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Analysis of Feed and Medicine Communication Network in Karapan Cattle Conservation Community in Sampang

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ABSTRACT

An accurate analysis of the communication network will facilitate the process of disseminating information about feed and medicines. This study aims to analyze the roles, identify clicks, and analyze the structure of the communication network for feed and medicines formed among conservationists of karapan cattle in Sampang Regency. This study uses a quantitative method with descriptive analysis. The sampling method uses the snowball sampling method. The respondents of this study were 26 conservationists of Karapan cattle in Sampang Regency. The data analysis method used in this research is sociometric analysis. The results of the study show that: (1) the feed and medicine communication network in Sampang Regency has the roles of opinion leaders, bridges, and neglectees; (2) the clicks generated in the feed communication network are 20 clicks, while the clicks contained in the drug communication network are 4 clicks; (3) the pattern of the feed communication network is all channels and wheels while the pattern of the drug communication network is wheels. The density value in the feed communication network is 0.128 which is higher than the drug communication network which is 0.057. The diameter formed in the feed communication network is 6 while in the drug communication network it is 5, which means that the farthest distance a conservationist can contact other conservationists in the feed communication network is 6 steps while in the drug communication network it is 5 steps. The degree of connectedness in the feed communication network was 89.4%, lower than the drug communication network of 24.9%, indicating that the dissemination of feed information was better than the dissemination of information about medicines.

Keywords: *communication network; Karapan Sapi; preservation of karapan cattle*

ABSTRAK

Analisis jaringan komunikasi secara tepat akan mempermudah proses penyebaran informasi mengenai pakan dan obat-obatan. Penelitian ini bertujuan untuk menganalisis peranan, mengetahui klik, dan menganalisis struktur jaringan komunikasi pakan dan obat-obatan yang terbentuk diantara pelestari sapi karapan di Kabupaten Sampang. Penelitian ini menggunakan metode kuantitatif dengan analisis deskriptif. Metode pengambilan sampel menggunakan metode snowball sampling. Responden penelitian ini adalah 26 pelestari sapi karapan di Kabupaten Sampang. Metode analisis data yang digunakan dalam penelitian ini adalah analisis sosiometri. Hasil penelitian menunjukkan bahwasannya: (1) jaringan komunikasi pakan dan obat-obatan di Kabupaten Sampang terdapat peran opinion leader, bridge, dan neglectee; (2) klik yang terbentuk dalam jaringan komunikasi pakan adalah 20 klik, sedangkan klik yang terdapat pada jaringan komunikasi obat-obatan adalah 4 klik; (3) pola jaringan komunikasi pakan adalah semua saluran dan roda sedangkan pola jaringan komunikasi obat-obatan adalah roda. Nilai kepadatan (density) dalam jaringan komunikasi pakan sebesar 0,128 lebih tinggi dari jaringan komunikasi obat-obatan sebesar 0,057. Diameter yang terbentuk dalam jaringan komunikasi pakan adalah 6 sedangkan dalam jaringan komunikasi obat-obatan adalah 5 yang artinya jarak terjauh pelestari dalam menghubungi pelestari lain dalam jaringan komunikasi pakan adalah 6 langkah sedangkan dalam jaringan komunikasi obat adalah 5 langkah. Nilai derajat keterhubungan dalam jaringan komunikasi pakan adalah sebesar 89,4% lebih rendah dibandingkan jaringan komunikasi obat-obatan sebesar 24,9% menunjukkan penyebaran informasi pakan lebih baik dibandingkan penyebaran informasi mengenai obat-obatan.

Kata Kunci: *jaringan komunikasi; Karapan Sapi; pelestarian sapi karapan*

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INTRODUCTION

Indonesia is one of the countries with various ethnic groups, and each tribe has its own culture. This causes Indonesia to have a variety of ethnicities, tribes, languages, religions, beliefs, as well as cultures and customs. The variety of cultures owned by Indonesia is one of the riches that need to be preserved. Looking at the global context, the various cultures owned by Indonesia can be state assets as advantages and cultural richness typical of the country that are not found in other countries(Hasan, 2012). Data on the recording of intangible cultural heritage owned by the Ministry of Education, Culture, Research, and Technology shows that Indonesia has 11,706 intangible cultural heritage. Karapan sapi is one of the rich cultural heritage in Indonesia.

