autonomy (TR Mandiri).

THEORETICAL FRAMEWORK

The Institutional/Organization

One of way to identified the institutional is by seeing the degree of interest between the community that having public interest, where all the problem is solved and the community that having specific interest such as an association. Each of association only has managing some aspects of their member. A business association is only managing their own business member and not taking care with the religion or education member needs. APTR as the sugarcane farmer association only has managing the sugarcane interest (Soekanto, 1999:183).

The institutional role in the production is to organize the inter dependency sources between the participants, eventually determine the efficiency level, the equality and the sustainable of production had done (Anwar, 1995: 5). In the institutional context, some of economist believed that the institutional will exist in some economy aspect if there is an efficient existence, since it is becoming the potential and actual of competition result between alternative institutional agreements (Yustika, 2004:26).

Transaction Cost

Defining the transaction cost is very complex, so that to differentiate between transaction cost and production cost is also difficult. The implementation effort, the transaction cost concept are very beneficial to recognize the structure and the form of transaction. The transaction cost is defined as the cost of negotiation, measurement and barter enforcement (Furubotn dan Richter, dalam Yustika, 2006:105).

In the assumption of transaction cost choice, Williamson uses the New of Institutional Economy/NIE paradigm as his base. The last assumption in his analyze by revising the base assumption of limited rationality, specification of asset, opportunism and uncertainty (Williamson, 1989:135). Suitable with Williamson, all the science discipline such as psychology, politic, economy and law gave the contribution toward the development of transaction cost theory. The base concept of transaction cost approach is rationality, opportunism, specification asset, and symmetric information (Hobbs, 1996:17).

The limited rationality means that even though people tend to make a purchasing decision, the capacity to evaluate accurately the whole alternative of limited decision still able to do (Simon, 1961). The analogy of a chessman that even though they are able to see the game

position of chessboard as a whole, but they are not able to evaluate accurately the whole whether their own potential moved or their opponent moved. The limited rationality creates the problem in the uncertainty or complexity condition where there is an obstacle in making the rational decision (Douma and Schreuder, 1992).

Opportunism is an action that more prioritizes the self interest by using their illogical mind. In the business and individual activity sometimes they are trying to exploitive the situation for their beneficial. However, it does not mean that all the parties has been involved are opportunism, but the opportunism risk is often appeared (Williamson, 1979:233). The lower number of supplier, therefore the lower of supplier is going to opportunist.

The specification asset is appeared when one of the parties that has exchanged (Company A) is interesting to invest the specific resources toward the exchange that has alternative value used. As an illustration, the company A is facing their partner trade (Company B) as opportunist trying to appropriate the rent of investment. If the company A has been investing in the exchanges, meanwhile the company B is denial their contract by offering the lower prices. Therefore, the opportunist behavior of company B is called as the post contract opportunist or the opportunists rerun contract (Crawford *et al.*, 1978:297).

The transaction cost analysis might mitigate the perfect information assumption from the neoclassic theory. The transaction cost approach is acknowledged that there are many of business exchange that is asymmetric or imperfect. The uncertainty and imperfect of information are referred to the situation where all the parties are doing the transaction facing the same level information but not complete. Asymmetric information is appeared when the information that provided toward all the parties and individual information only provided toward the certain parties, so that all the parties having the same level information. The asymmetric information

creates the opportunist behavior. Oportunism *ex ante* is occurred if the information is hidden before transaction and for the first time, it was defined by Akerlof in the year of 1970 about Lemon Market (Stigler, 1961:213).

The Determination and the Transaction Cost Variables

The main issue of transaction cost is the measurement. Many various studies had been done, however, there had been having some confusion definition and the result also not bring satisfied yet. Joskow is following the approach that describing the important of institutional agreement in creating transaction cost, that based on the power plant experienced (Furubotn dan Richter, 1991:10-11; in Yustika, 2006). The description of transaction cost measurement is a complex problem therefore it needed the same understanding about definition, determinant and variable.

