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Relationship of Farmer's Characteristics with Competence Corn Farming

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Relationship of Farmer's Characteristics
with Competence Corn Farming

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ABSTRACT

The purpose of this research is to know distribution characteristic farmer in farming corn, analyze competence farming controlled farmers, and analyze relations characteristic of farmers with competence farming corn. This research was conducted on three Subdistrict in Pohuwato Regency, namely Subdistrict Taguat, Subdistrict Patilanggio, and Subdistrict Buntulia. Research methodology is descriptive survey by analyzing relations and the influence of research between variables. Samples to research is 83 grower of corn taken by proportional a random sample, of the population grower of corn as many as 481 people. Data analyzed qualitatively descriptive. To test relations the correlation between variables the research was done by test concordance Kendall W. The research results show that the characteristic grower of corn in the research locations, consisting of; formal education, the size of farming, seed corn used, experience farming, and the availability of capital farming. Competence farming corn controlled farmers, among other: treatment on seeds corn, planning production costs, pest and disease, the use of technology efficiently, and entrepreneurship.

Key words: Competencies, Characteristics, Knowledge, Skills, Attitude, Farming

INTRODUCTION

Farmers' characteristics and farming competencies are the descriptions of farmers' capability in managing the farm based on an effective and efficient plan that is in line with the crops farming techniques. Farmers' characteristics and farming competencies show the farmers' performance and responsibility in running their farm better and continually. Competent corn farmers are those who have a measurable characteristic and behavior in acting up as well as being responsible for their corn farming, so that people consider them competent. They also do have a technical and managerial capability in doing the corn farming. A farmer's technical capability is worthwhile to improve the quality of farming production, meanwhile, his managerial capability is useful to manage the farm and gain profit. Pohuwato Regency is one of the regions in Gorontalo Province that has a potential opportunity of corn development. Corn harvested area in Pohuwato Regency in 2010 was 14,386 Ha with the production of 40,241 tons. In 2015, the corn harvested area increased to 43.614 Ha with the production of 206,935 tons (Agriculture and Food Security Office of Gorontalo Province, 2016). Corn potential in Pohuwato Regency can be enhanced by prioritizing farmers'

1

characteristics and corn farming competencies that can support the sustainable increase of farmers' incomes. For that reason, this study needs to be conducted as a source of scientific information in developing human resources of farmers.

METHOD OF STUDY

This study was conducted from April to July 2017 in three sub-districts in Pohuwato Regency, including Paguat Sub-District, Patilanggio Sub-District, and Buntulia Sub-district. It employed descriptive survey by analyzing the correlation and influence between research variables. The variables were free variable X and Y. In this study, the variable X (farmers' characteristics) consists of: (1) farmers' age, (2) farmers' formal education, (3) farming land area, (4) farming experiences, (5) working motivation, and (6) farming capital availability. The variable Y (farming competencies), in contrast, consists of: (1) technical competence, and (2) managerial competence. The data were analyzed by employing a qualitative descriptive method. Kendall W Concordance test was used to test the correlation between research variables. The populations of this study are farmers who run their corn farming in three sub-districts; Paguat, Patilanggio, and Buntulia Sub-Districts. The number of corn farmers in those sub-districts is 481. The sample was selected by using "proportional random sampling" from the lists of farmers' names in those sub-districts. By utilizing Slovin formula (Sevilla, 1993), the sample size of corn farmers with a ten-percent error rate is described in Table 1:

$$n = \frac{N}{1 + N(e)^2}$$

$$n = \frac{481}{1 + 481\,(0,10)^2} = 83 \text{ people}$$

$$n_i = \frac{N_i}{N} \times n$$

Information:
n = sample size
N = population sample
e = error standard
n_i = strata sample size i
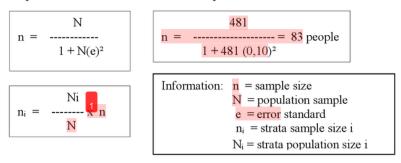N_i = strata population size i