The activity carried out by pitting the speed between two pairs of cows pulling a train with jockeys on it is one of the local wisdom of East Java, especially the people of Madura Island, and is a hereditary tradition that characterizes the local community. The cow carapan race is held with the aim of helping the local community interact and communicate with other communities. Interaction and communication that occur will cause social groups to be formed in Madura society (Anggraini & Kuswanto, 2019). Karapan sapi which is a Madurese cultural entity also contains values and benefits such as hard work, cooperation, competition, order, sportsmanship, tightening the ties of friendship, and also meeting the means of economic needs for some people on other Madura islands (Rahman et al., 2021). The cattle karapan activity is also a proud event that is considered to be able to raise the dignity and dignity of conservationists and participants of the cow carapan competition on the national stage. The cattle carapan activity is carried out as an annual competition to win the president's cup.

According to Kutsiyah, Madurese cattle are thought to be the result of a cross between Balinese cattle (Bos *sundaicus*) and zebu cattle (*Bos indicus*)(Kutsiyah, 2012). Some suggest between bulls with a mixture of zebu (*Sinhala*) and *short horn* type cattle, or between bulls (*Bos/Bibos sundaicus*) and local cattle in Central Java which then obtain additional zebu cow blood. Cows that are contested in cow carapans are cows that have been trained and prepared to take part in cow carapans. Madura cattle are selected by the Madurese people into three types based on their culture, namely karapan, sonok and broiler cattle. This shows that not all cows can be used as karapan cows, because in the selection of karapan cows the main thing is their running speed (Entek Alexander, Sucik Maylinda, n.d.). Karapan cattle are cows that have more ability to run fast, agile, and have hard work skeletal and emotional muscles compared to sonok cattle and cattle breeders. Based on morphometric comparisons between the three types of Madura cattle, it was found that karapan cattle were the cattle with the lowest value. This is because, karapan cattle have received physical training and herbal medicine from an early age making the low physical size in karapan cattle. Even so, compared to cattle farmers and sonok cattle, karapan cattle are bulls with the best speed. The good quality of karapan cattle is the result of the selection of the best Madurese cattle. This is also not spared from the good maintenance of the cow(Miftahussurur, M; Sayadi, Hasan;Tito, 2022) .

The maintenance of cattle that will be used in cattle karapans requires many things to pay attention to. To win in every cow karapan competition is not easy, especially in the district-level cow carapan (*gubernur*) event. It takes maximum effort from the owner of the karapan cattle, from preparation to implementation. The maintenance of karapan cows is carried out by bathing karapan cattle, drying karapan cattle in the morning sun, giving massages, feeding and herbs of good quality for

karapan cattle (Rahman et al., 2021). The policy of cattle breeding in Indonesia has a legal basis stated in Law No. 6 of 1967, implying that Madurese cattle are designated as state-protected germplasm and need to be done to maintain efforts to maintain their purity. Referring to the Law, efforts to preserve indigenous Indonesian livestock are directed within the framework of developing national superior breeds as one of the efforts to preserve forward-looking SDGs, namely preserving the genetic potential of livestock in the framework of biodiversity with the aim of engineering national superior seeds(Mirza et al., 2012).

The concept of homophily was introduced by Lazarsfeld and Merton in empirical research that an individual has a tendency to hang out with people with the same characteristics as himself(Lazarsfeld & Merton, 1954). Based on this theory, carapan cattle conservationists will have a tendency to gather with fellow conservationists. They are all gathered in the karapan cattle conservation community. In conservation efforts, this certainly cannot be separated from communication. Both interpersonal and intrapersonal communication. According to Rogers, individual behavior is determined based on interaction through the exchange of information from one individual to another(Rogers, 2012). According to this theory, in the context of the preservation of karapan cattle, the decision of karapan cattle conservationists in providing feed and herbal medicine for conserved karapan cattle is influenced by communication channel factors. Communication networks describe how the communication formed between individual conservationists in the community, the role of the individual, and the level of influence of that individual on other individuals, will affect the conservationist of karapan cattle in providing feed and medicine for the conserved cows. The results of a communication network analysis are useful to find out who is the most influential person in the karapan cattle conservation community, especially in feed and medicine.