Collins and Fabozzi, 1991 (Yustika, 2006:128) are explained the complexity of transaction cost concept that is derived in many various variables that easy to measure through this transaction cost, as follows:

Transaction Cost = Fixed Cost (BT) + Variable Cost (BV)

Fixed Cost = commission + *transfer fees* + tax;

Variable Cost = execution cost + opportunity cost;

Execution Cost = *price impact* + *market timing costs*;

Opportunity Cost = the result need- actual income – execution cost – BT

The correlation between the transaction cost and the institutional have been strategic meaning as the efficiency level indicator. The institutional efficiency indicator is viewed from

the low or high the transaction cost that appear from the economy transaction activity. The lower of transaction cost indicates the efficient of institutional, vice versa (Yeager, 1999, in Yustika, 2006: 259).

The Adopted of Innovation

The adopted of Innovation has a complex and dynamic definition. The process of innovation adopted is related with the making decision that involves many affecting factors. Rogers and Shoemaker (1971:99) defining the taking decision process of innovation adopted is:

> *the mental process of an innovation to a decision to adopt or to reject and to confirmation of this decision....*

Based on that definition, there are some important elements in the process of innovation adopted, which is the mental attitude to adopt the innovation and the confirmation of making decision. The existence of innovation adopted is a process based on the dimension of time. Two things of innovation adopted is considered that is the adopter candidate identity and the having perception of situation

The fast or not the innovation adopted process as individual depend on the internal adopter factor, social background, economy, culture and politics. The other important factors influencing the individual innovation adopted are: the age, education, the taking risk brave, the change attitude, the work motivation, and fatalism (Soekartawi, 2005:60).

The Managerial Decision Making

In the managerial decision making process, the manager is not feel certain about the chosen activity that might be taken (Salvatore, 2005:220). The return of long term investment depends on the economic condition, the competition level, the consumer taste, technology,

politic and the indeterminable factors. In this situation, the company is facing the risk or the uncertainty.

The people attitude in facing their risk problem can be differentiating into three, which: the attitude of avoiding the risk, neutral or risk taker (Mangkusubroto, 1982:12; Soepranto, 2007).

THE RESEARCH METHOD

The Dimension of Study

This study is the combination between the explanatory research and the deskriptif research. The deskriptif research is describing deeper about the certain social symptom or the life aspects study toward the society itself. This approach can reveal lively the correlation between the several of social symptom, whereas those things are not able to reach by the explanatory research (Singarimbun dan Effendi, 1995; Hadari, 1998; Arikunto: 1997:6).

The study design used is the qualitative method; therefore the positivist paradigm is used replacing the objective dimension in the epistemology assumption. The deductive method is used to test the hypothesis based on empirical data. The validity deductive process if there is no wrong hypothesis if the entire premise is true. The conclusion is accepted if the entire premise is true and valid (Arikunto, 1997:10, Jogiyanto, 2004).

The Type of data and the Determination Sample Method

The analysis of data is a primary data and secondary data. Secondary data is collected from various primary sources and the supporting sources such as Agriculture and horticulture official in the province of Jogjakarta, the level of *Kabupaten,* and the several publications related with the implementation of sugarcane cultivation. The primary data is collected toward the

sugarcane farmer in the region of Jogjakarta that spread in many areas such as: *Kabupaten* Bantul, Gunung Kidul, Sleman dan Kulon Progo. The population elements consist of the sugarcane farmer as business cooperation *(TR KSU)* and sugarcane farmer as partnership *(TR Kemitraan),* and the sugarcane farmer as Autonomy (*TR Mandiri).*

The determination sample method is using the Stratified Random Sampling. It was chosen in order to reach the representation of each sample group and the random level of data collection. Each of sample groups has chosen randomly suitable with the proportion.

The minimum sample numbers has taken in this study using the computation formula(Sedarmayanti and Hidayat, 2002 : 164)

$$n = \frac{\sum \frac{n_i^2 s_i^2}{w_i}}{\left[\frac{\delta}{Z_{\alpha/2}}\right]^2 N^2 + \sum n_i s_i^2}$$

$$w_i = \frac{n_i}{N} = \frac{n_i s_i}{\sum n_i s_i}$$

Explanation:

δ = *bound of error* = 0,2

α = the evident level (error) α 5 %

Z_α = the value of Z under normal curve in the evident level of α 5 %

n_i = total population to the group of i

N = total population

s_i = Standard path(*simpangan baku)* stratify to- i

The sugarcane farmer that cultivated in peak or grind season in the year of 2007 and the total sample is taken in this research as shown in this following table:

