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Analysis Of Relationship Structure And Role Of Actors In Vegetable Farming Social Networks (Case Study Of Vegetable Farmers In Basket Hamlet, Wayame Village, Ambon City)

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Abstract

This study aims to analyze the relationship and structure of social networks of vegetable farmers. This research was conducted in Basket Hamlet, Wayame Village, Ambon City. Quantitative research approach, saturated sampling in targeting a sample of 20 farmers. Data analysis uses Spearman Rank to see the relationship between variables. The results showed that the social network structure of vegetable farmers based on the issue of each information is generally open network, where the relationship characteristics are loose or low. Actors who play an important role in social networks are P_{16} from their role as Bdrige or connecting bridges between extension workers and farmers, especially those related to Saprodi information, while information related to marketing and business capital is obtained through actors who play the role of Leason.

Keywords: structure, social network, role of actor

INTRODUCTION

Indonesia is one of the countries that has a variety of potential natural resources that can be utilized properly to improve the welfare of people, especially farmers and their families in rural areas. One of the natural resources that can be cultivated and traded is horticultural vegetable commodities.

Vegetable products in Indonesia are strongly influenced by market *demand* and existing supply. Data shows that vegetable production in 2016 (147,710 tons), 2017

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(93,335 tons), 2018 (89,943 tons), 2019 (93,679 tons), and 2020 (119,020 tons) (Data from the Directorate General of Horticulture. Ministry of Agriculture, 2021). This condition shows that vegetable crop production from year to year fluctuates and the increase is not significant. One factor among other factors as a cause of fluctuations in vegetable production is limited information for farmers, both in the form of production and marketing information. BPS data (2021) shows that 51.33% of poor households in the agricultural sector have difficulty accessing various information to support agricultural activities. Thus,the end of the availability of information for farmers can affect the degree of farmers' ability to carry out agricultural activities.

The above explanation can also occur between farmers and traders as well as other information providers through interpersonal relationships in the implementation of vegetable farming activities. The relationship between farmers and traders and other actors can determine the quality of relations between these parties. Agustin's research, R (2018) shows that the social network between farmers and vegetable traders in the Bangkinang Pekan Baru-Riau traditional market is formed based on trust, cooperation and social capital.

Pethani Dusun Basket is a resident in Ambon City, where most people have a livelihood by farming vegetables. In carrying out vegetable farming activities, various information that supports the smooth running of these activities is obtained from various sources of information, both market information, information on production facilities, business capital information and other information. The speed, accuracy and openness of each farmer in obtaining various information differ from one another. This difference may occur based on the emotional level of the relationship, openness or closeness of the farmer to the actor. The efforts of farmers to receive and provide information with fellow farmers and other actors are illustrated in the form of their social network structure, whether it is closed (*network clousure*) or open (*open network*). The structure of social networks can determine the role of each actor in the social network, such as; *Openion Leader, Gate Keeper*, *Bridge, Cosmopolite, Liason,* and *Isolate.*Based on the explanation above, researchers are interested in conducting research related to the analysis of social networks of vegetable farmers in Basket Hamlet, Ambon City.

RESEARCH METHODS

Research Paradigm

Thetheory used in this study is the *positivism* paradigm. The approach method used in this study is a quantitative approach method. According to Sugiyono, (2015) said,

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"the quantitative short or quantitative method is a method based on the *positivist* paradigm, used to examine certain populations or samples, data collection using research instruments, quantitative or statistical data analysis, with the aim of testing hypotheses set based on the theory used".

Location and Time of Research

This research activity was carried out in Basket Hamlet, Wayame Village, Ambon City, Maluku Province, with the consideration that the area is the central vegetable in Ambon City. This research will be conducted in March - April 2023.

Population and Sampling

Population

Thepopulation in this study is the total number of vegetable farmers in Basket Hamlet, Ambon City as many as 20 people.

Samples

In this study,the sampling technique used *saturated sampling* techniques. According to Sugiyono (2017), *saturated* sampling is a sampling technique when all members of the population are sampled, this is done when the population is relatively small, less than 30, or the study wants to make generalizations with very small errors. Thus, the study sample was 25 respondents.