METHODS

This research uses the basic method of quantitative research with descriptive analysis. Communication network research with descriptive analysis is research that describes the structure and individuals in communication networks. The research location is in Sampang Regency. Site selection is determined *purposively*. Research on communication networks in Sampang Regency is expected to be able to answer how the role of individuals, the proximity of conservationists, and the pattern of communication networks formed between conservationists. The population in this study is all members of the karapan cattle conservation community, Sampang Regency. As for the research sample will be taken using *snowball samples*. The data sources of this study are primary data and secondary data. Data collection techniques from this study are structured interviews, observations, documents, and literature reviews. The data analysis method used is sociometric analysis. Data analysis is a data processing process which is then arranged in a pattern, category and basic description unit. The data obtained in the field will be analyzed and interpreted in such a way using network analysis methods, meaning that after the communication network data is collected, the data is grouped according to their respective categories and then interpreted who is the party that has the most impact in increasing the knowledge of carapan cattle farmersand conduct in-depth interviews with them to see how the quality of information through words or sentences with a theoretical framework to derive conclusions or from answers that have been formulated (Moleong, 2017)

RESULT AND DISCUSSION

This study aims to determine the pattern of feed and medicine communication networks in carapan cattle conservationists in Sampang Regency. Based on observations and interviews, it is known that there are two different networks between feed communication networks and drug communication in carapan cattle conservation in Sampang Regency.

Sociometric Data of Karapan Cattle Conservation Feed Communication Network

The feed of karapan cattle is generally the same as that of ordinary cattle. So like cattle breeders, karapan cattle conservationists have some difficulties and certain problems in finding feed for cows. Like during the dry season, for some conservationists who usually buy grass for cow feed will find it difficult to find feed. Or because of the dry season and the land lacks water, in the cow's feed there will be caterpillars that can cause cows to choke. Problems like this are usually discussed between conservationists with each other. Therefore, the role in the network is important to know to know the direction of dissemination of feed information between conservationists in Sampang Regency. Knowing the role in the network is intended to find out the dominant real forces that exist in a communication network structure. The following are the results of sociometric analysis of feed communication networks in karapan cattle conservation communities in Sampang Regency using the Ucinet VI application.

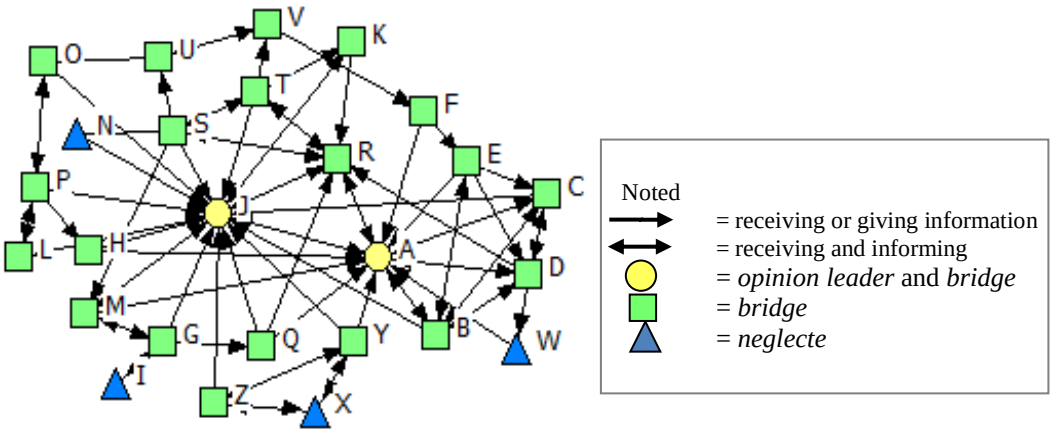

Figure 1 Feed Communication Network at Karapan Cattle Conservation Community in Sampang Regency

