

THE INFLUENCE OF PLANNING PROGRAM ESTABLISHMENT AND THE CARRYING CAPACITY OF NATURAL AND HUMAN RESOURCES TOWARDS THE EFFECTIVENESS OF THE KOPPEL PROGRAM IN KUPANG REGENCY

Oktaviana Adriana Manulangga¹, Ulrikus R. Lole², Obed H. Nono³
Animal Husbandry Study Program, Postgraduate Program of Nusa Cendana University
Kupang - NTT
E-mail : via_manulangga@yahoo.co.id

ABSTRACT

The research aims: 1) to analyze the relationship between the establishment of Koppel cattle breeding program planning and the consistency of Koppel program owners and recipients on achieving the effectiveness of this program, 2) to analyze the relationship between the potential carrying capacity of natural and human resources and their implementations to breeders and their groups until the contract period ends on achieving the effectiveness of this koppel program. This research was conducted on 7 sub-districts in Kupang Regency. The choice of location was determined purposively. There were 95 people of the total respondents out of 1859 Koppel cattle breeders and focussed only on the koppel recipients responding in year 2008-2013. This research was used purposive sampling. The data analysis was conducted by using smart PLS 3.0 software. The research result showed this program had not run effectively in increasing the cattle productivity and the breeders economy. The smart analysis of PLS: 1) program establishment variable (X1) had coefficient parameter (original sample of 0.532) toward the effectiveness of Koppel program (Y) in which the positive and significant effects as the mediation variable, 2) the potential carrying capacity variable of natural and human resources had a parameter coefficient (original sample 0.785) towards the effectiveness of Koppel program (Y). The potential carrying capacity of natural and human resources (X2) was a strongest variable influencing the effectiveness achieving of this program.

Keywords: planning, the potential, effectiveness, koppel program.

INTRODUCTION

Koppel Program is a livestock empowerment program by Kupang Regency Government which costs are supported by the Government II funds. This program has been implemented since 2000-2015, and has been distributed with a rolling system \pm 5576 of productive female cows in 24 sub-districts in 152 villages in 339 groups (1859 people) in Kupang Regency. The main objectives of the program are: 1) increase livestock productivity (quality, quantity and breeders / feeder providers); 2) changes in cattle farming systems from extensive to semi-intensive and intensive through increased land use and forage development initiatives; 3) increase income and economic changes for farmers; and 4) to improve of human resources and group institutions resources.

The effectiveness factors in the implementation of the Koppel program, including: 1) the carrying capacity technical of breeding cattle (the specifications technical of female and male animals, the availability of forage feed, the maintenance system during the development process, observation and treatment of cattle reproduction to breed, cattle healthhandling and calf handling); 2) the process of assisting and monitoring evaluation by related parties; and 3) Koppel program economic value empowerment.

The fact, Koppel program has not giving satisfactory results yet according to the Koppel program's success indicators, which are; 1) number of cattle ownership, 70% of Koppel recipients (after rolling), only have 1-2 cows rolled with low quality. The program output should be five years as a minimum period of contract to rolling system, At the period of contact the breeder is expected to already have at least 5 female cows and 1 male cow as an effort in increasing the number of livestock ownership; 2) the comparison of feed development by breeders as recipient of Koppel Program and breeders non recipients is not different, which is both are relying on natural grass in the grazing land as cattle feed; 3) the farmer's economic level does not has a significant change due to low ownership of the number of livestock; 4) aspects of human resources, farmers and groups low independent, inability of groups to maintain the existence and sustainability of group programs and dynamic of group is not going well, hopes the Koppel program can improve the existence, sustainability and dynamic of group in terms of supporting institutional strengthening of cattle breeding

Based on the data above can be indicate there are problems in program planning determinate, in potential carrying capacity of natural resources and human resources that needs to be quantitatively and qualitatively studied to achieve Effectiveness of the Koppel program.