Data Collection Techniques

In research, in addition to the right method, it is also necessary to choose relevant techniques and data collection so that the results of the research are objective. Therefore, the data collection technique used must be in accordance with the nature and characteristics of the research conducted or based on the approach method used. Based on this explanation, the data collection technique in this study used questionnaires, interviews, and observations.

Data Analysis Techniques

The data analysis used in this study is quantitative analysis according to using the *Spearman Rank* statistical test tool to predict the relationship between variables.

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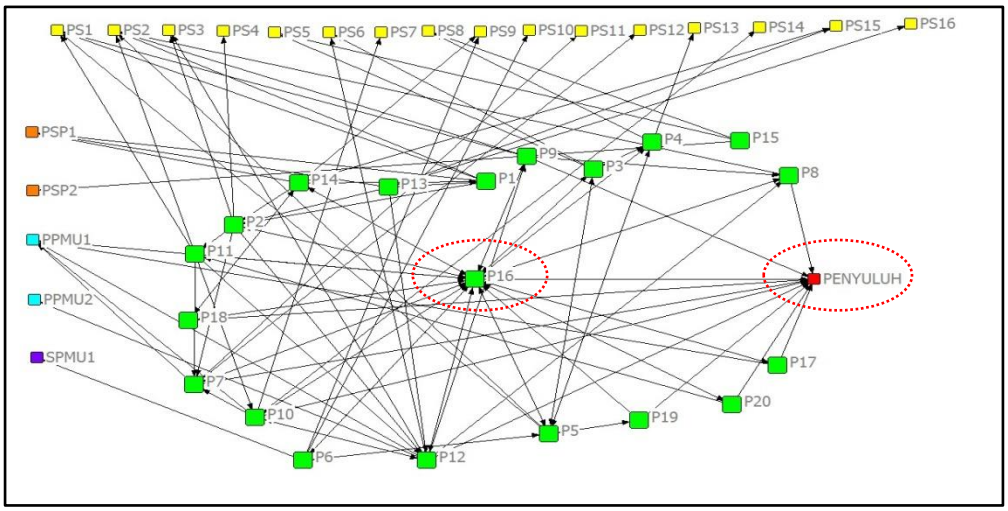
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DISCUSSION

Social Network Analysis of Vegetable Farmers in Basket Hamlet, Wayame Village, Ambon City

Social Network Structure

Social network analysis is a quantitative method used to analyze the interpersonal relationships of actors that form the structure of social networks and communication patterns among actors depicted through sociograms. Figure 2 shows a sociogram analysis that explains the structure of relationships in social networks between actors (vegetable farmers and other sources of information) in Basket Hamlet.



Remarks : Figure 2. Sociogram of social network of vegetable farmers in Basket Hamlet of Ambon City, Year 2023

Source : Primary Data, 2023

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	$P_1 – P_{20}$	:	Farmer
	$PS_1 – PS_{16}$	:	Vegetable Trader
	SPMU	:	Source of Business Capital Borrowers
	PSP	:	Traders of Production Facilities
	-	:	Extension
	$PPMU_1 – PPMU_2$	:	Farmer Business Capital Borrower from outside the system
Density Value		:	0.403 or 40.3%

Based on figure 2 or the sociogram above shows that the communication relationship that occurs between farmers and farmers and farmers with non-farmer parties (information providers from outside the Dusun Basket farmer system), leads to 3 aspects of the information network formed, namely; a) network aspects of information about marketing; b) aspects of information networks about the needs of SAPRODI and; c) network aspects of information about business capital.

To find out the network pattern formed in the overall social network structure, whether the network pattern is closed (network *clousure*) or the network pattern is open (*open network*). Determination of a network pattern is closed or open, can use the value of network density (*dencity*), with integration rates moving from 1 to 100 percent.