Table3: The Population of Sugarcane Farmer in the area PG Madukismo and The Total Sample

No	Cultivation pattern	Population of Sugarcane Farmer		Total Sample	
		(farmer)	(%)	(farmer)	(%)
1.	TR Mandiri	294	48	64	48
2.	TR KSU	45	7	10	7
3.	TR Kemitraan	275	45	59	45
Total		614	100	133	100

Source: PG Maduksimo, 2007 calculated

Data Analysis

The analysis method is using the descriptive and quantitative analysis. The descriptive analysis that used descriptive statistic is analyzing such as providing data through table, graphic, modus, median, mean (the central tendency measurement), relative calculation, trend forecasting and comparison of the average two data groups. The analysis subjects consist of sugarcane cultivation in several kind of institution and determine the transaction cost toward the sugarcane cultivation in the farmer levels.

The transaction cost is measured by modify the measurement method that formulated by Collins dan Fabozzi, 1991. The total transaction cost is formulated as the total of Fixed and Variable transaction cost. The fixed cost consists of commission cost and transfer fees. The variable cost consists of execution cost and opportunity cost.

The commission cost consist of interest cost, farmer fees toward KPTR and APTR, managing credit, managing the instruction letter of cut down carry (SPA or *Surat Perintah Tebang Angkut*). Transfer fees consist of the additional vehicle stay in PG Madukismo, stamp, document photocopy cost. The execution cost is the difference of price at the auction time with the government price determination that becomes auction references. The opportunity cost is the compensation costs such as the institutional socializations activity, meeting until the implementation of contract, managing credit, transportation cost to factory, join the auction and managing the income.

The quantitative analysis that used is multinomial logistic regression (Politomous Logistic Regression) which becoming the expansion of logistic regression. The multinomial logistic regression is to determine the factor affecting the farmer opportunity doing the institutional innovation adopted of sugarcane cultivation. This research is using the three categories that is the farmer choice toward TR *Mandiri*, TR *KSU* and TR *Kemitraan.*

The multinomial logistic regression implementation does not need the normality assumption of data toward their independent variable. This analysis tools is very accurate to use if the assumption of multivariate normal distribution is not fulfilled (Gozali, 2005:71). Mathematically, if the dependent variable with m category so that one of them will be assumed as the reference category (the first, last category or the highest frequency number) in the multinomial logistic regression.For the dependent variable with m category, it needed the

computation of m-I equation for each relative category toward the reference category in order to describe the effect of independent variable toward the dependent variable (Gozali: 2005:87, Hozmer, *et al*, 1989).

The equation of multinomial regression by using three categories toward dependence variable is: (Hozmer, *et al*, 1989:217)

$$g_1(x) = 1n\left[\frac{p(Y=1 \mid x)}{p(Y=0 \mid x)}\right] \qquad \text{(Equation 1)}$$
$$= \beta_{10} + \beta_{11}x_1 + \beta_{12}x_2 + ... + \beta_{1p}x_p = (1, x')\beta_1$$

$$g_2(x) = 1n\left[\frac{p(Y=2 \mid x)}{p(Y=0 \mid x)}\right] \qquad \text{(Equation 2)}$$
$$= \beta_{20} + \beta_{21}x_1 + \beta_{22}x_2 + ... + \beta_{2p}x_p = (1, x')\beta_2$$

The operational form of multinomial logistic equation regression is:

The farmer choice toward the sugarcane farming as business cooperation *(TR KSU)*

$$g_1 = \beta o + \beta_1 \text{ LHN} + \beta_2 \text{ BT} + \beta_3 \text{ RND} + \beta_4 \text{ PLM} + \beta_5 \text{ DIK} + ei$$

The farmer choice toward the sugarcane farming as partnership *(TR Kemitraan)*

$$g_2 = \beta o + \beta_1 \text{ LHN} + \beta_2 \text{ BT} + \beta_3 \text{ RND} + \beta_4 \text{ PLM} + \beta_5 \text{ DIK} + ei$$

Explanation:

g : the farmer choice toward the kind of sugarcane activity institution

1 : the sugarcane farming as business cooperation *(TR KSU)*

2 : the sugarcane farming as partnership *(TR Kemitraan)*

3 : the sugarcane farming as Autonomy (*TR Mandiri)*.

