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INTEGRATED COCOA DEVELOPMENT COMMUNICATION NETWORK IN NGLANGGERAN TOURISM VILLAGE, GUNUNGKIDUL REGENCY

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ABSTRACT

One of the programs run by the government to support the will of the agricultural sector is the Nglanggeran Agricultural Technology Park (TTP) which is located in the Nglangeran Area, Gunungkidul Regency. TTP Nglanggeran is expected to be able to drive the wheels of the economy in the surrounding are and be able to complete with the global market. Integration of dairy goat cocoa is the management of cocoa waste which can be used as dairy goat feed and dairy goat manure can be used as organic input for cocoa plants to support plant growth and development. In the dissemination of information on the integration innovations of cocoa goat livestock, of course in cannot be separated from the role of stakeholders and communication process that is established and will centrainly bring up the mastermind in the dissemination of innovation integration of cocoa livestock for dairy goats in the Nglanggeran Region. The aims of this study were to find out the stakeholders communication network of integrated dairy goat cocoa farming in TTP Nglanggeran. The method used in this study is descriptive quantitative with a communication network analysis approach. The results showed that actor A1 and actor D2 were actor who were trusted as information providers, information recipients, closeness in providing information to another actor, and liaisons for information regarding of integrated dairy goat cocoa farming innovation. Actor A1 is the head of the farmer group, while actor D2 is a stakeholders of BPTP Yogyakarta. Actor D2 is a stakeholders who plays an active role in socializing dairy goat cocoa integration innovations and actor A1 is a trusted by other actor is disseminating information whitin his group so that actor A1 and actor D2 are used as role models for group members.

Keywords: *Stakeholders, Communication Networks, Integrated Farming*

INTRODUCTION

In improving better conditions in the agricultural sector, the application of appropriate technology needs to be encouraged to improve community food supply, agricultural infrastructure provision, and poverty alleviation. Technology is a concept from science that is practiced in the production process (Afifah, 2023). Gunungkidul Regency is one of the districts in the Special Region of Yogyakarta that has succeeded in developing tourism villages. One of the famous tourist villages in Gunungkidul Regency is Nglanggeran Tourism Village located in Kalurahan Nglanggeran, Patuk District, Gunungkidul Regency. According to (Hermawan, 2016) Nglanggeran Tourism Village grew rapidly after the establishment of the Tourism Awareness Group (Pokdarwis) in 2013. So that year was the beginning of the tourism village in Nglanggeran growing rapidly and netting professionally.

The most striking management concept of Nglanggeran Tourism Village is the development of Ancient Volcano ecotourism, the development of Nglanggeran fruit garden agrotourism, and Embung Nglanggeran. In addition to ecotourism and agrotourism, there are processed Nglanggeran commodities, namely goat's milk which is packaged through agricultural and livestock product management centers, namely Griya Cokelat and Nglanggeran Agricultural Technology Park. Nglaggeran Village is one of the villages that became the center of cocoa plantations in Yogyakarta.

One of the forms of integration in Nglanggeran Village is the integration of goat cocoa. The land in Nglanggeran is very supportive for the growth of cocoa plants and farmers in Nglanggeran practice an integrated agricultural system between cocoa plants and goats (Restyandi *et al*., 2023). According to (Budisatria, 2016) The concept of integration is the development of agribusiness in an integrative manner between livestock and plantations. In cocoa plantations will most likely be a place for the development of feed availability for goats, while goat farms will produce manure that can be used as a source of organic fertilizer for cocoa plants.

The dissemination of information on the integration of agricultural technology is certainly inseparable from the role of stakeholders. Stakeholders or *stakeholders* are needed to solve problems where these problems cannot be solved individually. In this case, stakeholders are in the

spotlight in disseminating information on the management of cocoa and goat integration from the beginning of the introduction of technological innovations to their application. In an effort to deal with this, TTP Nglanggeran held community empowerment through training and mentoring to livestock farmer groups in Nglanggeran Village in which there was a role for *stakeholders*. Therefore, it is necessary to analyze the communication network carried out between *stakeholders* to find out the flow of communication that occurs.