Table 1. Population Size of Corn Farmers in Three Sub-Districts of Pohuwato Regency

Sub-district	Population number of farmers (people)	Sample size (people)
Paguat	132	23
Patilanggio	185	32
Buntulia	164	28
Total	481	83

2

FINDINGS AND DISCUSSION
1. Distribution of Farmers' Characteristics

Corn farmers in Paguat Sub-District, Patilanggio Sub-District, and Buntulia Sub-District of Pohuwato Regency have a formal education that can support them in doing the corn farming. Formal education (50.6%) of elementary school and junior high school with the category of 9 – 12 years of school duration is in a moderate category. In the aspect of the land area, the farmers in those sub-districts (66.3%) have a narrow land area of 0.5 – 1.5 ha. For the use of corn seeds, farmers in Paguat, Patilanggio, and Buntulia sub-districts tend to utilize composite seeds (42.2%). Further, in the aspect of corn farming experiences, farmers in those sub-districts have worked for less than 10 years (68.7%), and from the aspect of farming capital availability, the farmers have adequate capital in developing their corn farming in Paguat Sub-District, Patilanggio Sub-District, and Buntulia Sub-District. The result shows that the farmers' characteristics in those three sub-districts strongly support farmers' competencies in corn farming. This indicates that farmers' characteristics are one of the factors that the local government should concern with in increasing corn production in Pohuwato Regency. This is explained in Table 2.

Table 2. Distribution of Farmers' Characteristics

No.	Farmers' Characteristics	Category	Quantity (person)	Percentage (%)
1	Formal education	Low: 5 – 8 years	26	31.3
		Moderate: 9 – 12 years	42	50.6
		High: 13 – 16 years	15	18.1
2	Land area	Narrow: 0.5 – 1.5 Ha	55	66.3
		Spacious: > 1.5 H	28	33.7
3	Used corn seeds	Local: 35 kg	26	31.3
		Composite: 25 kg	35	42.2
		Hybrid: 15 kg	22	26.5
4	Farming experiences	Poor: < 10 years	57	68.7
		Fair: > 10 years	26	31.3
5	Farming capital availability	Deficient: score 7 - 11	26	31.3
		Adequate: score 12 - 16	47	56.6
		Plentiful: score 17 - 21	10	12.1

Source: Primary Data after processed, 2017.

The improvement of farmers' characteristics can be carried out by implementing sustainable agricultural extension through the plan of extension program involving the farmers that are in accordance with their capability and the location-specific natural resources potential. The result of this study is in line with Rosilawati, et al (2013) concluding that farmers' characteristics have an impact on their corn farming competencies. Nevertheless, it does not influence the success of

corn farming. The study conducted by Helmy, et al (2013) sums up that there is a real correlation between extension workers' characteristics and perceptions toward the institutional support with extension workers' perceptions toward the innovation nature *cyber extension* that can be applied to support the extension materials.

2. Corn Farmers' Competencies

Corn farmers' competencies are elaborated by their behavior in corn farming, including: knowledge, skill, and attitude.

Farmers' Knowledge in Corn Farming

Farmers' knowledge is the basis for understanding corn farming, both in upstream subsystems and downstream subsystems. Excellent knowledge of corn farmers in some technical and managerial competencies reveal that the farmers in Paguat, Patilanggio, and Buntulia Sub-Districts of Pohuwato Regency have a high capability in cultivating and planning the development of corn farming in accordance with the region potential. Table 3 brings out the fact that farmers' knowledge in corn farming is in the high category, both in technical and managerial competencies.