Facts in the field show that the *density* value of the social network structure formed in Dusun Basket in sharing information both related to SAPRODI information, marketing information and business capital information in vegetable farming activities is 40%. This data shows that the level of density in social networks in discussing information related to marketing, SAPRODI and business capital among actors is not high, where each actor is only connected less than 50%. That is, the level of connectedness between actors related to the information above is lower, the lower the information distributed among actors. This is because, the average actor (vegetable farmer) in a social network has information dependence with several actors, such as actors: P16 (group leader), and Extension Workers. The information discussed is more related to cultivation techniques, production facilities and coordination of government assistance. In addition, information from other agencies and institutions is all through the group leader (P16), then the information is distributed to other farmers. Meanwhile, information related to marketing

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and business capital is only obtained by farmers through their direct relationships with vegetable traders and other actors outside the system who act as sources of business capital borrowers (SPMU) and farmers borrowing business capital from outside the system (PPMU $_1$ and PPMU$_2$). This condition causes the density of connections in the network to be lower (loose

Thus, loose or low social network structures are characteristic of open network patterns (open network) According to Robins, P (1984) *in* Puttileihalat, P. M (2018), *interlocking* network patterns have similarities with wheel or *radial* network patternsthat is; 1) information spreads quickly; 2) have a high level of information accuracy; 3) bring forth a leader; 4) but has low morale in disseminating information.

Characteristics of Marketing Information Network

Information marketing be information Retrieved through relationship between farmer Hamlets Basket with merchant vegetables that be in the Home market Three and market Mardika Ambon City with purpose Fulfillment necessity economics. Figure 3 explain structure network social that Formed By information marketing.

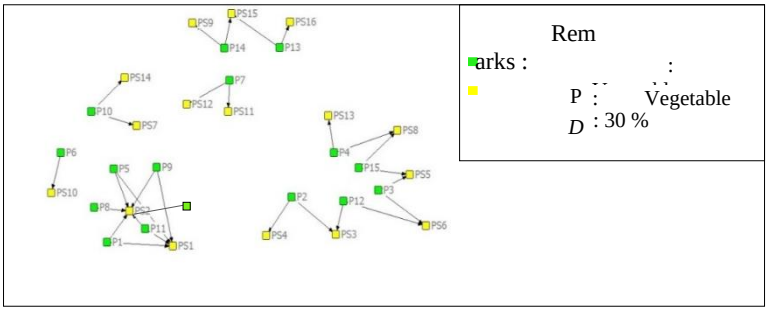


Figure 3. Sociogram of social network marketing
Source : Primary Data, 2023

In the picture above, the *density* value of the social network structure of marketing information between farmers in Dusun Basket and vegetable traders is 30%. These data show that the density of social networks in talking about marketing-related information among actors is not high, with each actor only connected less than 50%. That is, the level of connectedness between actors related to the information above is lower, the lower the information distributed among actors. Thus the social network pattern formed is an open network pattern (*open network*).

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The results showed that the agreement and cooperation between Dusun Basket vegetable farmers and vegetable traders in the market in economic activities have been established for a long time and are running well. This relationship has been established for a long time because of good trust and cooperation. Facts in the field show that most farmers in conducting vegetable selling transactions already have special relationships with traders who are considered to be able to work together, because of the mutual trust built so far, such as; P 1, P 5, P 8, P 9, P 11, P16 have ties with PS_1 and PS_2 to sell their products in the market. This is because they already consider their subscriptions (PS_1 and PS_2) as friends, even family who help each other and maintain relationships with each other, so they find it difficult to connect with farmers or other traders.

Mutual interaction in the social network of Dusun Basket farmers with traders forms a value of trusting cooperation bonds and norms are very important components in the social life of farmers and traders. According to Rahmawati, P., S (2016) states that "trust" is a person's trust in another based on beliefs that are expected jointly by both parties.

Characteristics of SAPRODI Information Network

In addition to information related to vegetable marketing between farmers and traders, there is also information related to production facilities (SAPRODI). Figure 4 describes the social network structure formed based on SAPRODI information.