METHOD

This study uses a communication network analysis method with a research focus on the flow of information carried out by *stakeholders* with local farmers and breeders in the development of cocoa integration of goats. The local farmers and ranchers in question are residents precisely in the Ngudi Makmur II Livestock Group, Gunung Butak Hamlet, Kalurahan Nglanggeran, Patuk District, Gunungkidul Regency. The data collection method uses an interview method with questionnaire guidelines that have been made previously. The questionnaire was used for interviews with respondents consisting of 16 members and *stakeholders* involved including the Yogyakarta Agricultural Instrument Standard Implementation Center (BPSIP), Nglanggeran Agricultural Technology Park (TTP), and the Agricultural Extension Center (BPP) Patuk District. The data analysis used uses a whole network communication *network* known through *indegree*, outdegree, *density*, click , *closeness centrality*, *and* betweenness centrality.

RESULTS AND DISCUSSION

Kalurahan Nglanggeran is one of the villages located in Kapanewon Patuk, Gunungkidul Regency. Nglanggeran Village is famous for its main commodity in the form of cocoa plants integrated by dairy goats. The beginning of the integration of dairy goat cocoa was the collaboration between stakeholders to initiate the integration of dairy goat cocoa in Nglanggeran. This is because seeing the abundant potential of cocoa plants and some communities raising goats so that stakeholders have plans to introduce the integration of cocoa in dairy goats.

A. Communication Network Structure of Cocoa Integration of Dairy Goat Livestock in Tenak Ngudi Makmur II Group

The beginning of the integration of goat cocoa in the Ngudi Makmur II Livestock Group was from the collaboration between *stakeholders* to initiate dairy goat cocoa in Nglanggeran. This is because Nglanggeran has abundant cocoa plant potential and some people raise dairy goats. *Stakeholders* involved in the integration of goat cocoa in the Ngudi Makmur II Farmer Group include external stakeholders and *internal stakeholders*. *External* stakeholders include the Yogyakarta Agricultural Technology Assessment Center (BPTP) and the Agricultural Extension Center (BPP) of Patuk District, while *internal stakeholders* include the Ngudi Makmur II Livestock Group and the Nglanggeran Agricultural Technology Park (TTP).

Table 1. Results of Communication Network System Analysis of Cocoa Integration of Dairy Goat

Size	***Density (%)***	***Average Degree***	**Click**	***In-degree***	***Out-degree***
				Highest	Highest
20	40	16,20	23	A15	A1
				13 Information	16 Information

Source : Primary Data processed (2023)

Analysis of the communication system for innovation in the integration of goat cocoa includes *size*, density, average *degree*, and density. *Size* describes the number of actors in the network which describes the size of a network. It can be known that the *size* in the analysis of the POP communication network is 20, which means that the size value is still classified as a small network. *Density* shows the density of the network that can be seen based on the intensity of communication between actors, *the density value* is closer to one or 100%, the density of a network can be said to be high. Table 1 shows a density value of 40% or very far from the standard *density* value of 100%. *Density* on this network is influenced by the number of links that point to *nodes, the more* links *or lines connected* between nodes, *the denser a network will be and social relations between actors will be stronger.*

The *average degree* value describes the average actors in the network, which means that the POP communication network has an average of 16.20 actors, which can be interpreted as the average actor in receiving and conveying POP innovation information 16 times. *Clicks* show how many groups have complete relationships or relationships with each other in a number of networks. In the POP communication network shows no *clicks* or in Table 1 it is stated that the *click* value is 23 which means there is no similarity

or closeness in communication between livestock groups and *stakeholders* involved in the integration of goat cocoa. Of the 20 relationships formed in the cocoa integration communication network, there are 23 clicks, indicating that there are three or more actors discussing each other exclusively.

