

Determinant Factors of Agricultural Extension Competence in The Implementation of Good Agricultural Practices in Bangka, Belitung Province

by Muhammad Yazid

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**DETERMINANT FACTORS OF AGRICULTURAL EXTENSION COMPETENCE
IN THE IMPLEMENTATION OF GOOD AGRICULTURAL PRACTICES IN BANGKA,
BELITUNG PROVINCE**

Agustina F.*

Department of Agribusiness, Faculty of Agriculture, Bangka Belitung University,
Bangka, Indonesia

Zahri I., Yazid M., Yunita

Department of Agribusiness, Faculty of Agriculture, Sriwijaya University,
Palembang, Indonesia

*E-mail: fournitaagustina@gmail.com

ABSTRACT

The application principle of Good Agricultural Practices (GAP) in plant cultivation must be guarded well by the Agricultural Extension Workers in order to make sure that the implementation completely in accordance with the provisions to produce good product. The amount of demand for good and healthy food product as well as friendly environment is something that cannot be inevitable. The implementation process of agricultural extension can be run properly if it is supported by the professional and reliable extension workers, extension materials flown constantly, correct counseling implementation system and proper counseling method of the polyvalent extension management. The purpose of this study was to determine the factors that affect the competence of agricultural extension on the implementation of GAP. In this study, survey method and sampling are used that is conducted probability, i.e. stratified random sample (stratified random sampling) with a total sample of 125 agricultural extension workers and 100 farmers built by agricultural extension. The data collected is then analyzed using SEM (Structural Equation Model) with the program LISREL (Linear Structural Relationships). The results showed that exogenous latent variable characteristics of the educator, motivational counselor, educator attitudes, knowledge and skills extension educator clearly influenced on improving the competence of agricultural extension. The effect of each latent variable exogenous to the extension of competence (endogenous latent variable) appears on its merits extension competence in planning outreach programs, utilizing local resources, organize agricultural extension, build networks and capacity extension in the field of technical expertise

KEY WORDS

Agricultural extension, good agricultural practices, competencies extension.

Food and Agriculture Organization world (FAO) who shelter under the United Nations, stated in the world meeting that there are three main challenges agriculture today, namely: (1) increasing food security, livelihoods and incomes of the rural population, (2) reaching the demand in increasing the variety need of safe food products (3) preservation of natural resources and the environment (FAO, 2003).

By seeing the agricultural developments, it is necessary to take a strategic step in agriculture, especially in Indonesia, to answer those three challenges. The government has been aware of this, so that at the beginning of the administration of President Susilo Bambang Yudhoyono emerged a revitalization program of Agriculture, Fisheries and Forestry (RPPK) and Revitalization of Agricultural Extension (RPP). RPP program received strong legal umbrella with the issuance of Law No. 16 of 2006 on the Extension System of Agriculture, Fisheries and Forestry (SP3K). Revitalization Program is focused on several sub-programs, namely the institutional arrangement of agricultural extension, increasing the quantity and quality of agricultural extension, an increase in institutional and leadership of

farmers, improvement of the organization of agricultural extension systems, and the development of cooperation between agriculture and agri-extension system (Sumardjo et al. 2010).

Policies and general strategies taken in the implementation of RPPK itself is the reduction of poverty, improvement of competitiveness and the preservation and utilization of the environment and sustainable natural resources. Increasing competitiveness, productivity, added value and self-reliance among others by good agriculture practices (GAP = Good Agricultural Practices). The application of the principles of Good Agricultural Practices (GAP) in the cultivation of plants must be guarded well by the Agricultural Extension Workers (PPL) for the implementation completely in accordance with the provisions and produce good product.

The passing of Law No. 16 of 2006 on "Extension System of Agriculture, Fisheries and Forestry" the momentum of rise in the Indonesian education system. The law is legal certainty, which set the start of the extension system, institutional, FEA, counseling implementation, infrastructure, financing, up guidance and supervision in counseling, but on the other hand also leaves fundamental issues such as the preparation of human resources extension. Reliable human resource will be able to improve the performance of the public service.

The process of implementation of agricultural extension can be run properly if it is supported by the FEA professionals, institutional extension reliable, extension materials are constantly flowing, system counseling implementation correct and counseling methods appropriate management and counseling polyvalent (Warya 2008).

In terms of meaning agribusiness agricultural extension is a source of information for farmers to improve their farming both upstream subsystems, subsystem farming, downstream subsystem (processing) and supporting subsystems. Unfortunately, the condition of the field illustrates that the level of competence of agricultural extension in implementing the stewardship of agricultural extension is still not as expected farmers.