There are 26 actor points (*nodes*) in the communication network of carapan cattle conservationists in Sampang Regency. The role of *opinion leaders* can be seen from the highest number of *links* owned by conservationists. Arrows pointing toward the conservationist in the network indicate the preservationist's indegree, while arrows coming out of the preservationist indicate *outdegree*. Based on Figure 1, conservationists who have many *links* are conservationists #A, and #J. The Madurese family cattle carapan association does not have official data collection for its members. So that all conservationists who participate and register themselves in the cow karapan competition are indirectly members of the association. Preservationists

#J is the head of the cow karapan association in Sampang Regency. This is in accordance with Anggriyan's research (Anggriyani, 2017), and Kusumadewi (Kusumadewi et al., 2020). While the conservationist #R is the vice chairman of the cattle karapan association.

Unlike other conservationists who usually buy land or buy feed for their carapan cows, conservationists #A have their own land for feed intake for carapan cows. Conservationists #A even have wells made to irrigate their land during the dry season, so they rarely feel there is a problem to feed karapan cows. This makes other conservationists refer and ask for opinions from #A conservationists on the issue of feed for their karapan cattle. Conservationists #A also have some kinship with other conservationists so that the exchange of information about the main feed is more frequent. Conservationists #A, and #J also become a reference for other conservationists because they are considered successful in preserving karapan cattle because they have won championships at the level of the President's Cup. According to Kusumadewi (Kusumadewi et al., 2020), the role of the *opinion leader* has power in the community system so that other conservationists can better trust the information provided.

Conservationists who have a role as a *bridge* based on Figure 1 are conservationists #B, #C, #D, #E, #F, #G, #H, #J, #K, #L, #M, #O, #P, #Q, #R, #S, #T, #U, #V, #Y, and #Z. The role of *bridges* in the communication network of feed conservationists is quite a lot. This is because conservationists discuss with each other to solve existing feed problems with other conservationists. The role of *bridge* in Sampang Regency facilitates the dissemination of information about feed to karapan cattle conservationists in Sampang Regency. Conservationists #A, and #J have a dual role as a *bridge* in addition to *opinion leaders*. The role of *the bridge* is a role that is in charge of disseminating information evenly to other conservationists. However, the role of *bridge* that is quite evenly distributed among karapan cattle conservationists is because in overcoming feed problems, conservationists share information and discuss between conservationists. The role of *neglectees* in the communication network of carapan cattle conservationists in the use of feed is owned by conservationists #I, #N, #W, and #X.

The role of *neglectee* is a role shared by conservationists who choose other conservationists as sources of information but those conservationists are not chosen by other conservationists as sources of information. Conservationists who have a role as *neglectees* are usually new conservationists, under 5 years old in preserving karapan cattle. To determine the role contained in the feed communication network for karapan cattle conservation in Sampang Regency, further analysis is needed, namely centrality analysis, centrality of proximity, and intermediary analysis.

Level Centrality in Feed Communication Network in Karapan Cattle Conservation Community in Sampang Regency

Degree centrality indicates the popularity of conservationists in social networks. The centrality of the level indicates the number of *links* to and from the breeder of carapan cattle. There are two forms of relations in level centrality. Relationships that have direction (*directed*) and relationships that do not have direction (*undirected*).

Table 1
Calculation of Level Centrality in Feed Communication Network in Karapan Cattle Conservation Community in Sampang Regency