B. Information Received (*In-degree*) by Actors on Dairy Goat Cocoa Integration

The *In-degree* value indicates how much information goes into the actor denoted by the *node*. The more an actor receives information from another actor, the more popular actor in receiving information. Actors who are active in receiving information can be seen on the sociogram as follows.

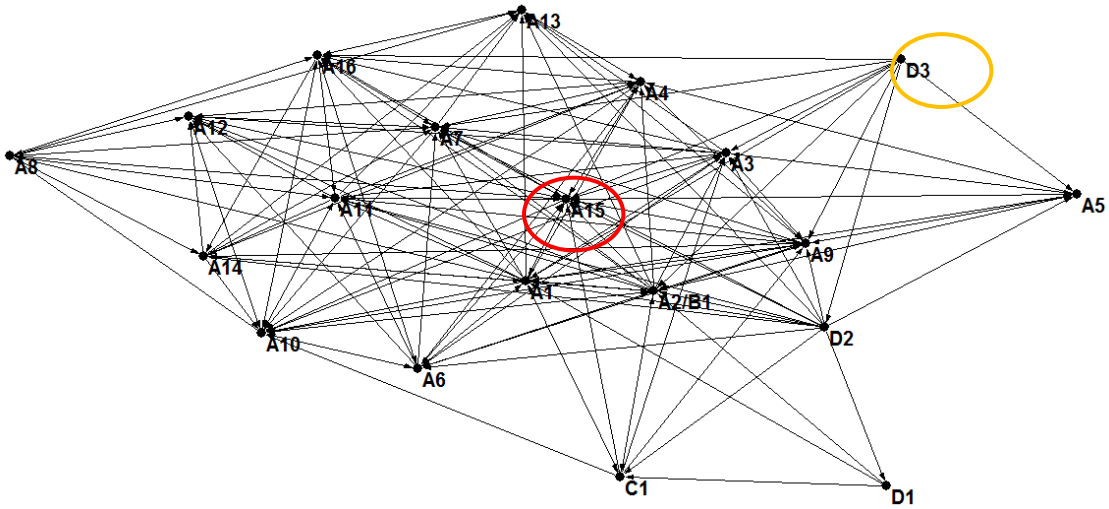

Figure 1. In-degree Communication Network Sociogram on Cocoa Integration of Dairy Goat Livestock
Source: Primary data analysis, 2023.

Based on Figure 1, it can be seen that there is an exchange of information received by actors on the integration of livestock cocoa. The highest score in *the In-degree is the A15 actor, while the actor who has* the lowest In-degree score is the D3 actor. The A15 actor is a member of a cattle group. In addition to being a member of the livestock group, the A15 actor is an actor who contributed to the initiation of the formation of the livestock group together with the group leader, namely A1. When viewed in terms of closeness between actors or can be called *closeness centrality*, A15 actors have closeness with other actors which can be seen from the sociogram that the reach of A15 actors to discuss with other actors has a high value. Most A15 actors in receiving information regarding the integration of dairy goat cocoa do not require intermediaries from other actors.

Actor D3 is *stakeholders* who are competent in the field of Agronomy. However, D3 actors have value *In-degree* lowest where actor D3 is *stakeholder* which introduces innovation. This is because, *stakeholders* has an active role in introducing cocoa integration innovations for goats. But in the long-term implementation, *stakeholders* Not fully assisting in the sustainability of innovations applied in farmer groups, so its role at this time is not so visible. Based on the case on the literature according to (Munif et al., 2022) explained that volunteers provided assistance at the beginning of the river environmental management and preservation program by socializing the Clean Times program. After the mentoring activity, the community again threw garbage in the river and polluted the river again. If the case is equated with *stakeholders* D3 actor, that assistance in cocoa integration activities for dairy goats was carried out at the beginning and many farmers and breeders were enthusiastic about participating in the training. However, gradually *stakeholders* No longer providing assistance and some farmers or ranchers who have not continued their livestock activities due to information constraints or others. Usually, members of farmer groups always discuss and carry out dominant integration activities together with other member farmers. Especially if there are problems in integration activities, farmers always find solutions through the head of the farmer group or members who have a broad understanding of the problem.