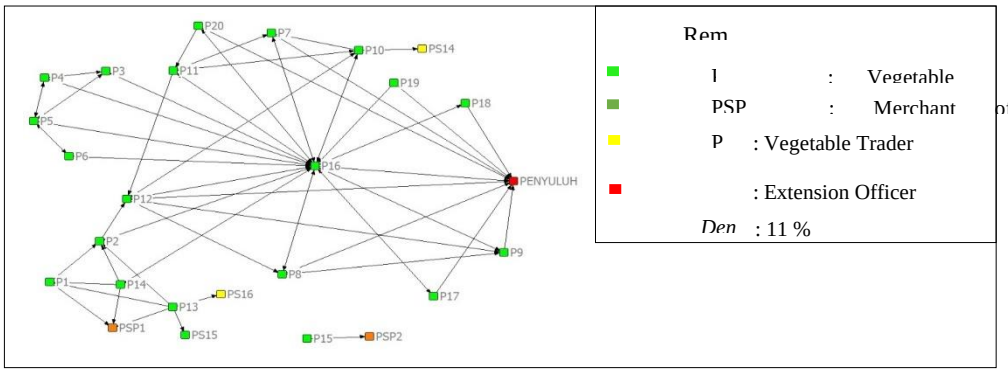


Figure 4. Social network sociogram of SAPRODI
Source : Primary Data, 2023

In the picture above, the *density* value of SAPRODI's social information network structure among farmers in Dusun Basket and other actors in the network is 11%. This

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data shows that the level of density in social networks in talking about information related to SAPRODI, among actors is not high, where each actor is only connected less than 50%. That is, the level of connectedness between actors related to the information above is lower, the lower the information distributed among actors. Thus the social network pattern formed is a network pattern that is open (*open network*) or *interlocking.*

The results showed that information related to production facilities (fertilizers, medicines, pesticides) of vegetable farmers can be obtained from several actors, namely; P_{16}, Extension Officer, and PSP $_1$ and PSP_2. Most of the information related to SAPRODI is informed by extension workers to P 16 who acts as the head of the farmer group, after which information from P_{16} is passed on to other farmers in the network, although there are some farmers who are directly related to extension workers. Vegetable farmers (P_{16}) are actors entrusted by all existing farmers to provide information, if the information comes from extension workers. This condition has more to do with technical conditions, such as; Program information from the Technical Service. Meanwhile, traders of production facilities (PSP $_1$ and PSP_2) are actors who sell SAPRODI needed by vegetable farmers. Thus, the flow of information on vegetable farmers related to SAPRODI is more dominantly only centered on P_{16} in the network as group leader.

Characteristics of Business Capital Information Network

The characteristics of social networks are a pattern in the sense of social relationships owned by individuals and groups, where the pattern of relationships has a regularity of relationships for how individuals behave in the community environment. The characteristics of social networks in this study are related to the topic of business capital. Business capital information network is information obtained through relationships between vegetable farmers and other actors, both in the form of conversations about business capital to in the form of capital lending. In principle, farmers need business capital to carry out production activities. These interpersonal relationships between vegetable farmers and other actors can describe the structure of social networks between actors in the form of mapping the flow of information related to business capital. Figure 5 describes the structure of a social network formed based on business capital information iness capital social networks

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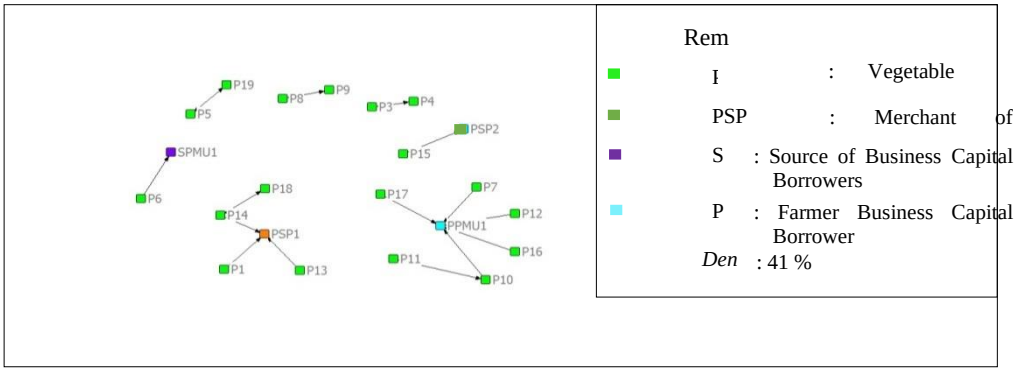