Aktor	*N Outdegree*	*N Indegree*	Sentralitas Tingkatan	Rangking
A	0,107	0,240	0,347	2
B	0,093	0,080	0,173	4
C	0,080	0,067	0,147	5
D	0,080	0,053	0,133	6
E	0,053	0,027	0,080	10
F	0,040	0,013	0,053	21
G	0,053	0,027	0,080	11
H	0,027	0,013	0,040	23
I	0,013	0,013	0,026	24
J	0,093	0,267	0,360	1
K	0,053	0,053	0,106	8
L	0,040	0,027	0,067	15
M	0,040	0,040	0,080	12
N	0,013	0,013	0,026	25
O	0,027	0,027	0,054	17
P	0,053	0,027	0,080	13
Q	0,040	0,013	0,053	22
R	0,067	0,107	0,174	3
S	0,093	0,040	0,133	7
T	0,067	0,027	0,094	9
U	0,027	0,027	0,054	18
V	0,027	0,027	0,054	19
W	0,013	0,013	0,026	26
X	0,027	0,027	0,054	20
Y	0,053	0,027	0,080	14
Z	0,040	0,027	0,067	16

Source:Primary Data Analysis in 2023

Based on the value of centrality levels in Table 1, it can be seen that conservationists #J, and #A have a centrality value of more than 0.2. The actor who has the highest level of centrality can be called *an opinion leader*. Based on Table 1, the actors referred to as *opinion leaders* in feed communication networks are #J conservationists with a centrality value of 0.360, which means that #J conservationists are the figures who exchange the most information about feed for karapan cattle. According to the conditions in the field, this is because the conservationist #J is the chairman of the Madura Family Cattle Karapan Association in Sampang Regency and has the longest experience in preserving karapan cattle in Sampang Regency, which is for 24 years. The exchange of information is mostly done in personal communication with other conservationists. The role of *opinion leader* can be obtained by more than one person. Conservationists who also have a high level of centrality value are #A conservationists with 0.347. #A Conservationists are conservationists who are considered senior conservationists who have successfully preserved karapan cattle because they have won many championships even at the level of the President's Cup. Conservationists #A considered more senior

and experienced so they also become figures who become references and places to ask questions when there are problems about feed

Conservationists who have the most *outdegree* or *outgoing links* are #A, #B, #J, and #S conservationists with #A conservationists of 0.107 and #B, #J, and #S conservationists of 0.093. A high *outdegree* value indicates that the conservationist is positioned as a subject who contacted, gave, seek, or informed other conservationists. Conservationist #A is a conservationist who has family relationships with conservationists #B, #C, #D and #E so that they often discuss and disseminate information about feed to other conservationists, especially their relatives. Similarly, #B conservationists who have relatives often discuss and provide other conservationists with information about feed, especially their close relatives. The conservationist #J is the head of the Sampang Regency cattle karapan association, so he coordinates and contacts other conservationists a lot. While #S conservationists are relatives of #R, #T, #U, and #V conservationists so they often contact other conservationists, especially their close relatives.

Conservationists #J has the most *indegree* value, which is 0.267. A high *indegree* value indicates that the conservationist is a figure who has become a reference and role model for other conservationists, in this case it is about karapan cattle feed. Conservationists #J considered to have more knowledge about karapan cattle feed by other conservationists, because #J conservationists are the longest-serving conservationists in Sampang Regency. In addition, the position of chairman of the Pakarsakera of Sampang Regency also makes conservationists #J the conservationists who are most often a reference for other conservationists when facing problems in feed for karapan cattle. The next most *indegree* value is #A conservationists with a value of 0.240, which means that #A conservationists are also conservationists who are used as role models and references by other conservationists in feeding karapan cattle.

Centrality of Proximity in Feed Communication Network in Karapan Cattle Conservation Community in Sampang Regency

ClosenesCloseness centrality is another aspect that can assess the closeness between conservationists in communication networks. Just like tier centrality, proximity centrality can also be calculated using the Ucinet VI application. The following is a calculation of the centrality of proximity in the feed communication network in Sampang Regency.