C. Out-degree Information by Actors on Cocoa Integration of Dairy Goat Livestock

The Out-degree *value* indicates how much information is outgoing or conveyed to other actors denoted by the *node*: The more actors receive information from other actors, the actor is an active actor in providing information. Actors who are

active in providing information can be seen in the sociogram as follows.

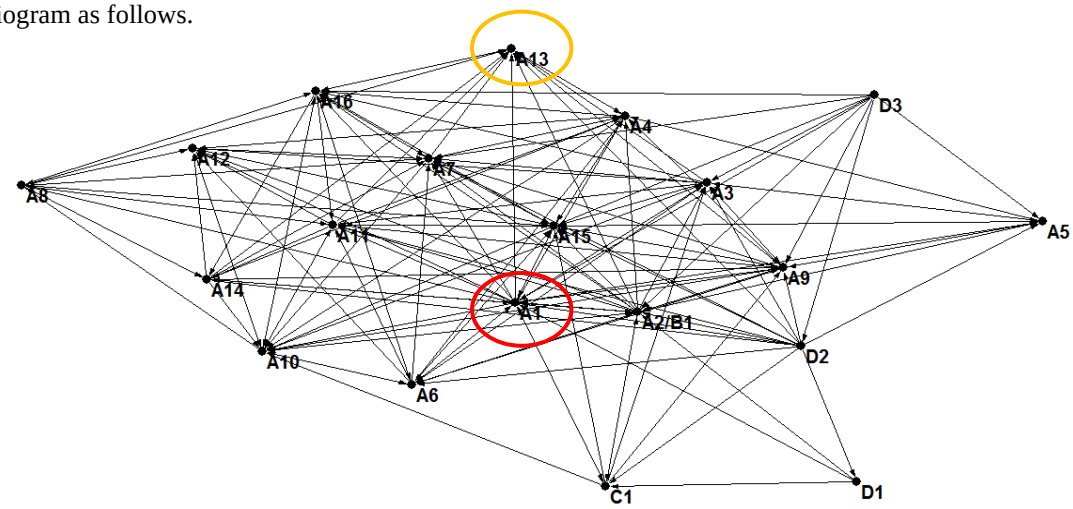

Figure 2. *Out-degree Communication Network Sociogram* on Cocoa Integration of Dairy Goat Livestock
Source: Primary data analysis, 2023.

The Out-degree *value* indicates how much information goes out to the actor denoted by the *node* or can also be called the actor most actively involved in the communication network. Based on Figure 2, it can be seen that there is an exchange of information received by actors on the integration of livestock cocoa. The highest score in *the Out-degree is an A1 actor, while the actor who has the* lowest In-degree score is an A13 actor. Actor A1 is the Chairman of Ngudi Makmur II Group. In accordance with his role as a leader in a group, the A1 actor is used as a role *model* in disseminating information on cocoa integration innovations in dairy goats in his group. In addition, A1 actors have extensive experience in cocoa integration innovations in dairy goats because they often attend training outside the group as representatives in their groups.

Actor A13 is a member of the Ngudi Makmur II Livestock Group. A13 actors only pass information to two other actors, so A13 actors are less trusted as sources of information. The A1 actor also has the role of *opinion leader* which is needed in helping goat farmers to successfully develop their livestock business. According to the literature it is explained that *opinion leader* Can also be a communicator and is considered to have more ability compared to other farmers. Role *opinion leader* It is needed to help solve the problems experienced by farmers in developing their agricultural businesses. Moreover *opinion leader* It is also required to carry out effective communication so that the desired agricultural results of farmers are achieved (Nurazira et al., 2021).