LHN : the extensive farm that cultivated by sugarcane farmer (ha)

BT : transaction cost (rp)

RND : the rendemen cost as the proxy of expectation sugarcane quality (%)

PLM : the farmer experiences managing the sugarcane cultivation(th)

DIK : the time period of farmer education (th)

βo : intercept

$\beta_1 .... \beta_5$ Coefficient of logistic regression equation

e_i : interfere factor

The data computation that used the SPSS program /Statistical Package for the Social Sciences is defined as the Statistical Package for the Social Sciences recently (Triton, 2006:3). The sugarcane farming as Autonomy (*TR Mandiri)* is becoming the base references about what kind of sugarcane institution of farmer choice. The suitable or not suitable the multinomial logistic regression as the affecting expectation of independent variable toward the dependent variable is determine by doing some examination (Gozali, 2005:78).

HASIL PENELITIAN THE RESULT OF ANALYSIS

The Analysis of Logistic Multinomial Regression (Logistic Politonomous Regression)

Based on primary data that computed by using SPSS software, the parameter of Logistic Multinomial Regression can known that shows in the table 5. The result of parameter shows the affect of each independent variable toward the farmer probability that choose those sugarcane institutions.

Table 4: The Estimation Parameter of Logistic Multinomial Regression

g(a)		B	Std. Error	Wald	df	Sig.	Exp(B)	95% C I for Exp(B)	
								Lower Bound	Upper Bound
1.00	Intercept	-76.419	42.416	3.246	1	.072			
	LHN	-21.758	9.677	5.056	1	.025	3.55E-010	2.06E-018	.061
	BT	.000	.000	4.290	1	.038	1.0	1.000	1.000
	RND	15.560	7.295	4.550	1	.033	5725447.8	3.535	9272126290218.2
	PLM	-.857	.380	5.073	1	.024	.425	.201	.895
	DIK	-1.186	.413	8.255	1	.004	.305	.136	.686
2.00	Intercept	27.376	15.790	3.006	1	.083			
	LHN	10.327	2.856	13.076	1	.000	30545.9	113.262	8237952.617
	BT	.000	.000	17.593	1	.000	1.000	1.000	1.000
	RND	-.959	2.384	.162	1	.688	.383	.004	41.000
	PLM	-.468	.141	11.003	1	.001	.626	.475	.826
	DIK	-.944	.324	8.481	1	.004	.389	.206	.734

Source: Primary Data that calculated

Based on the coefficient number influence for each independent coefficient variable numbers and the level of significant, the equation of multinomial regression can be compiled toward the TR KSU and TR Kemitraan choice comparing with TR Mandiri choice as follows:

$$\text{Ln}\ \frac{P(\text{TR KSU})}{P(\text{TR Man})} = -76{,}419 - 21{,}758\ \text{LHN} + 0\ \text{BT} + 15{,}56\ \text{RND} - 0{,}857\ \text{PLM} - 1{,}186\ \text{DIK}$$

(0,072) (0,025) (0,038) (0,033) (0,024) (0,004)

$$\text{Or}\ \frac{P(\text{TR KSU})}{P(\text{TR Man})} = e^{-76{,}419} e^{-21{,}758\ \text{LHN}}\ e^{0\text{BT}}\ e^{15{,}56\ \text{RND}}\ e^{-0{,}857\ \text{PLM}}\ e^{-1{,}186\ \text{DIK}}$$

P (TR Man

$$\text{Ln}\ \frac{P\ (TR\ Mitra)}{P\ (TR\ Man)} = 27{,}376 + 10{,}327\ LHN + 0BT - 0{,}959\ RND - 0{,}486\ PLM - 0{,}944\ DIK$$

(0,083) (0,00) (0,00) (0,688) (0,001) (0,004)

$$\text{or}\ \frac{P\ (TR\ Mitra)}{P\ (TR\ Man)} = e^{27{,}376}\, e^{10{,}327\ LHN}\, e^{0\ BT}\, e^{-9{,}959\ RND}\, e^{-0{,}468\ PLM}\, e^{-0{,}944\ DIK}$$

both of these equation of logistic multinomial regression above, individually, it shows that it is only RND variable (rendemen) that is not influence significantly toward the variety of the sugarcane farming as partnership *(TR Kemitraan)* choice rather than TR Mandiri. Statistically, it is caused the big acceptance interval under line and the above line (Exp B). Therefore, it is only the RND variable that is not suitable with the hypothesis.