Agriculture extension is the cornerstone for the success of agricultural development. Therefore, It is always required for carrying out a duty to serve and fight for the interests of farmers and the fore is visionary, creative, productive, disciplined and independent. Increased insight and expertise extension needs to be improved so that conducive to the development potential as a professional educator.

The purpose of this study was to determine the factors that affect the competence of agricultural extension on the implementation of GAP. This study is expected to strengthen the architecture of competence theory in the context of agricultural extension and the expected results of this study can be a reference to the policy-making both by the central government and the local governments.

METHODS OF RESEARCH

This research was conducted in Bangka Belitung Province, namely in three districts of 7 districts / cities in Bangka Belitung province. Locations were selected purposively namely Bangka, Bangka Regency of Central and South Bangka Regency with the consideration that the district has established appropriate institutional counseling Law No. 16 of 2006 and has the largest extension in Bangka Belitung. Collecting data in the field is carried out from February to August 2014.

The unit of analysis is all the existing agriculture extension Bangka, Bangka Regency of Central and South Bangka Regency whose population is 144 extension workers and farmers who cultivated horticultural extension agent. Based on the formula solving with an error rate of five percent is derived sample of 125 people extension taken by stratified random sampling and horticultural farmers (100 people). This study uses a survey through questionnaires which supported the interview. The data collected is then analyzed using SEM (Structural Equation Model) with the program LISREL (Linear Structural Relationships).

RESULTS AND DISCUSSION

Hypothetical model proposed includes 29 indicators derived from six independent variables and the dependent variable. After the estimation of variables that affect the competence of agricultural extension, structural competence discovered agriculture extension models that show the influence between variables with the results of SEM conformance criteria as follows:

Table 1 – Results of the conformance criteria SEM Model

Goodness-of-Fit	Cutt-off-Value	Result	Description
GFI(Goodness of Fit)	≥ 0,90	0.96	Good Fit
RMR(Root Mean Square Residual)	≤ 0.1	0.08	Marginal Fit
RMSEA(Root Mean square Error of Approximation)	≤ 0,08	0.02	Close Fit
AGFI(Adjusted Goodness of Fit Index)	≥0,90	0.95	Good Fit
CFI (Comparative Fit Index)	≥0,90	1.00	Good Fit

Hypothesis 1: "A characteristic aspect counselor, educator motivation, attitude extension, extension of knowledge, skills extension have real effect on improving the competence of agricultural extension in the development of GAP in Bangka Belitung. How to test the hypothesis 1 is done by comparing the value of t-test and t table for each variable. The direct effect of the study variables are presented in the table below.

Table 2 – Effect directly between research variables and coefficients of influence

Between Variables Influence		Influence Coefficient				
Free variable (X)	→	Variables Bound (Y)	Directly	Total	Value t on $\alpha = 0,05$	R ²
Characteristics Extension	→	competence Extension Y ₁	0,44	0,44	7,00	0,9
Motivation Extension	→		0,47	0,47	6,44	
Attitude Extension	→		0,46	0,46	8,07	
Knowledge Extension	→		0,58	0,58	14,03	
Skills Extension	→		0,67	0,67	11,35	
Extension System	→		-0,58	-0,58	-3,18	

Source: Primary Data Processed, 2014.

Table 2 shows the direct influence of the variable characteristics of extension, extension motivation, attitude extension, extension of knowledge, skills extension and extension system in agriculture extension competencies are significantly different at the 0.05 level. A mathematical equation structural model of agricultural extension competencies are:

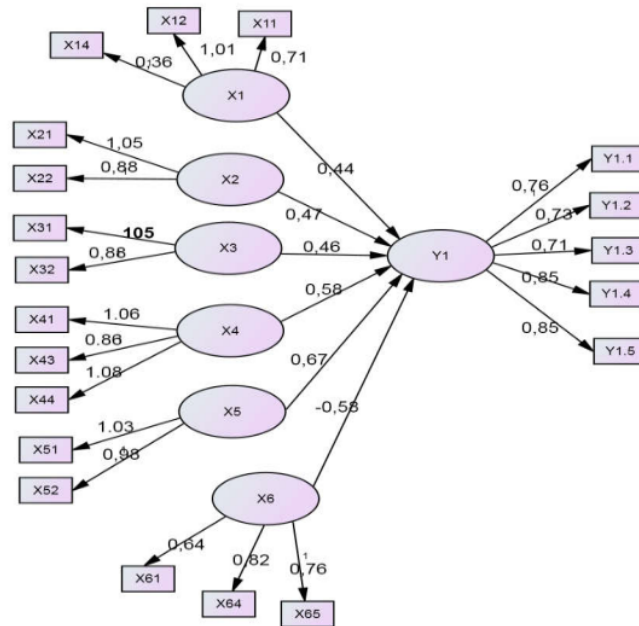
$$Y_1 = 0,44 * X_1 + 0,47 * X_2 + 0,46 * X_3 + 0,58 * X_4 + 0,67 * X_5 - 0,58 * X_6$$