D. *Closeness Centrality* in Cocoa Integration of Dairy Goats

Closeness Centrality shows the extent to which actors have closeness in the form of social relations with other actors. Actors who have a high affinity with other actors can be seen on the sociogram as follows.

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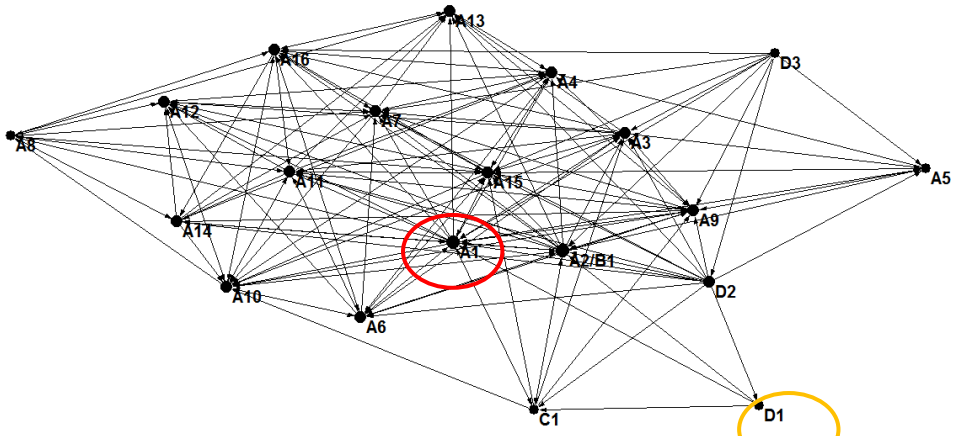

Figure 3. Sociogram Communication Network *Closeness Centrality* on Cocoa Integration of Dairy Goat Livestock
Source: Primary data analysis, 2023.

Closeness Centrality shows the extent to which actors have closeness in the form of social relations with other actors. Based on Figure 3, it can be seen that the actor who is at the center of the network has the *highest Closeness Centrality* value as well as getting better. The *actor who has the highest Closeness Centrality value is owned by the actor in the red circle is actor A1, while the actor who has the* lowest Closeness Centrality value is actor D1. A1 actors are actors who have proximity as well as are easily accessible to other actors in terms of disseminating information about cocoa integration innovations in dairy goats. Actor A1 is the Chairman of the Ngudi Makmur II Livestock Group. The actor is easy to establish relationships with other actors because the actor is trusted in providing information about cocoa integration innovations in dairy goats. In exchanging information about innovation, A1 actors with other actors often communicate directly while at home or through WhatsApp media.

Actor D1 is the actor who has the lowest score in *Closeness Centrality*. Actor D1 is *stakeholder* who are competent in the field of food crop production, plantations, and horticulture. *Stakeholders* External does not always contribute to every activity carried out by farmers, therefore communication is carried out by *stakeholders* externally with the herd of cattle becomes weak. Especially during the introduction of goat cocoa integration innovation, *stakeholders* only provide assistance at the beginning of the introduction of innovation, the rest after introducing innovation, *stakeholders* Externally handing over the whole series of integration activities to the livestock group.

E. *Betweenness Centrality* in Cocoa Integration of Dairy Goats

Betweenness Centrality shows actors who become intermediaries or bridges in receiving information in communication networks. Actors who become intermediaries in providing information are actors who are trusted as intermediaries or bridges in providing information. Actors who are intermediaries in communication networks can be seen in the sociogram as follows.