MATERIAL AND METHODE

This study is a survey study which was designed as an explanatory research design to explain the correlation between Independent Variables and Non-Independent Variables through hypothesis testing (Singarimbun and Effendi, 2006). The study done in Kupang Regency as the owner and implementer of the program. Respondents of study are farmers who are members of a Koppel program groups recipient developed by Kupang Regency Livestock Service Department. Some of the variables studied:

1. Program planning, indicators: a) Livestock specifications, b) Work contracts and c) Availability and distribution of technical assisting officers. Scoring category is *very good / good / moderate / low / very low*.
2. Carrying capacity of potential natural resources and human resources recipients of the program with indicators: a) Implementation of candidate recipient of candidate locations; b) Human Resources (age and education) of the farmers. And c) livestock experience. Scoring category is *very good / good / moderate / bad / very bad*.
3. The effectiveness of Koppel program; indicators: a) success indicator of Koppel program according to Koppel's Technical Guidelines success indicator and b) the efficiency of the Koppel program. Scoring category is of *very effective / effective / less effective / ineffective / very ineffective*.

Research data sources consist of two parts, namely: 1) primary data (direct from respondents) and 2) secondary data. The method is census methods by questionnaires, and data collection techniques, was 1) direct interviews; 2) field observations; and 3) literature study.

The population is 1859 people in 339 groups, recipient of Koppel program since 2000-2015, and living in 152 villages in Kupang Regency. Target population is 467 people in 84 groups, recipient of Koppel cattle from 2008-2013, living in 66 villages of 24 sub-districts

of Kupang Regency. The selection of the Koppel recipient group in 2008–2013 was carried out deliberately (purposive). Sample is a group contain 95 farmer that is living in 30 villages 7 sub districts of Kupang Regency. Sample done purposively. Each sub-district taken 2-3 sample villages and each sample village taken 1 group. Each group has 5 respondents that represented from 5-10 people. All population and sample data are from the Animal Husbandry Department as the Koppel program manager. The selection of 5 sample as respondents selected from each sample group was carried out in a non-proportional quota sampling. The number of respondents according to Noor (2011: 158), was calculated based on the Slovin formula with 0.1.error level.

Research method is descriptive and inferential methods. Variables (X1), (X2), and (Y) used a five-level from Likert scale (1,2,3,4, and 5). The final results are classified into five categories: Strongly Agree, Agree, Neutral, Disagree and Strongly Disagree (Singarimbun and Effendi, 2006). Variable categories based on respondents achieved scores, using formula "*class interval*" that is dividing the difference between the highest and lowest values with many categories (Dajan, 1986, *in* Sanjaya, 2013).

The data analysis technique uses SEM based on PLS, consisting of three parts:

1. Evaluation of the measurement model (*outer model*), which is evaluated based on the results:
 - a. Convergent validity >0.7 , but in the early stages of development research, a loading value of 0.50–0.60 can be considered sufficient (Ghozali, 2011). And for this study the convergence validity value > 0.50 .
 - b. Discriminant validity by checking cross loading, if the cross loading value of each indicator in the relevant variable is largest compared to other latent variables, then Valid. Or another way, if the square root AVE latent variable is greater than the

correlation of all latent variables, then good discriminant validity. Recommended AVE value > 0.50 (Ghozali, 2011).

c. Composite reliability, which is the reliability value testing between the indicator blocks of the construct, the composite reliability value is above 0.60 ($\rho \geq 0.60$) (Ghozali, 2011).

2. Evaluation of structural models (*inner models*), observed correlations:

a. R-square predictive relevance (R^2), measures the effect of independent variable variance on the dependent variable, with a measurement value of $0 < R^2 < 1$. Cohen (1988) in Yamin and Kurniawan (2011: 21) divides the R^2 criteria into three parts namely: 0.67 (substantial / strong), 0.33 (moderate / moderate) and 0.19 weak (weak). It is said that for survey data that is cross section in which data obtained from many respondents at the same time, then the value of $R^2 = 0.2$ or 0.3 is good enough.

b. Q-square predictive relevance (Q^2), used to measure how well the value of observations produced by the model and also the parameter estimation. Large Q^2 has a value with a range of $0 < Q^2 < 1$. To calculate Q^2 , the formula used:

$$Q^2 = 1 - (1 - R_1^2) (R_2^2) \dots \dots \dots (R_3^2)$$

c. Goodness of Fit index (GoF). According to Tenenhau (2004) in Hussein (2015), a small GoF value = 0.1, a medium GoF = 0.25 and a large GoF = 0.38. For GoF values use the formula:

$$GoF = \sqrt{AVE \times R^2}$$

3. Hypothesis test

Hypothesis test is done by t-statistic test. If the test is obtained p-value < 0.05 ($\alpha = 5\%$), it means that the test is significant, and vice versa. When the results of hypothesis

testing on the measurement model are significant, it means that the indicator seen to be used as an instrument of measuring latent variables and there is a significant influence of one latent variable on other latent variables.