Where: Y₁ is an extension of competence; X₁ extension characteristics; X₂ motivation extension; X₃ attitude extension; X₄ extension of knowledge; X₅ and X₆ skills extension agricultural extension systems. Collectively the six variables influence the competence of agricultural extension by 90 percent real on $\alpha = 0.05$ so the hypothesis is accepted. This can be explained that:

The characteristics of direct extension have real effect on the competence of agricultural extension, it means that each increase of one unit of the characteristic extension 0,44 units.

The results showed that the variables directly affect the characteristics of real competence agricultural extension. This means that the extension characteristics also determine whether the poor competence agricultural extension coefficient of 0.44 real influence on $\alpha = 0.05$. Effect of extension on competence characteristics visible on its merits

extension educator competencies in planning outreach programs, utilizing local resources, organize counseling, networking and capacity building areas of technical expertise.



Notes: X1 = Characteristics Extension; X1.1 (Age), X1.2 (Tenure) and X1.4. (Technical training); X2 = Motivation Extension; X2.1 (need for achievement), X2.2. (need for affiliation); X3 = Attitude extension; X3.1. (Ability to cooperate), X3.2. (Analyzing the problem); X4 = Knowledge; X4.1 (Understanding the potential of the region), X4.3. (Access to information resources), X4.4. (Technical horticultural cultivation); X5 = Skills Instructor; X5.1 (communicate effectively), X5.2 (building networks); X6 = Extension System; X6.1 (government support); X6.4 (support means), X6.5 (extension methods); Y1 = Competence agricultural extension; Y1.1 (planned extension program), Y1.2 (utilizing local resources), Y1.3 (organizing counseling); Y1.4 (building networks), Y1.5 (technical expertise).

Figure 1 – Structural Model of determinant factors of agricultural extension competence in Bangka Belitung

The real effect of the characteristics of agriculture extension educator at competencies reflected by the observed variables (manifest), the dimensions of age, years of service, and technical training followed by extension. Circumstances age extension in Bangka Belitung province ranged from 22 to 56 years old and mostly aged 26-45 years (80.8%). This means most of the extension of childbearing age, so the impact on the improvement of the competence of extension. According to Klausmeier and Goodwind (1975) in Yunita 2010, age is one of the important characteristics relating to the efficiency and effectiveness of learning, individuals who are in the productive age will more readily accept change, new ideas and innovation. The tenure of the extension in Bangka Belitung province ranged between 1 and 32.tahun. Most of the work period of 5 -10 years (48%). this suggests that agricultural extension in Bangka Belitung generally young (juniors) so that they are eager to find information and technological innovation will be the agricultural extension materials, these conditions have an impact on improving the competence of extension.

Technical training and functional extension followed by the agricultural extension is still relatively low, yet still have an impact on improving the competence of extension for extension has not felt saturated with the training provided and encouraged to seek new information or **The results of this study are also consistent with** the results of Bryan and Glenn (2004) concluded that, work experience have a positive effect relatively new

extension, while the extension is already longer work showed low levels of client satisfaction. Havelock (1969) in Yunita (2010) states that a person's experiences affect the tendency to require and ready to accept new knowledge. Results of research jahi Kumiawan R and A (2005) concerning the competence of agricultural extension in seven districts in Bekasi, West Java, which concluded that despite their diverse characteristics, the instructor showed high agreement in rank eighth kinds of competencies that they need.

The study provides information that the extension characteristics such as age, years of training can be a real influenced on improving the competence of extension. Thus this study can be used as a reference for the government in managing agricultural extension educator with due regard to age, years of service and extension training. In the recruitment system to consider the age of the prospective counselor and educator who had long tenure need to be improved abilities through training related to the development of innovation. Training extension workers need to be scheduled well and adapted to the needs of farmers. This will facilitate the extension in serving farmers auxiliaries.

Motivation direct extension have real effect on the competence of agricultural extension, means that each increase of one unit will increase the motivation of extension agricultural extension competence of 0.47 units.