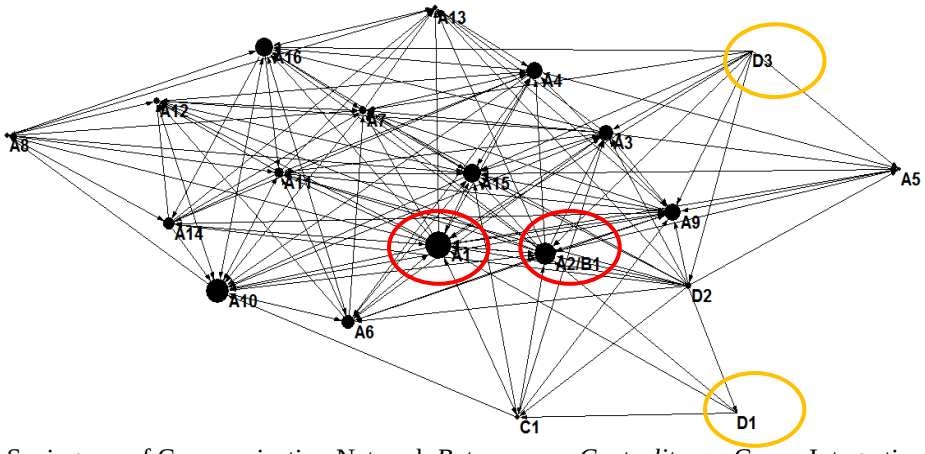

Figure 4. Sociogram of Communication Network *Betweenness Centrality* on Cocoa Integration of Dairy Goat Livestock
Source: Primary data analysis, 2023.

In Figure 4 it can be seen that the *largest node illustrates the value of* good Betweenness Centrality, *meaning that the node is trusted to be an intermediary in the communication network of cocoa integration of goats. The largest node* in the communication network structure is owned by A1 actors and followed by A2/B1 actors. Actor A1 is believed to be a liaison because the position of actor A1 is the group leader, so that other actors who are members of the group always trust the group leader as a liaison of information about the integration innovation of dairy goat cocoa.

Then, actor A2/B1 is the deputy head of the group as well as an extension worker at BPP Patuk. A2/B1 actors have a role in providing or sourcing information to other actors and with this dual role, other actors believe that A2/B1 actors can mediate both information conveyed from internal groups and from external groups. D1 and D3 actors are *stakeholders* who have the lowest *Betweenness Centrality* value. D1 actors are *competent* stakeholders in the field of food crop production, plantations, and horticulture, while D3 actors are competent *stakeholders* in the field of agronomy.

CONCLUSION

In the cocoa integration communication network of dairy goats, the highest In-degree, *Out-degree*, *Closeness Centrality*, and *Betwenness Centrality* scores are dominated by A1 actors and D2 actors. Actor A1 is the head of the group and actor D2 is a stakeholder of the Center for the Study of Agricultural Technology (BPTP) Yogyakarta. *Stakeholders* have an active role in spreading cocoa integration innovations in dairy goats. D2 actors are trusted by other actors so that an important role in disseminating information on the integration of dairy goat cattle cocoa is owned by actor D2 and actor A1 as role models for actors who are members of the livestock group. Density on this network is influenced by the number of *links that point to nodes, the more* links *or lines connected between nodes, the denser a network will be and social relations between actors will be stronger.*

Closeness *Centrality* shows that actor A1 and actor D2 are actors who have closeness with other actors. The role of actor A1 and actor D2 as actors who have extensive sources of information. *Betweenness Centrality* shows the trust of actors as information connectors, A15 actors are actors who are trusted as sources of information. The A15 actor is a member of the group as well as taking part in the initiation of the livestock group. A15 actors often discuss with other members who are *experts* about the integration of dairy goat cocoa and carry out livestock activities in communal pens in the form of fertilizer making, feeding, to goat mating. So that A15 actors are trusted as information liaisons because they have a lot of information, experience, and have skills in managing the integration of dairy goat cocoa.

In addition, there is a lack of effective dissemination of information on cocoa integration innovations in dairy goats because of the findings only certain actors who stand out or exist. Therefore, there is a need for active participation and more intensive coordination by *stakeholders* in the dissemination of innovations so that information dissemination does not only focus on certain actors but all actors can be involved in disseminating information on cocoa integration innovation in dairy goats. In addition, actors who are less prominent are better to be involved in decision making and actors who stand out or exist can be involved in selecting and contributing to new innovations.

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