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## The social capital and innovative behaviors of the farmers in Bantaeng Regency

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## The social capital and innovative behaviors of the farmers in Bantaeng Regency

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**Abstract.** Farmers who adopt an innovation will collaborate with other parties through the innovation information network relationship and farmers who have a wider network will easily obtain information about the innovation. Thus, they have high social capital and an opportunity to adopt innovations. This study aims to analyze the relationship between farmers' social capital and the innovative behavior of highland farmers in Bantaeng Regency. The samples were chosen by simple random technique. The data analysis used correlation analysis of the Chi-square Test. The data were measured by a Likert Scale with the scoring of 1 and 2. The scales were constructed based on the questions of each independent variable previously determined. The results showed that there was a relationship between the elements of social capital (social networks, mutual trust, and reciprocity) with the elements of the innovative behavior of farmers (creativity and risk-taking) at various levels of significance. The social capital elements of social networks tend to show a real relationship with creativity and risk-taking (elements of innovative behavior). Farmers' social networks in economic activities, social, and high environmental activities tend to be related to the level of creativity and level of risk-taking of farmers. Mutual trust and reciprocity social capital elements show the relationship with the element of risk-taking.

### 1. Introduction

Social capital can be a stimulant capital owned by the farming community to open up opportunities and other potential capital. This is strongly supported by the innovative behavior of the farming community. Management of the agricultural system in the highlands is seen as part of community empowerment through strengthening social capital and its success can be demonstrated through improving the level of life of the local community. Innovative behavior of farmers is considered an important part of the improvement. In this research, implementing innovative behavior is realized by looking at the level of creativity and the level of risk-taking from the highland farming community. These two dimensions of innovative behavior are based on the thinking of [1] detailed in more innovative behavior in carrying out the innovation process into 4 stages of seeing opportunities, issuing ideas, fighting for and the application stage.

The four stages above are needed by farmers to identify the level of creativity. Opportunities can start from incongruence and discontinuity occurs due to a discrepancy with the expected pattern, for example, the adoption of coffee side-continued innovation. Farmers who see and understand the benefits of this innovation will take action to adopt the innovation. With this understanding, making



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highland farmers fight their ideas to fellow farmers or in farmer groups to apply side-grafting innovations to their coffee plants. The level of risk-taking is a good understanding of risk and failure conditions from farmers make farmers accept a low risk. Conversely, the conditions of understanding risks and failures that are not good from farmers make farmers accept high risks.

The adoption of innovation is largely determined by the ability of human capital (knowledge, motivation, and attitude) as a mental process in making decisions to adopt. Human capital is defined as the value of knowledge, motivation, and attitudes possessed by individuals that are relevant to the activity of adopting an innovation. For the development of intact human resources of farmers in the adoption of innovation is to empower through the strengthening of human capital and social capital because both are complementary.

In the process of adoption, interaction, communication network, and new information always occur between individuals, groups and other related institutions. If innovation can be learned by others it shows that there is a network of information between individuals and other individuals. Farmers who adopt an innovation will automatically collaborate with other parties through social relations and new information networks. Individual farmers or groups who have a broader innovation information network will more easily obtain innovation information so that they have high social capital and have the opportunity to adopt innovations.

Social capital is a multidimensional concept that is meaningful [2,3]. There are two streams in understanding the concept namely social capital as a shared resource and social capital as a variety of ways of interacting. In the first understanding, resources become social because they can be obtained and used through relationships with others. In the first understanding, social capital is an individual attribute. Unlike the first understanding. In the second understanding, social capital is seen as an attribute of society to characterize the various ways used by its members to interact with each other. [4] defined social capital as being a total potential resource among the related networks of individuals or groups. It is also divided into the following three constructs such as structural, cognitive and relational dimensions. In contrast, expressive social capital most often refers to cognitive relationships between organizational members that are formed to exchange social resources such as friendship and social support that are not directly aimed at achieving organizational [5,6].