The results showed that the variables of motivation educator real effect on the competence of agricultural extension. This means motivation will determine whether the poor competence of extension coefficient of 0.47 real influence on $\alpha = 0.05$. Extension motivational effect on the competence of extension appears in planning outreach programs, utilizing local resources, organize counseling, networking and capacity building areas of technical expertise.

Dimensions motivation extension are closely linked to agricultural extension competence is reflected by two variables observed (manifest), namely (1) the need for achievement that includes encouragement for excel or achievement. and (2) the need for affiliation which includes the desire to be accepted by others in the neighborhood extension work or residence. The need for achievement is the most powerful indicator reflects the motivation variable ($\lambda = 1.06$). Thus the effect of outstanding educator needs great potential to increase the competence of extension.

The results of this study are consistent with the results of the study Marius AJ (2007) concerning the competence development of agricultural extension in East Nusa Tenggara province, which concluded that the aspects of motivation is a big influence on the dimensional extension of competence (0.628%).

Theoretically this research direction of the Achievement proposed by McClelland (1961), states that there are three important things to be human needs, namely:

- Need for achievement (need for achievement) in this case the urge to excel, or Achievement:
- Need for affiliation (the need for social relationships / almost equal to its social need Maslow) in this case the urge to build social relationships;
- Need for Power (the urge to organize) in this case the urge to dominate or manage other people.

Based on the research results and the above theory, the results of this study showed a noticeable effect with competence motivation extension of dimensions need for achievement and affiliation needs. Thus the results of research can help local governments improve motivation extension of the dimensions of need for achievement and the need to involve counselors affiliated with the various races, increased levels of formal and non formal education, as well as reward to the agents who excel and provide the facilities and infrastructure extension.

Attitude extension directly real effect on the competence of agricultural extension, means that each increase of one unit of attitude extension will increase the competence of 0.46 units of agricultural extension.

The results showed that the real effect on the attitude variable competence agricultural extension. This means that attitudes determine whether the poor competence extension agricultural extension coefficient of 0.46 real influence on $\alpha = 0.05$.

Influence the attitude of extension in agricultural extension appears competence in planning outreach programs, utilizing local resources, organize counseling, networking and capacity building areas of technical expertise.

Dimensions attitude extension which is closely related to the competence of the agricultural extension reflected by variables observed (manifest), namely (1) the attitude of working together synergistically fellow educator and farmer is measured by the attitude to accept other people's opinions and attitudes towards a group / team, (2). attitude to the problems faced by farmers. Variables observed (manifest) the most powerful extension reflects the attitude is the attitude of working together ($\lambda = 1.06$). Thus the effect of attitude's educator who can develop an attitude in working together potentially the most to improve **the competency of agricultural extension**.

Theoretically this study in line with **the** opinion Sumardjo (2006) which explains that competency is the ability and authority possessed by a person to do a job that is based on the knowledge, skills and attitudes in accordance with the specified performance. Further Roger (1983) suggested that an extension is said to be competent if he managed to carry out a series of duties that include: (1) the willingness and ability of extension workers to build relationships directly or indirectly with the targeted community; (2) the willingness and ability to be an intermediary educator / mediator between the sources of innovation with the government, institutions and community extension target; and (3) the willingness and ability to customize activities to do with the needs that can be perceived by the government or agency counselors and targeted community.

Based on the research results and the above theory, the research revealed a real influence on the attitude of the educator competency dimension in working attitude and problem analysis. Thus the results of research can help local governments to increase the competence of extension educator with attention attitude in collaborating and problem analysis.

Knowledge extension directly real effect on the competence of agricultural extension, means that each increase of one unit of knowledge extension will increase the competence of agricultural extension was 0.58 units.

The results showed that there are significant variables knowledge competence agricultural extensions. This means knowledge extension determine whether the poor competence agricultural extension coefficient 0,58 real influence on $\alpha = 0.05$ Effect of knowledge extension on competence extension appears in planning outreach programs, utilizing local resources, organize counseling, build networks and ability areas of technical expertise.

Dimensional extension of knowledge are closely linked to agricultural extension competence eis reflected by the observed variables (manifest), is (1) an understanding of the potential extension work areas include understanding the potential of natural resources, leading commodities and farmers' efforts auxiliaries. (2) knowledge extension of access to information resources that includes knowledge of the benefits and how to use computers and internet media, (3) knowledge of horticulture cultivation techniques ranging from soil preparation to the marketing. In connection with the competence of agricultural extension, technical knowledge horticultural cultivation is an observed variable (manifest) that reflects the knowledge of the most powerful extension ($\lambda = 1.08$). Thus the effect of extension of knowledge to develop technical knowledge horticultural cultivation greatest potential to improve **the competency of agricultural extension**.