Table 3. Farmers' Knowledge in Corn Farming

No.	Farmers' Competencies	Category of Farmers' Knowledge	Number of Respondents	Percentage (%)
1	Farming	High: 65 - 95	47	56.6
		Low: 20 - 64	36	43.4
2	Seeds treatment	High: 65 - 95	51	61.4
		Low: 20 - 64	32	38.6
3	Pests and diseases control	High: 65 - 95	62	74.7
		Low: 20 - 64	21	25.3
4	Harvest	High: 65 - 95	45	54.2
		Low: 20 - 64	38	45.8
5	Post-harvest	High: 65 - 95	58	69.9
		Low: 20 - 64	25	30.1
6	Commodities selection	High: 65 - 95	60	72.3
		Low: 20 - 64	23	27.7
7	Business obstacles and opportunities identification	High: 65 - 95	37	44.6
		Low: 20 - 64	46	55.4
8	Technology utilization	High: 65 - 95	21	25.3
		Low: 20 - 64	62	74.7
9	Efficient land use	High: 65 - 95	31	37.3
		Low: 20 - 64	52	62.7
10	Production cost plan	High: 65 - 95	26	31.3
		Low: 20 - 64	57	68.7
11	Entrepreneurship	High: 65 - 95	23	27.7
		Low: 20 - 64	60	72.3

Source: Primary data after processed, 2017.

4

Table 3 explains that farmers' competencies in farming consist of seeds treatment, fertilization, pests and diseases control, harvest, post-harvest, commodities selection, and production cost plan. On the other hand, farmers' competencies of farming obstacles and opportunities identification, technology utilization, efficient land use, and entrepreneurship development of farmers' knowledge are low. This result is going with Kartono, et al (2009) concluding that factors that are positively and meaningfully related to the establishment of farmers' perception on Integrated Corp Management (PTT) of rice are: cosmopolitan level of farmers, farmers' income, a business climate that supports farming, and a better agricultural extension. Theoretically, this research result is in line with Bandura (1997) who argues that farmers are able to learn the consequences of their action and will enrich as well as sharpen their knowledge.

Farmers' Skill in Corn Farming

Farmers' skill can be successful if supported by knowledge of corn farming that can have implications for the increased corn production. This is presented in Table 4.

Table 4. Farmers' Skill in Corn Farming

No.	Farmers' Competencies	Category of Farmers' Skill	Number of Respondents	Percentage (%)
1	Entrepreneurship	High: 70 - 95	53	63.9
		Low: 45 - 69	30	36.1
2	Farming	High: 70 - 95	67	80.7
		Low: 45 - 69	16	19.3
3	Fertilization	High: 70 - 95	58	69.9
		Low: 45 - 69	25	30.1
4	Efficient land use	High: 70 - 95	33	39.8
		Low: 45 - 69	50	60.2
5	Post-harvest	High: 70 - 95	21	25.3
		Low: 45 - 69	62	74.7
6	Seeds treatment	High: 70 - 95	32	38.6
		Low: 45 - 69	51	61.4

Source: Primary data after processed, 2017.

The result of this study in Table 4 indicates that farmers' skill in corn farming in Paguat, Patilanggio, and Buntulia Sub-Districts of Pohuwato Regency is in the high category, including: (1) entrepreneurship, (2) farming, and (3) fertilization. However, their skills of (1) Efficient land use, (2) post-harvest, and (3) seeds treatment are in a low category. This result is in compliance with Sudirman (2006) describing that the training model of farmers' skill is directed to the development of productive business adjusted with the environment condition, and conducted in an integrated manner. Besides, Bandolan, et al (2008) concludes that the high skill of farmers is due to their knowledge, so that the skills of seeds selection, planting, preservation, and harvest can be done. According to Jasius (1968), a skill shows a process of attitude, ability, and competence improvement of workers to do a particular work".