The illustration of the opportunity decision taking of farmer determining the sugarcane institution variety by taking the amount of farm extensive variables, transaction cost, rendemen, the implementation of sugarcane cultivation, and the respondent level into the logic multinomial equation. The number of each those independent variable had done by taking the highest, average and the lowest values.The highest value and the average toward the independent variable of respondent data shows that the farmer opportunity to adopt the innovation by choosing the sugarcane cultivation through *TR KSU* institution rather than *TR Mandiri*. On the other hand, there is no opportunity to do TR KSU cultivation than TR *Mandiri* in the lowest value of the independent variable. This is quite different with the opportunity choice of TR *Kemitraan*

cultivation institution comparing with TR *Mandiri* toward many independent variable possibilities that might show the opportunity existence.

The variable studies toward the farmer opportunity determining the institution variety choices in both equations above can be explained as follows:

Related with the variable choice of the sugarcane institution (g), the respondent has chosen more the sugarcane farming as Autonomy (*TR Mandiri)* rather than the sugarcane farming as partnership *(TR Kemitraan)*. Therefore, the farmer is not fully attempting JPM of PG Madukismo as the main reason to undergone the sugarcane cultivation. As consequences, if there is a harvest failed in their cultivation, they will face risk that is cannot get their income. Suitable with these things (Sutanto, 2003:54), stated that farmer in doing their activity will face the uncertainty such as the nature risk, market fluctuation, social uncertainty, and government policies. There are three groups that related with individual attitude facing of their problem risk, as follows: avoiding the risk, neutral and risk taker (Mangkusubroto, 1992:116). The risk taker is indicated by the high number of farmer that doing TR *Mandiri*.

LHN variable (the extensive farm of sugarcane cultivation) individually affecting toward the opportunity farmer choice adopting the innovation of sugarcane institution. It shows that JPM incentive from PG Madukismo toward the farmer is able to attract them adopting the institution innovation. Empirically, the farmer is faced to the limited rationality determining the alternative choice of farm extensive and the limited market information access for the beneficial that might get from several commodities (Hobbs, 1996:17). The positive coefficient influence shows that the more extensive of sugarcane area, the farmer is trying to transfer their risk. The farmer has been taking over their production risk physically that might caused by natural disaster, illness and disinfect attack, fire, and the other factors (Said dkk, 2001:112).

RND variable (rendemen results) as individual, has the positive and significant influence toward the farmer choice determines the TR KSU rather than the sugarcane farming as Autonomy (*TR Mandiri), and* the sugarcane farming as partnership *(TR Kemitraan)* is more choose than the sugarcane farming as Autonomy (*TR Mandiri).* The positive effect of farmer choice toward the institution of innovation adopted is suitable with limited rationality of making decision. Simon, (1961) stated that people is making decision, having capacity to evaluate accurately the whole alternative possibility as limited physic (Douma, *et al*, 1992).

The variable of PLM and DIK (the farmer experiences managing the sugarcane cultivation and the farmer education) had been negative influenced individually. It shows that the more experience and higher education of sugarcane farmer has been making them to prefer TR Mandiri cultivation rather than adopting the institution innovation. Therefore, it is quite different with the factors affecting innovation adopted (Soekartawi, 2005) who stated that the farmer education and experiences managing their cultivation are the factors affecting innovation adopted.

The Amount of Transaction Cost

Analyzing the transaction cost of sugarcane cultivation MG in the year of 2007 is differentiate into three kind of institution that is TR KSU, TR *Kemitraan* dan TR *Mandiri* cultivations. The sugarcane farmer that joined into TR KSU and TR Kemitraan institution having the contract tied with PG Madukismo. Otherwise, the sugarcane farmer that is joined with TR Mandiri is not having the contract tied with PG Madukismo.