Table 2
Calculation of Centrality of Proximity in Feed Communication Network in Karapan Cattle Conservation Community in Sampang Regency

Aktor	*Closeness (Normal)*		Total
	Out Closeness	*In Closeness*	
A	0,333	0,625	0,958
B	0,309	0,410	0,719
C	0,305	0,410	0,715
D	0,301	0,410	0,711
E	0,275	0,321	0,596
F	0,275	0,231	0,506
G	0,298	0,325	0,623

H	0,298	0,258	0,556
I	0,238	0,248	0,486
J	0,352	0,735	1,087
K	0,294	0,439	0,733
L	0,291	0,439	0,730
M	0,313	0,455	0,768
N	0,278	0,272	0,550
O	0,291	0,278	0,569
P	0,298	0,333	0,631
Q	0,325	0,253	0,578
R	0,342	0,532	0,874
S	0,347	0,357	0,704
T	0,333	0,357	0,690
U	0,266	0,387	0,653
V	0,258	0,387	0,645
W	0,263	0,398	0,661
X	0,272	0,153	0,425
Y	0,362	0,153	0,515
Z	0,333	0,153	0,486

Source: Primary Data Analysis in 2023

How far or close conservationists can contact and be contacted by other conservationists can be seen from how many steps (*paths*) a conservationist can contact (out closeness) or be contacted (*in closeness*) by other conservationists. Centrality of proximity is obtained by dividing the number of shortest lines of actors by one another actor in a communication network. The conservationists with the highest proximity value based on Table 2 are #J conservationists with a total value of 1,087. The #J preserver is also the conservationist who has the highest level of centrality value. According to Eriyanto (Eriyanto, 2014) actors who are at the center of the network have a higher likelihood of occupying centrality of proximity than other actors at the periphery of the network. A high proximity centrality value indicates the proximity of the preserver to other conservationists in a network, and measures which conservationist reaches all other conservationists in the network the fastest. So conservationists who have proximity and are able to reach other conservationists quickly in this feed communication network are #J conservationists. Conservationists who also have the highest proximity value are #A conservationists, and #R who also have high levels of centrality values, with values of 0.958 and 0.874.

Centrality of Intermediary in Feed Communication Network in Karapan Cattle Conservation Community in Sampang Regency

The centrality of intermediary shows the position of a conservationist as an *intermediary (betweenness*) of the relationship between one conservationist and another conservationist in the communication network of cattle conservationists in the use of feed for karapan cattle in Sampang Regency. This centrality is important because it deals with the control and manipulation of information. Conservationists

who have an intermediary position can determine the membership of other conservationists in the network (Eriyanto, 2014).

Table 3
Calculation of Intermediary Centrality in Feed Communication Network in Karapan Cattle Conservation Community in Sampang Regency

Aktor	*N Betweenness*	Keterangan
J	45,800	Perantara
A	26,833	Perantara
R	24,044	Perantara
M	12,311	Perantara
G	11,333	Perantara
S	9,450	Perantara
L	9,017	Perantara
T	7,567	Perantara
P	6,739	Perantara
D	5,394	Perantara
V	5,094	Perantara
B	4,133	Perantara
O	3,585	Perantara
F	3,150	Perantara
Y	3,111	Perantara
U	2,628	Perantara
Q	1,833	Perantara
Z	1,222	Perantara
E	0,889	Perantara
C	0,867	Perantara
H	0,500	Perantara
K	0,000	Perantara
W	0,000	Bukan Perantara
X	0,000	Bukan Perantara
I	0,000	Bukan Perantara
N	0,000	Bukan Perantara

Source: Primary Data Analysis in 2023

The highest intermediate value based on Table 3 is the #J conservationist with a value of 45,800 which also has the highest level centrality value and the highest proximity centrality value. Based on data in the field, #J conservationists have a high intermediate value because they have the status as the chairman of the cattle carapan association in Sampang Regency, and the status as conservationists who preserve carapan cattle the longest in Sampang Regency. So that the role of conservationists #J very crucial in the feed communication network in Sampang Regency. Like the #A conservationist who also has a high intermediate value, which is 26,833. The value of centrality of intermediary is further owned by conservationists #R, #M, #G, #S, #L, #T, #P, #D, #V, #B, #O, #F, #Y, #U, #Q, #Z, #E, #C, and #H, who occupy the role of *a bridge* because they connect their *clicks* with other conservationists. There are only five conservationists who are not liaisons with other conservationists, namely conservationists #K, #W, #X, #I, and #N. The results of research in the field show that conservationists do not hesitate to share solutions to problems faced related to feed for karapan cattle.