Farmers' Attitude towards Corn Farming

The result of this descriptive study brings up the fact that farmers in Paguat, Patilanggio, and Buntulia Sub-Districts of Pohuwato Regency (68%) consider the (1) corn seeds treatment, (2) commodities selection, and (3) entrepreneurship important. Conversely, farmers in those sub-districts of Pohuwato Regency consider the aspect of (1) production cost plan, (2) efficient land use, and (3) efficient technology utilization not really crucial (32%). This result is in line with Indrianingsih (2011) who claims that non-adopter farmers suitability and technological complexity and perception of farmers on the influence of media/ interpersonal information as a communicative technology conveyor for the farmers is not understood because the farmers' knowledge in the media of agricultural technology information has not been optimal in accordance with their experience in farming. This study is theoretically similar to Azwar (2003) who explains that one of the factors affecting attitudes is personal experiences. Personal experiences leave a strong impression that attitudes become more easily formed when the person is in a situation involving emotional factor.

3. The Correlation between Farmers' Characteristics and Corn Farming Competencies

The result reveals that farmers' characteristics and corn farming competencies in Paguat, Patilanggio, and Buntulia Sub-Districts of Pohuwato Regency have a strong correlation. Correlation coefficient *Kendal W* represents a high correlation between farmers' characteristics and their competencies in corn farming.

The Correlation between Formal Education and Corn Farming Competencies

The result indicates that farmers with a low education level should master several corn farming competencies, including: (1) seeds treatment, (2) harvest, and (3) identifying obstacles and opportunities of corn farming. Moreover, they also should have the knowledge, such as: (1) obstacles and opportunities identification, (2) post-harvest, (3) harvesting, and (4) entrepreneurship management. The other aspects of (1) farming, (2) fertilization, and (3) harvesting are considered unimportant. This result is in compliance with the study conducted by Abdullah and Amri Jahi (2006) who note that every farmer has different characters. This study is theoretically related to Wiraatmadja (1986) stating that the level of education is one of the indicators to determine farmers' quality. Formal or or non-formal education is a basic capital for farmers to access information through media.

The Correlation between Land Area and Corn Farming Competencies

The result of land area characteristics shows that farmers who have narrow land in Paguat, Patilanggio, and Buntulia Sub-Districts of Pohuwato Regency should have these essential corn farming competencies, such as: (1) harvesting process, (2) seeds treatment, and (3) obstacles and opportunities identification. For farmers who have a spacious land, they need to master some competencies, including: (1) obstacles and

opportunities identification, (2) entrepreneurship, (3) seeds treatment, and (4) pests and diseases control. The other competencies of (1) production cost plan, (2) commodities selection, and (3) efficient land use are considered insignificant. This result is similar to the study conducted by Nasution (2008) who concludes that working capital, land area, and labors simultaneously do influence the production, meanwhile, working capital and labors partially do not affect the production. Further, land area has given a real effect on production. Theoretically, this result goes with Mosher (1987) describing that the area of farmed land tends to be related to the farming income and the number of dependents of the farmers' family. A large number of family members who will use the income affect the work productivity and children intelligence, increased investment capability, and capital development.

The Correlation between Seeds Selection and Corn Farming Competencies

Seeds selection is strongly correlated with farmers' competencies. Farmers with a high competence prefer to choose hybrid seeds for their farming, so that it should be supported by (1) fertilizer and fertilization, (2) seeds treatment, (3) production cost, (4) harvesting process, and (5) post-harvest. In contrast, farmers with a low competence tend to use local seeds for their farming, which therefore, they need to have farming competencies of (1) seeds treatment, (2) fertilization, (3) efficient land use, and (4) commodities selection. However, harvesting, post-harvest, obstacles and opportunities identification, and production cost are considered not really important. This result is in compliance with Jariyah and Wahyuningrum (2008) summing up that the selection of crops is based on high selling price, easy marketing, preferred by the farmers, easy plantation and management. This result is theoretically related to Ali (2013) arguing that agricultural seed production systems, both intended to meet self-consumption and commercially-oriented, require the availability of high-yielded and good-quality seeds.