Theoretically this study in line with **the** opinion of the opinion Sumardjo (2006) which explains that competency is the ability and authority possessed by a person to do a job that is based on the knowledge, skills and attitudes in accordance with the specified performance.

Based on the research results and the above theory, the research revealed a real influence on the competency of knowledge extension agricultural extension educator understanding of the dimensions of the potential work areas, access to information resources and technical knowledge to the horticultural cultivation. Thus the results of research can help local governments to increase the competence of extension workers by enhancing knowledge of extension workers through the provision of facilities and infrastructure

extension, extension to include the various training and improvement of the administrative system of extension services to help farmers increase their productivity.

Skills direct extension real effect on the competence of agricultural extension, means that each increase of one unit of skills trainers will increase the competence of 0.67 units of agricultural extension.

The results showed that the real effect on the variable skills competency agricultural extension. This means the skills of counselors determine whether the poor competence agricultural extension coefficient of 0.67 real influence on $\alpha = 0.05$.

Influence skills extension educator at competencies visible in planning outreach programs, utilizing local resources, organize counseling, networking and capacity building areas of technical expertise.

Dimensions of the agents whose skills are closely related to the competence of the agricultural extension reflected by the observed variables (manifest), are (1) the skills to communicate effectively which includes the preparation of extension materials, packaging in the form of multimedia message later skill in conveying the message to the various extension methods. (2) Skills to build networks include skills in negotiating with partners in making business deals. Variables observed (manifest) that has great potential in agriculture extension competency is communicating effectively ($\lambda = 1.03$). Thus the effect of the agents whose skills can develop the skills to communicate effectively the greatest potential to improve the competency of agricultural extension.

Theoretically this study in line with the opinion Sumardjo (2006) which explains that competency is the ability and authority possessed by a person to do a job that is based on the knowledge, skills and attitudes in accordance with the specified performance.

Based on the research results and the above theory, the research revealed a real influence on the competency skills extension agricultural extension of dimensional skills to communicate effectively and build networks. Thus the results of the research can be used as a reference for local government in making policies to increase the competence of extension workers with training that is associated with the ability to plan extension outreach programs and counseling implementation and provide facilities and infrastructure extension

The extension system is directly significant effect on the competence of agricultural extension, means that any reduction in one unit will increase the competence of extension system of agricultural extension was 0.58 units.

The results showed that the variables extension system real effect on the competence of agricultural extension. This means the system determines whether the poor competence extension agricultural extension with a coefficient of -0.58 real influence on $\alpha = 0.05$. Effect of extension system in the apparent extension of competence in planning outreach programs, utilizing local resources, organize counseling, networking and capacity building areas of technical expertise.

Dimensional extension system is factors beyond the individual agents whose influence its behavior in performing the task. Extension system that is closely linked to agricultural extension competence is reflected by three variables observed (manifest), is (1). government policy covering government budgeted funds for extension activities and the existence of a stand-alone extension agency; (2). the support means includes availability and publication, (3). pattern of leadership includes the distribution division of authority and the attitude of the leadership in the decision-making considerations. Support is forming a powerful tool against latent variable extension system. Thus the great potential to improve the competency of agricultural extension.

SEM analysis results indicate that the effect of the extension system coefficient is negative. This means that the extension system negatively affect the competence of agricultural extension. In general, extension system, including the category of being. Likewise, if viewed from the observed variables (manifest) included in the category of being. These findings indicate that the extension system which runs currently not running optimally. Agricultural extension facilities although equipped with two-wheeled vehicles but not supported with adequate operational costs will certainly affect the counseling process. Aside from the publication received only limited extension beam farmer magazine.

CONCLUSION AND SUGGESTIONS

Based on the analysis and discussion, it can be concluded that the extension characteristics, motivation extension, extension attitude, knowledge and skills of extension, the extension system real effect on improving the competence of extension. Competence extension appears in planning outreach programs, utilizing local resources, organize counseling, and build networks and capacity extension in the field of technical expertise.

The following suggestions were formulated based on the results of the above conclusions: Agricultural Extension Policy makers need to improve the competence and performance of extension agents to develop the implementation of Good Agricultural Practices (GAP) in Bangka Belitung; It should be further research on the potential extension budget and empowerment strategies in order to develop GAP in Bangka Belitung.

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