As an attribute of a society, social capital is seen as able to generate material or non-material returns to community members. For example, in relation to health problems, a better degree of health [10] found in people in communities with high social capital than people in communities with reverse social capital [7]. The location of social capital is not the individual or the physi[9] means of production but has a role and function in optimizing and making other capital effective. Social capital is productive, which enables the achievement of several goals that cannot be achieved without their existence. Lin in a number of papers [8] developed the work of Granovetter which shows how people use social resources to achieve their goals especially in finding work. Lin has shown that people act effectively using social relations will have a higher level of job mobility than their structural position [9].

[10] and [11] state that social capital does n[4] lie in individuals but in groups, communities, even at the state level. Putnam further stated that social relations are a reflection of cooperation and coordination between citizens based on active and reciprocal social ties. Putnam also mentioned that beliefs, norms and social networks tend to be mutually reinforcing and cumulative.

Several studies of social capital have been carried out but almost all of these studies still see differences in social capital in different cultural systems. A few studies have looked at the relationship between social capital and innovative behavior in upland agroecology. From this point of view, research[6]s important to do.

The purpose of this study was to analyze the relationship between social capital and the innovative behavior of upland farmers. The elements of social capital analyzed are social networks, mutual trust, and reciprocity, and the elements of innovative behavior analyzed are creativity and risk-taking. This study is expected to provide an overview of the importance of innovative behavioral elements in the development of farmer groups in the highlands based on social capital.

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**2. Methods**

This research was conducted in the highland farming community in Bantaeng Regency, South Sulawesi. Village selection was done by a purposive sampling method with criteria that represent the highlands agroecology is the village of Labbo, District of Tompobulu. The field research lasted for 4 (four) months from April to July 2014.

The data used in this study consisted of primary data and secondary data. Primary data is data obtained through structured interviews with respondents using a questionnaire or questionnaire. Besides that, it is also done through observation by looking at the relationship between the dimensions of social capital and innovative behavior in the context of highland agroecology.

The various types of primary data collected in this study are on the following aspects:

1. Social capital, the variables collected are mutual trust, social networks, and reciprocity.
2. Innovative behavior, including creativity and risk-taking.

In this study, the population was all farmers (households) in the sample village. The sample villages were selected purposively with the criteria that the villages represented upland agroecology for the highlands selected Labbo Village, Tompobulu District. Samples for survey purposes were drawn using the random sampling method with a representative number of samples representing the population of each village. The number of samples taken was based on the size of the population and uniformity of business (homogeneous). At the location of Labbo Village's agroecological research, the population was 806 households who work as coffee farmers.

Analysis of the data used was descriptive statistics and correlation matrices. The use of a correlation matrix depends on the facts that exist in the statistical model and generally based on the correlation between variables. This is what underlies why the correlation matrix was placed as the main stage in looking at the level of social capital to the innovative behavior of upland farmers. The level of significance used in selecting the combination was 10% with the first reason that this level allows us to have a broader structure to explain the relationship between variables so that it can cover the situation of flexibility to record the complexity of social capital or the widest reality. Additionally, using a correlation matrix as well makes it possible to clearly see how strong this association is. The most important is through the matrix, it allows getting important information about the direction and magnitude of the linear association between the selected variables. In another way, how dimensions get constructed which are supported by phenomena that can be identified through chi-square tests.

To see the level of significance (the real relationship), a significance test was performed. The value of  $\chi^2$  calculated compared to  $\chi^2$  table (Chi-Square):

- If  $\chi^2$  value  $<$   $\chi^2$  table, then  $H_0$  accepted;  $H_a$  rejected
- If  $\chi^2$  value  $>$   $\chi^2$  table, then  $H_0$  rejected;  $H_a$  accepted.

**3. Results and discussion***3.1. Relationship of social capital with innovative behavior*

The discussion in this section is the relationship between elements of the social capital of farmers with innovative behavioral elements. The element of social capital includes social networks, mutual trust, and reciprocity while the element of innovative behavior includes creativity and risk-taking.

*3.2. Relationship of social networks with innovative behavior*

The relationship between social networks of farmers with innovative behavior is divided into several parts; the relationship of social networks with the level of creativity of farmers and the relationship of social networks with the level of risk-taking of farmers. The relationship can be seen in Table 1.