RESULTS AND DISCUSSION

1. Analysis of the effect of independent variables on non-independent variables

- a. Evaluation of the measurement model (*outer model*):
- b. The loading factor value (*convergent validity*).

Table 1. Value of loading factors for exogenous and endogenous constructs

Construct	Indicator	Faktor Loading > 0.5	T-statistik > 1.96	P value < 0.05
Planning program	Specifications program (X1_1)	0.926	75.742	0.000
	Employment contract (X1_2)	0.934	71.624	0.000
	Availability and distribution of field technical assistan (X1_3)	0.719	11.919	0.000
Carrying capacity of potential natural resources & human resources	Implementation of prospective recipients of prospective locations (X2_1)	0.931	28.895	0.000
	Breeders' human roesourches (age and education) (X2_2)	0.460	2.796	0.005
	Breeding experience (X2_3)	0.417	2.566	0.011
Effectiveness of program	Effectiveness of the koppel program (Y1)	0.903	42.228	0.000
	Efficiency of the koppel program (Y2)	0.948	149.926	0.000

Source: Primary data processed

- c. Discriminat validity:

Table 2. Validity test is based on cross loading of exogenous and endogenous constructs

Construct	Planning program	Carrying capacity of potential natural resources & human resources	Effectiveness of the program
Specifications program (X1_1)	0.924	0.626	0.485
Employment contract (X1_2)	0.934	0.486	0.483
Availability and distribution of field technical assistant (X1_3)	0.719	0.439	0.320
Implementation of prospective recipients of prospective locations (X2_1)	0.671	0.931	0.785
Breeders' human resources (age and education) (X2_2)	0.085	0.460	0.224.
Breeding experience (X2_3)	0.033	0.417	0.206
Effectiveness of the program (Y1)	0.416	0.594	0.903
Efficiency of the koppel program (Y2)	0.508	0.806	0.948

Source: Primary data processed

d. Outer Model Reliability

Table 3. Reliability values of exogenous constructs for endogenous constructs

Variance Extract	Constellation Exogenous Average >0,5	Composite Reliability (CR)>0,6	Conclusion
Program Planning (X1)	0.749	0.898	Good Reliability
Potential natural resources & human resources X2)	0.417	0.652	Good Reliability
Program Effectiveness (Y)	0.857	0.923	Good Reliability

Source: Primary data processed

The results of the validity and reliability tests concluded that all variables were observed is valid and reliability to measuring the other latent variables.

e. Evaluation of structural models (*inner model*):

- Correlations between endogenous constructs, based on values R², Q² dan GoF:

Table 4. Values R², Q² and GoF

Construct	Value R ²
Effectiveness of the program (Y)	0.596

$Q^2 = 1 - (1 - 0.596) = 0.596$
 $GoF = \sqrt{0.67 \times 0.596} = 0.40$

The values above indicate, the model is feasible for testing hypotheses.

- Correlation of exogenous constructs with endogenous constructs and factors of direct effects and indirect effects

Table 5. Correlations between exogenous and endogenous constructs

Path	Original Sample	Sample Mean	STDV	T-statistic (>1.96)	P-value <0.05	Information
X1->Y	0.066	0.067	0.102	0.695	0.488	not significant
X2->Y	0.730	0.735	0.065	11.240	0.000	significant

Bootstrapping results Figure 1, the correlation between program processes (X1) to effectiveness of the program (Y) is not significant. Because the correlation between program planning variables (X1) and effectiveness of the program (Y) is the main hypothesis then the approach using are *prediction*, *mediation* and *criterion* variables based on the references of Kenny and Baron (1986) in Hussein (2015). Thus, the carrying capacity of natural resources

and human resources (X2) is a variable that mediate the correlation between program planning (X1) and effectiveness of the program (Y) (figure 2).