Figure 5. Sociogram of bus

Source : Primary Data, 2023

In the picture above, the *density* value of the business capital information social network structure between farmers in Dusun Basket and other actors in the network is 41%. This data shows that the level of density in social networks in talking about information related to business capital, among actors is not high, where each actor is only connected less than 50%. That is, the level of connectedness between actors related to the information above is lower, the lower the information distributed among actors. Thus the social network pattern formed is a network pattern that is open (*open network*) or *interlocking.*

The results showed that vegetable farmers in Basket Hamlet in carrying out production activities could not be separated from the business to obtain business capital. This business can be accompanied by the actions of vegetable farmers to discuss with other actors about business capital, to the actions of vegetable farmers to obtain business capital loans with other parties. Vegetable farmers in the business capital network are always in contact with PSP 1, PSP_2, PPMU 1, and SPMU $_1$ actors.

Vegetable farmers related to PSP 1 actors are P_1 , P 13, P $_{14,}$ P $_{18}$ and those related to PSP_2 are only P $_{15}$. Farmers related to PSP_1 actors are vegetable farmers who carry out business capital lending activities for the purchase of production facilities. This business capital can be returned by vegetable farmers after the results are sold. Meanwhile, vegetable farmers (P_{15}) are given business capital by PSP_2 actors. PSP_2 is the sibling of P 15 which always provides business capital support for P_{15} without any guarantee of return of working capital.

In addition to PSP 1 and PSP_2 actors, there are also PPMU 1 and SPMU $_1$ actors in the business capital network. $PPMU_1$ is an actor who is not domiciled in Basket Hamlet,

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but lives in Waiheru Village, which has an agricultural business and a capital lending business for other farmers who need their services. Vegetable farmers who are in contact with $PPMU_1$ actors to discuss business capital lending only but have not carried out lending activities are P_7, P 10, P 11, P 12, P 16, and P_{17}. While the vegetable farmers related to the $SPMU_1$ actor are P_6. $SPMU_1$ is an actor who also provides loan services to vegetable farmers or anyone who needs their services. This actor is not a farmer by profession, but also helps farmers in carrying out production activities by lending money at 10% interest / year.

The Role of Actors in the Social Network of Vegetable Farmers in Basket Hamlet

Interpersonal relationships between actors in the social network structure of vegetable farmers in Dusun Basket can describe who actors play a role in vegetable farming activities. Mohammed, A. (1995) says "In social networks there are several terms that can describe the role or position of the most important individual in the network structure, yaitiu; *Opinion leader, Gate keepers, Bridge, Cosmopolite, Liason,* and *Isolate.* In addition to some specific roles in the network mentioned above, there are several other terms that need to be added to complement one's role in the network. These terms are "*hubs*" and "*cutpoints*". Table 7 explains the role of each actor in the social network of vegetable farmers in Dusun Basket in the implementation of vegetable farming activities.

Table 1. The role of actors based on conversation issues in the social network of vegetable farmers in Basket Hamlet, 2023 (N=20)

Actor	∑ relationship	Actor Roles	Actor Talk Issues		
			SAPRODI	Marketing	Business Capital
(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
P_{16}	19	*Opinion Leader, Gate Keeper, Bridge, Cosmopolite*	P_2, P_3, P_4, P_5, P_6, P_7, P_8, P_9, P_{10}, P_{11}, P_{12}, P_{13},P_{14}, P_{17}, P_{18}, P_{20}, Penyuluh	PS_2	$PPMU_1$

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Extension	10	*Opinion Leader,*	P_7, P_8, P_9, P_{10}, P_{12}, P_{16}, P_{17}, P_{18}, P_{19}, P_{20}	-	-
PS_1	4	*Liason*	-	P_1, P_5, P_9, P_{11}	-
PS_2	5	*Liason*	-	P_1, P_5, P_8, P_{11}, P_{16}	-
$PPMU_1$	5	*Liason*	-	-	P_7, P_{10}, P_{12}, P_{16}, P_{17},

(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
P_{17}		*Isolate*	P_{16}, Extension Officer		$PPMU_1$
P_{18}		*Isolate*	P_{14}, P_{16}, Extension	-	-
P19	3	Isolate	P5, P16, Extension	-	-
P20	3	Isolate	P11, P16, Extension	-	-