**Table 1.** Relationship of Social Networks with Innovative Behavior (Creativity and Risk-taking) of Highland Farmers in Bantaeng Regency, South Sulawesi.

Social capital VS PI		Creativity			Risk-taking		
		L	H	Total	L	H	Total
Network	L	40 (40.82)	19 (19.39)	59 (60.20)	42 (42.86)	17 (17.35)	59 (60.20)
	H	10 (10.20)	29 (29.59)	39 (39.80)	13 (13.27)	26 (26.53)	39 (39.80)
	Total	50 (51.02)	48 (48.98)	98 (100.00)	55 (56.12)	43 (43.88)	98 (100.00)

Information :

$\chi^2$ -tab.=2,706

$\chi^2$ -hit =16,697; sig.= 0,000

$\chi^2$ -hit =13,662; sig.= 0,000

(df=1,  $\alpha=0,1$ )

L = low

H = high

In Table 1, upland farmers generally show a real relationship between social networks with innovative behavior in creativity and risk-taking. Farmers who have a high level of social networking tend to have a high level of creativity (29.59%) and farmers who have a low social network tend to have a low social network of 40.82%. This relationship shows ( $\alpha = 0,1$ ;  $\chi^2$ -hit = 16,697 >  $\chi^2$ -tab. = 2,706; sig. = 0,000 at df = 1). Additionally, the test results show that the higher the farmer's social network, the higher the level of creativity. Farmers with high creativity have the ability to see good opportunities, easy to accept ideas, as well as in conveying ideas and applying them so that farmers will also have a high network, both networks in social activities, environmental activities and economic activities.

Likewise, the network relationship with risk-taking is a real relationship where the number of farmers who have a network and high level of risk-taking is 26 people (26.53%) farmers and the low are 42 people (42.86%) farmers. Relationships showed significance ( $\alpha = 0,1$ ;  $\chi^2$ -hit = 13.662 >  $\chi^2$ -tab. = 2.706; sig. = 0.000 at df = 1). The higher the farmer's social network, the higher the association of farmers' risk-taking in farming. This shows that there is an association between the network and the level of risk-taking of farmers. Farmers who have a low network tend to have a low understanding of failure as well as an understanding of risk and the ability to accept risks that tend to below as well. Whereas farmers who have a high network tend to have a high level of risk-taking as well. This is indicated by the level of understanding of product failure, understanding of risk and the ability to accept risks are also high.

3.3. Relationship of mutual trust with innovative behavior

The relationship between mutual trust and innovative behavior of upland farmers can be seen in table 2.

**Table 2.** Relationship between Mutual Trust and Innovative Behavior (Creativity and Risk-taking) of highland farmers in Bantaeng Regency, South Sulawesi.

Social capital VS PI		Creativity			Risk-taking		
		L	H	Total	L	H	Total
Mutual Trust	L	26 (26.53)	19 (19.39)	45 (45.92)	32 (32.65)	13 (13.27)	45 (45.92)
	H	24 (24.49)	29 (29.59)	53 (54.08)	23 (23.47)	30 (30.61)	53 (54.08)
	Total	50 (51.02)	48 (48.98)	98 (100.00)	55 (56.12)	43 (43.88)	98 (100.00)

Information:

$$\chi^2\text{-tab.}=2,706$$

$$\chi^2\text{-hit}=1,520; \text{sig.}=0,218$$

$$\chi^2\text{-hit}=7,591; \text{sig.}=0,006$$

$$(\text{df}=1, \alpha=0,1)$$

L= low

H= high

In table 2, the farmers in the highlands generally show an unreal relationship between mutual trust and innovative behavior in creativity and risk-taking. Farmers who have high levels of mutual trust tend to have high levels of creativity, and farmers who have low mutual trust tend to have low creativity. This relationship does not show a significance (sig. = 0.218), which means that there is no real relationship between mutual trust and farmers' creativity ( $\alpha = 0.1$ ;  $\chi^2\text{-hit} = 1.520$  and  $\chi^2\text{-tab.} = 2.706$  at  $\text{df} = 1$ ). Mutual trust as a variable related to income earned tends to not contribute to the level of creativity for farmers in the highlands.