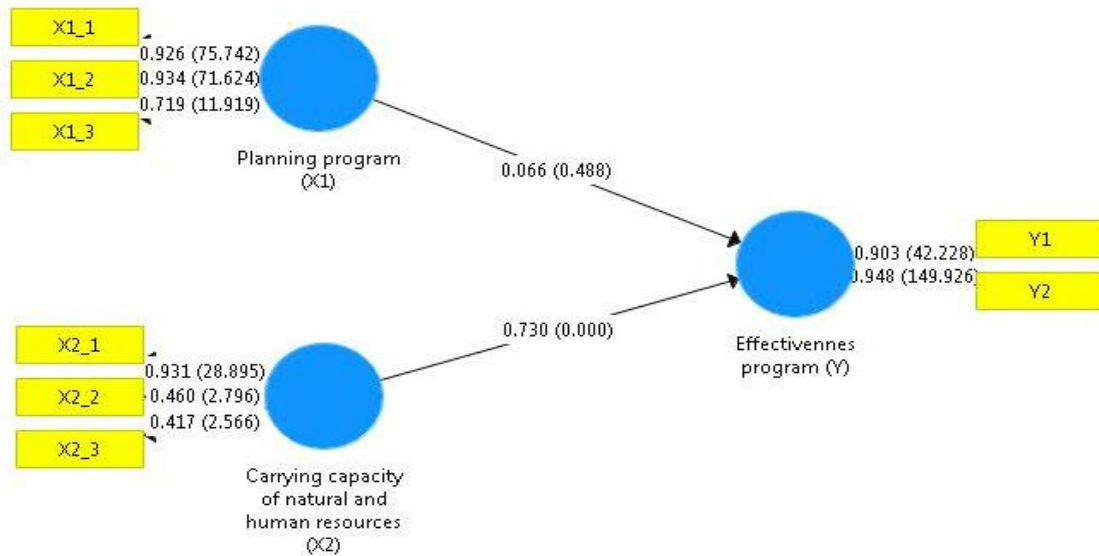


Figure 1. Path correlations between exogenous and endogenous constructs result bootstrapping

The results of eliminating the direct correlation between the prediction variable (X1) and the criterion variable (Y) by using the potential carrying capacity of natural resources and human resources (X2) to become the mediating variable of program planning (X1) to the effectiveness of the program (Y), the correlation of X1 to Y becomes significant with the value t-statistic of 12,013 > 1.96, p-value of 0.000 < 0.05 (Table 6). Thus, the carrying capacity of human resource and natural resource potential (X2) has perfect mediation in linking program planning (X1) to the effectiveness of the program (Y).

Table 6. Total correlations between exogenous and endogenous constructs with variable X3 as

Path	mediating variable X2 towards Y		Total influence >1.96	P value <0.05
	Direct	Indirect		
X1 -> Y	0.066	11.947	12.013	0.000
X2 -> Y	28.253	-	28.253	0.000