The number of the sugarcane cultivation transaction cost in the Plant Season 2006 (Grind/Peak Season 2007) per hectare is shown in this following table:

Table 5: Transaction Cost of Sugarcane Cultivation MT year 2006 (MG year 2007)

Explanation	Mandiri		Kemitraan		KSU	
	Total (Rp)	Rltf (%)	Total (Rp)	Rltf (%)	Total (Rp)	Rltf (%)

Fixed Transportation Cost (BTP)						
Commission Cost	385.226,2	46,62	11.560,4	2,53	17.132,1	3,11
Transfer Cost	107.668,3	13,03	109.663,7	24,0	98.000,0	17,79
Variable Transp. Cost (BTV)						
Opportunity Cost	125.599,3	15,20	221.657,8	48,51	264.253,3	47,97
Execution Cost	243.840,0	25.15	107290,8	24.77	178.200,0	31.13
Total Transaction Cost	969.549,0	100.0	433163,6	100.0	572.520,0	100.0
Trans. Cost per Hectare	826.310,8		456.932,0		550.872,0	

Source: primary data that calculated

Based on the table above, it shows that the structure of transaction cost is affecting by the sugarcane cultivation institution had been chosen by the farmer. The farmer that is not adopting the institution innovation is joined with the TR Mandiri. On average, the transaction cost TR Mandiri per hectare is higher than TR KSU and TR Kemitraan. This phenomenon is suitable with the results of research (Winter, *et all*; 2005) that viewing the important of contract toward the institution supreme in the evaluation analysis contract hybrid seed between the small entrepreneur in Indonesia and International Pioneer Hybrid. The approach that used by transaction cost had used to analyze the contract participation. This research finding is discouraged that the participation toward the contract is not able to enhance the efficiency and this statement also supported by Glover and Kusterer (1990), Key (1996) and Russten (1999) that stated the farming contract in developing countries is failed frequently.

CONCLUSION, THEORETICAL CONTRIBUTIONS AND THE RECOMMENDATION POLICY

Based on the description of the research results, the descriptive data analysis, the logistic multinomial regression, and the transaction cost analysis, it can conclude as follows: The farmer

opportunities determining the sugarcane cultivate institution of innovation adopted that had done PG Madukismo altogether is affected such as the sugarcane of extensive farm, transaction cost, rendemen, the experience and the education of the sugarcane farmer. Likely with the effect of independent variable individually, each of independent variable is effecting significantly toward the opportunity choice institution of TR KSU rather than TR Mandiri. These differences, the farmer opportunity choice determining the institution of TR Kemitraan cultivation comparing with TR Mandiri, individually, it is only rendemen variable that is not really effected significantly to determine the farmer that prefer more toward TR Kemitraan rather than TR Mandiri. Related with the transaction cost, the farmer that used TR Mandiri is acquired more their transaction cost per hectare than the farmer that used TR KSU and TR Kemitraan.

The theoretical contribution that acquired shows theoretically, the factors effecting innovation adopted as individual is not affected even though it is simultaneous affected. The education and the experiences of the sugarcane farmer that quicken innovation adopted theoretically is not fully able to become a main determinant in the technology transfer process through innovation adopted that farmer is used as the facility to raise their wealthy. Moreover, the transaction cost analysis of the sugarcane cultivation shows if there is a justification theory that the institution formed is capable to reduce the transaction cost. In the other side, this transaction cost analysis had produced different thesis that the contract stipulation in developing countries is failed frequently.

The recommendation of policies that suggested consist of, the determination of rendemen management that had been implemented by PG Madukismo which still used the group rendemen determination. Therefore, it needs more analyze the alternative rendemen determination individually. Those analysis needs to encourage the increasing of rendemen farmer in the

cultivation implementation (on farm) sides. The farmer that adopting innovation of TR KSU and TR Kemitraan institution is not able to sell fastly during this time since they had asked the permission from PG Madukismo to do the sugarcane auction based on the contract. It makes the farmer has not been enjoying yet their sugarcane income. Therefore, it needs deeper analysis about the alternative settlement mechanism of farmer obligation toward PG Madukismo in order to quicken their income.

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