Source : Primary Data, 2023

Information:

$P_1 – P_{20}$: Farmer

PS_1–PS_{16} : Vegetable Trader

$PPMU_1$ –$PPMU_2$: Farmer Business Capital Borrower from outside the system

Based on table 1 shows that in social networks there are 7 actors based on their roles, namely actors; P 16, Extension Officer, PS 1, PS_2, $PPMU_1$, P 17, P $_{18, P\ 19}$, and $P_{20.}$ Farmer (P_{16}) is a farmer with a total of 19 relationships with other actors, and has a role as *Opinion Leader, Gate Keeper, Bridge* and *Cosmopolite*. His role is considered as (1) *Opinion Leader,* because P_{16} is a leader (group leader) for farmers in Basket Hamlet and also shares information with other actors. The results of Rangkuti's research (2009) in Putiileihalat, P (2018) explained, "the role of rural community leaders such as village heads and farmer group leaders acts as *opinion leaders* in the social network structure of the adoption of hand tractor innovations for rice field processing in Cianjur Regency, West Java. Its role is considered as (2) *Gate Keeper,* because P_{16} is an actor who

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controls the flow of information among farmers in the group. P_{16} is in the middle of a network and relays a message from one person to another or does not provide information. In this case, P_{16} is considered as a goalkeeper who has the right to determine whether or not information can be included in the group. Its role is considered as (3) *Bridge*, because P_{16} is an actor who connects information from extension workers to other farmers in the network. So, if P_{16} actors do not exist then information from extension workers to other farmers cannot be channeled. The role is considered as (4) *Cosmopolite* because P 16 is an actor who always deals with other actors outside the group (ie extension workers) to discuss various group needs, then the information obtained by P_{16} actors, is distributed to other farmers in the group.

Extension workers with a total of 10 relationships are civil servant actors who serve at the Ambon City Extension Center and have work areas, one of which is in Basket Hamlet, Wayame Village. His role is considered as an *Opinion Leader* because the Extension Worker is considered as a figure who always provides information in the vegetable farmer group in Basket Hamlet.

PS_1 and PS_2 actors with a total relationship of 4 and 5 are vegetable traders who sell farmers' vegetable products in the market to consumers. Their role is considered as *Liason* because they are not farmers, but have an important role as a liaison between farmers and end consumers. That is, if PS_1 and PS_2 actors do not exist, then vegetable production owned by farmers cannot be marketed to consumers. In addition to PS 1 and PS_2 actors, there is also a $PPMU_1$ actor who also has a role as *Liason*. $PPMU_1$ with a total relationship of 5 is farmers who provide or inform business capital to farmers in Dusun Keranjang, but they themselves are not members of farmers in the area.

Actors P 17, P 18, P_{19} and P_{20} are farmers located in Dusun Keranjang. These actors are considered to have the role of *Isolate* because they have the least number of relationships in the system, which is as many as 3. These four actors have little relationship because in addition to having a livelihood as farmers, they work as civil servants and manual laborers, so they rarely have contact with other actors. They do farming activities when there is free time or there is an urge in themselves to do these activities. Even if they do farming activities, they only contact certain people to obtain information.

Looking at each actor's role can show how important the actor's position is in the quality of the social network. Based on the explanation in network theory, actors who have a *position* as a bridge (connecting bridge) are actors who have the most important role in a social network because they have a tendency to provide new innovations in a

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click or group in a social network. Thus, in this study, P_{16} actors are farmers who have the most important role in the quality of social networks of vegetable farmers in Basket Hamlet, Wayame Village.

CONCLUSION

1. The social network structure of vegetable farmers in Dusun Basket based on the issue of each information is generally *an open network, where the relationship characteristics* are loose or low. That is, the relationship between actors is more centered on one actor alone, when compared to all actors in the network.
2. The actor who plays an important role in the social network of vegetable farmers in Dusun Basket is actor P_{16}. This can be seen from its role as a *bridge* between extension workers and farmers, especially those related to SAPRODI information. Meanwhile, other information related to marketing and business capital is obtained through other actors who act as *Liason* (PS 1, PS_2 and $PPMU_1$).

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