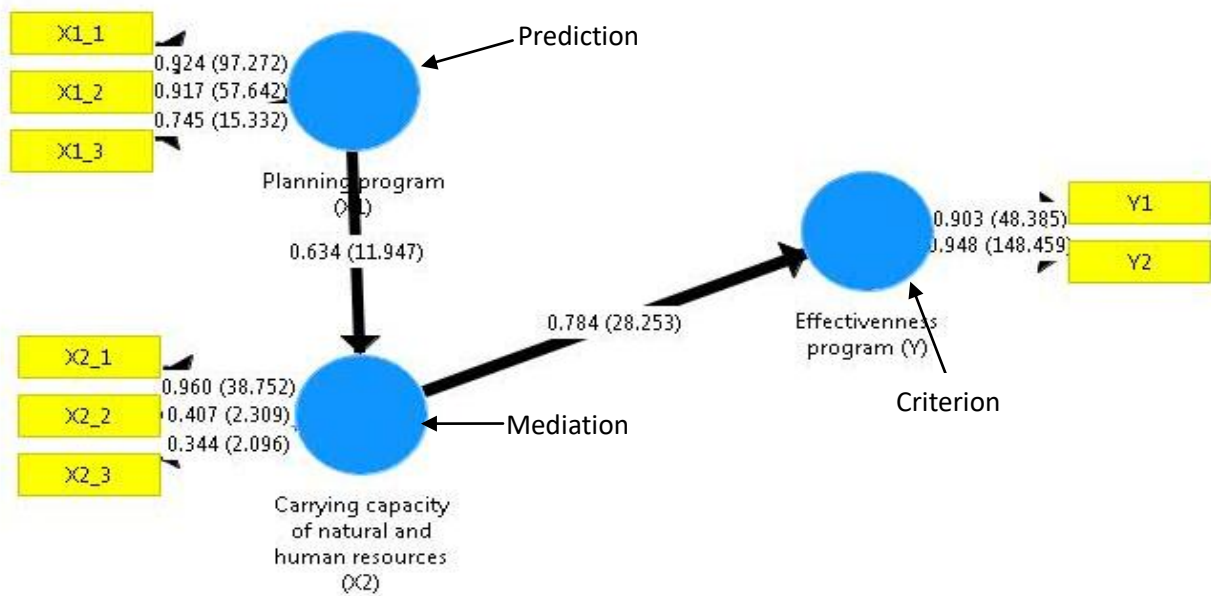


Figure2. The indirect correlation of program planning (X1) on effectiveness of the program (Y)

2) Hypothesis testing

The results of hypothesis testing are based on the inner model of the bootstrapping using X2 as the mediating variable X1 on effectiveness of the program (Y) in the following table:

Table 7. The results of the correlation between the carrying capacity of human resource potential and natural resources (X2) as a mediating variable for program planning (X1) to the effectiveness of the program (Y)

Path	Original Sample	Sample Mean	STDV	T-statistic (>1.96)	Pvalue <0.05	Information
X1->Y	0.634	0.640	0.053	12.013	0.000	significant
X2-> Y	0.784	0.786	0.028	28.253	0.000	significant

The results of the path analysis of the correlation of the overall variables in Table 7 show that all variables have a positive and significant correlation to the effectiveness of the Koppel program. The original value sample estimate of the two variables, which is very influential on the effectiveness of the Koppel (Y) program, is the carrying capacity of the potential human resources & natural resources (X2) of 0.784. That is, the carrying capacity of potential human resources & natural resources are most dominant variable influencing the effectiveness achievement of the Koppel program.

2. The results of the analysis of respondents perceptions of the Koppel program

The results analysis answering respondents about the Koppel cattle program based on Table 8 shows that the Koppel cattle program which has been running "*less effective*".

Table 8. Average score of respondents' answers about the Koppel cattle program

Perceptual aspects of respondent's answers		Average Score
Planning of program (X1)		3.15
Carrying capacity of potential human resources & natural resources (X2)		3.41
Effectiveness of program (Y)		3.01
Aspects of all		3.19
Information :		
Achievement score	Planning of program and the potential carrying capacity of human resources & natural resources	Effectiveness of program
> 4,2-5	very good	very effective
>3,4-4,2	good	efektif
>2,6-3,4	moderate	less effective
>1,8-2,6	bad	Ineffective
1-1,8	very bad	very ineffective

The analysis shows, the determination of program planning (X1) in the range of *moderater/less* scale (average score of 3.15). The contributor to the low level of program planning variables is the indicator of the availability and distribution of field technical officers. Synchronous with answers to interviews with informants from the relevant technical Service who stated "assistance cannot be carried out continuously on Koppel recipient groups. This is because: 1) the wide area of Koppel cattle spread; 2) the limitations of field technical officers owned by the Technical Office managing the activities (the number of field technical officers totaling 26 people spread across 24 sub-districts (152 villages) in the

Kupang Regency (Kupang Regency Animal Husbandry Service, 2016); and 3) Regional infrastructure lack of support in mentoring services, as well as limited transportation facilities because technical officers / field assistants generally do not live in the area where the program location is located.

Mardikanto (1988) *in* Sanjaya (2013) states that adoption is the result of the communication process/delivery of counseling messages that are initiated by the delivery of innovation until the change in target behavior. The more intense the correlation between field facilitators and / or program owners and program implementers (breeders) will greatly help farmers or breeders to change attitudes or behavior in responding to the program. Conversely, the less intense the correlation between the program owner and the program implementer will give the breadth of program implementers not to carry out the contents of the cooperation agreement (employment contract), especially if this is supported by the absence of strict and binding sanctions/rules between the program owner and the program implementer or binding rules within the group itself.