In terms of risk-taking, it also shows that 43.88% of farmers had 30.61% of farmers who had a high level of mutual trust with a high level of risk-taking, and of 56.12% of farmers, there were 32.65% of farmers who had rates Low mutual trust with low risk-taking. This relationship was significant ( $\alpha = 0.1$ ;  $\chi^2\text{-hit} = 7.591 > \chi^2\text{-tab.} = 2.706$ ; sig. = 0.006 at  $\text{df} = 1$ ). Paying attention to Table 55 and the test results show that farmers who have a high level of mutual trust have a high level of risk-taking.

3.4. Relationship of reciprocity with innovative behavior

The relationship between reciprocity with farmers' innovative behavior is divided into several parts; the relationship of reciprocity with the level of creativity of farmers and the relationship of reciprocity with the level of risk-taking of farmers. The relationship can be seen in table 3.

**Table 3.** Relationship between Reciprocity and Innovative Behavior (Creativity and Risk-taking) of Highland Farmers in Bantaeng Regency, South Sulawesi

Social capital VS PI		Creativity			Risk-taking		
		L	H	Total	L	H	Total
Reciprocity	L	23 (23.47)	19 (19.39)	42 (42.86)	28 (28.57)	14 (14.29)	42 (42.86)
	H	27 (27.55)	29 (29.59)	56 (57.14)	27 (27.55)	29 (29.59)	56 (57.14)
	Total	50 (51.02)	48 (48.98)	98 (100.00)	55 (56.12)	43 (43.88)	98 (100.00)

Information:

$\chi^2$ -tab.=2,706

$\chi^2$ -hit =0,412; sig= 0,521

$\chi^2$ -hit =3,318; sig= 0,069

(df=1,  $\alpha=0,1$ )

L= low

H= high

Based on table 3, the farmers in the highlands generally show an unreal relationship between reciprocity and innovative behavior in creativity and risk-taking. Farmers who have high levels of reciprocity tend to have high levels of creativity and farmers who have low social networks tend to not have low levels of creativity. This relationship does not show a significance (sig. = 0.521), which means that there is no relationship between reciprocity with farmers' creativity ( $\alpha = 0.1$ ;  $\chi^2$ -hit = 0.412 <  $\chi^2$ -tab. = 2.706 at df = 1). Farmers with high creativity have the ability to see good opportunities, easily accept ideas as well as convey ideas and apply them. The farmers will also have high reciprocity in the reciprocity of farming activities, household activities, and social activities.

The relationship of reciprocity with risk-taking shows a real relationship where the number of farmers who have high reciprocity and high risk-taking rates is 29 people (29.59%) farmers and the low are 28 people (28.57%) farmers. This relationship was significant ( $\alpha = 0.1$ ;  $\chi^2$ -hit = 3.318 >  $\chi^2$ -tab. = 2.706; sig. = 0.069 at df = 1). Table 3 and the test results show that the higher the reciprocity of farmers, the higher the level of risk-taking associated with farmers. Farmers who have low reciprocity tend to have a low understanding of failure as well as an understanding of risk and the ability to accept risks that tend to be low too. The farmers who have high reciprocity tend to have high levels of risk-taking as well. This is indicated by the level of understanding of product failure, understanding of risk and the ability to accept risks that are also high.

#### 4. Conclusion

Based on the description above, the following propositions can be formulated into "social capital (social networks, mutual trust, and reciprocity) has a relationship with farmers' innovative behavior (creativity and risk-taking) in the highlands". The social capital elements of social networks tend to show a real relationship with creativity and risk-taking (elements of innovative behavior). Farmers' social networks in economic, social, and high environmental activities tend to be related to the level of creativity and level of risk-taking of farmers. Meanwhile, the elements of mutual trust social capital and reciprocal social capital elements show a relationship with the element of risk-taking.

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