The Correlation between Farming Experiences and Corn Farming Competencies

In the aspect of farming experiences in Paguat Sub-District, Patilanggio Sub-District, and Buntulia Sub-District, the result shows that farmers who lack of experience need to master some competencies, including: (1) seeds treatment, (2) harvesting, and (3) obstacles and opportunities identification. For farmers who have adequate experience, on the other hand, should have competencies, such as: (1) seeds treatment, (2) harvesting, and (3) obstacles and opportunities identification. The other competencies of (1) production cost plan, (2) commodities selection, and (3) efficient land use are considered unimportant by farmers. Rukka, et al (2006) also goes with the result of this study in which farmers' experiences in corn farming give an impact on how to respond an innovation. The longer the experience of farming is, the higher the level of response to technology will be. This study is theoretically in accordance with Rasyid (2003) claiming that farming experience is one of the factors that support the success of farming. Through their experiences, it is expected that farmers are able to overcome the problems they face in their work.

7

The Correlation between Capital Availability and Corn Farming Competencies

The result of farming capital availability indicates that farmers lacking of capital in Paguat, Patilanggio, and Buntulia Sub-Districts of Pohuwato Regency should have these corn farming competencies, which are: (1) corn harvesting, (2) efficient technology utilization, and (3) entrepreneurship. For farmers who have adequate capital, they need to have some competencies, including: (1) corn seeds treatment, (2) obstacles and opportunities of corn farming, (3) corn harvesting, and (4) entrepreneurship. Moreover, it is crucial for farmers who have lots of capital to have several competencies, such as: (1) harvest, (2) fertilization, (3) identifying obstacles and opportunities of corn farming, and (4) corn seeds treatment. This result is in line with the study conducted by Wardhani (2011) who states that capital productivity is the capital capability to raise an income, which is the ratio between profit and production cost. Theoretically, this result is also with Mardikanto (1983) explaining that capital is the main supporting factor of farming. The availability of farming capital has something to do with the success rate of farming management. The correlation between farmers' characteristics and corn farming competencies in three sub-districts in Pohuwato Regency is shown in Table 5.

Table 5. The Correlation between Farmers' Characteristics and Corn Farming
Competencies in the Site Area

No.	Farmers' Characteristics	Farmers' Competencies	Correlation Coefficient *Kendall W*
1	Formal education	Seeds treatment, harvest, post-harvest, entrepreneurship, obstacles and opportunities identification.	0.96
2	Farming land area	Harvesting process, pests and diseases control, obstacles and opportunities identification, commodities selection, seeds treatment.	0.97
3	Used corn seeds	Post-harvest, seeds treatment, production cost plan, harvest, fertilizer and fertilization	0.94
4	Farming experiences	Seeds treatment, obstacles and opportunities identification, harvesting	0.96
5	Farming capital availability	Harvesting, efficient technology utilization, entrepreneurship, farming obstacles and opportunities identification, entrepreneurship	0.93

Source: Primary Data after processed, 2017.

8

CONCLUSION

This study concludes several things regarding the problem and objective of this study, including:

1. The distributions of corn farmers' characteristics in Paguat Sub-District, Patilanggio Sub-District, and Buntulia Sub-District of Pohuwato Regency are formal education, farming land area, used corn seeds, farming experiences, and farming capital availability.

2. Farmers in Paguat Sub-District, Patilanggio Sub-District, and Buntulia Sub-District should master a number of competencies, which are:

    a. Knowledge: (1) corn seeds treatment, (2) production cost plan, (3) identifying obstacles and opportunities of corn farming, and (4) fertilizer and fertilization.

    b. Skill: (1) Pests and diseases control, (2) harvesting, (3) post-harvest,

    c. Attitude: (1) efficient technology utilization, (2) commodities selection, and (3) entrepreneurship.

3. Farmers' characteristics and corn farming competencies in Paguat, Patilanggio, and Buntulia Sub-Districts of Pohuwato Regency are strongly correlated based on correlation coefficient *Kendall W* between 0.93 – 097.

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11

Relationship of Farmer's Characteristics with Competence Corn Farming