The potential carrying capacity of human resources & natural resources (X2) on a good scale range (average score of 3.41) which although supported by the experience of breeding that has been owned but is not supported by adequate education and training so that farmers have minimal skills. Most of the farmers have elementary school education/have not graduated from elementary school and only a few have attended animal husbandry training. Improving animal health services and self-reliant artificial insemination is a part of motivation in raising livestock. Lole (1995) states that one of the problems and obstacles at the farmer level that requires special attention in overcoming them is the lack of awareness/motivation of farmers for the importance of livestock for improving their welfare.

Natural resource factors in this case the availability of forage by the group less/moderate. In every business raising cattle for fattening and breeding, the provision and

provision of good feed is the main requirement for business continuity. Feed is the highest component of production costs in cattle farming, with a range of 60–70% (Nitis et al (1992) *in* Sanjaya (2013). Analogous with the opinion of Soenarjo et al (1991) *in* Sanjaya (2013), it is stated that quality feeding with an adequate amount will increase body weight where the feed is used to accelerate and optimize the rate of growth of livestock, without the support of adequate quality and quantity of feed it will be difficult to obtain maximum performance (body weight and reproduction).

Most of the Koppel cattle feed provided by respondents is from forage (field grass, lamtoro, elephant grass, legume and foliage) according to availability in the area of each respondent. The ownership of the forage plantation by the group from before receiving the program until after receiving the program has not changed. Based on the results of interviews and observations, the majority of respondents still rely on forage that are around their respective environments and are still low in the interest of farmers in trying to expand their forage gardens.

The results of interviews with informants of the Technical Office program manager that during the prospective recipients of prospective locations process by the Technical Office program managers in the field were generally only attended by some member of the breeder group. The prospective recipients of prospective locations process is part of the initial outreach of the program. Therefore it is very important to be attended by all group members because there is a lot of important information related to the Koppel program delivered in the prospective recipients of prospective locations process, including the importance of continuous HPT availability, handling of livestock (animal health and handling if the parent progresses) and understanding the importance of the contents of the work contract as reference in the implementation of the next rolling process. Thus it can be said that, ignorance and/or poor understanding of breeders about the objectives and benefits of the

program, supporting factors for the success of the program and the contents of the cooperation agreement / work contract by Koppel farmers are caused by the absence of farmers during the initial implementation of prospective recipients of prospective locations and program socialization by the Technical.

This weakness should be overcome if the process of mentoring and monitoring and evaluation by technical officers / field facilitators can be carried out properly. Lionberger and Gwin (1982) *in* Sanjaya (2013) state that agricultural extension activities (livestock) are one of the activities to change the attitude of farmers to implement innovations (programs) that can increase the productivity of their livestock businesses. Besides the interpersonal communication correlation between farmers-breeders in one group, with assistants also influence the formation of the attitudes of respondents. This condition is in accordance with what Azwar (2002) said *in* Sanjaya (2013) that the attitude of farmers (breeders) towards an innovation (program) will be formed due to social interaction between individuals.

The effectiveness of the Koppel (Y) program on a range of scales is less effective (average score of 3.01). Overall, the aspects measured by the Koppel cow program which have been running "are less effective and efficient" (total value of all aspects 3.19). The achievement of effectiveness of the program is based on the success rate of program planning, the carrying capacity of human resources & natural resources potential. The Koppel program is a program with low production costs because capital factors are not taken into account. Koppel cattle come from the government and are given in the form of social assistance as an effort to empower the community. The objective of the Koppel program is to provide benefit for farmers. The aspect of program benefits felt by farmers is limited to the nonmaterial aspects.

CONCLUSION

Determination of program planning and the potential carrying capacity of human resource & natural resources has a positive and significant effect on the effectiveness of the Koppel program in Kupang Regency. The results of the analysis indicate that the carrying capacity of human resource & natural resources is the most influential factor on the effectiveness of beef cattle breeding in Kupang Regency. The beef cattle breeding program that has been running in Kupang Regency is *less effective and efficient*.

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