Click on Feed Communication Network for Karapan Cattle Conservationists in Sampang Regency

Click is a grouping of actors (*nodes*) in a network that includes all forms of relationships between actors, and those actors interacting with each other with all members (Eriyanto, 2014). Clicks can also be analyzed using the Ucinet VI application. Here is a click of carapan cattle conservationists in the use of feed in Sampang Regency.

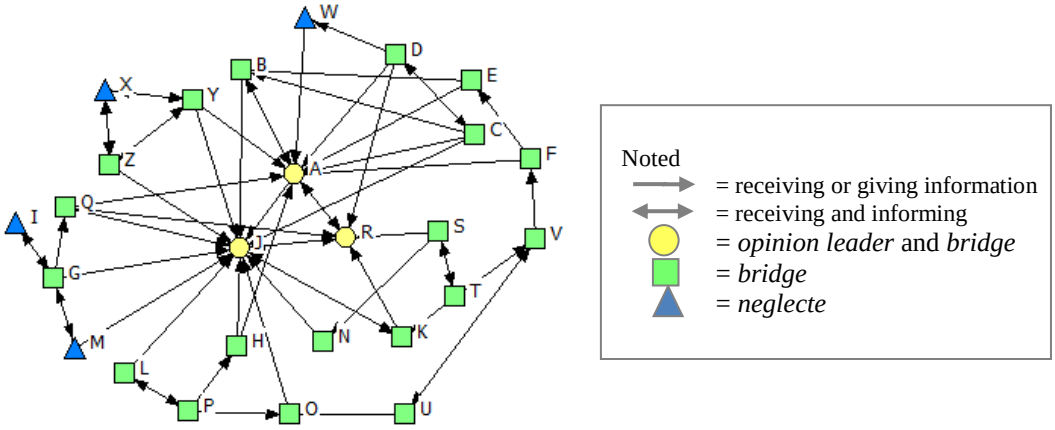

Figure 2: Feed Communication Network for Karapan Cattle Conservationists in Sampang Regency

Click :

1: A B C J	6: G J M	11: J O P	16: A B C D E
2: A H J	7: G J Q	12: H J P	17: A D R
3: A J M	8: J K R T	13: J R S T	18: A D W
4: A J Q R	9: J L P	14: J M S	19: A E F
5: A J Y	10: J N S	15: J Y Z	20: X Y Z

Click analysis shows that there were 20 clicks from 26 actors. Each click consists of 3 to 4 conservationists. A few click members indicate that the conservationists are not yet fully open to each other. Communication between conservationists is still small in scope. There are even 3 conservationists who are not included in any clique, namely conservationists #I, #U, and #V. Less extensive communication causes the information obtained by conservationists is also limited. There are only 20 clicks on conservationists regarding feed, which means that there are only 20 variations in information exchange between conservationists. Dissemination of information so that it is easily accepted by each individual conservationist can be done with a minimum of close to one click representative formed. According to Kusumadewi (Kusumadewi et al., 2020), information will be more easily received by the conservationist if the giver of the information is someone close to the conservationist or someone who is trusted. Dissemination of feed information can be assisted through the help of opinion leaders, but if there are conservationists who cannot be reached by opinion *leaders*, information dissemination can be done by choosing one of the people contained in the click that has not been reached by the *opinion leader*. There is no role of *cosmopolite* and *liaison* in feed communication network for karapan cattle conservationists in Sampang Regency.

Structure of Karapan Cattle Conservation Feed Communication Network in Sampang Regency

Network structure describes the general picture of a *complete communication* network. The network structure involves all conservationists and relationships are formed among all karapan cattle conservationists in Sampang Regency. In total there are 26 actors who are conservationists of carapan cattle in Sampang Regency which are intertwined in the feed communication network. The pattern of communication networks formed in carapan cattle conservationists is partly an all-channel pattern and partly a wheel pattern. The pattern of all channels shows that some cattle carapan conservationists in Sampang Regency can communicate with all conservationists and the wheel pattern shows that some conservationists in Sampang Regency still carry out communication centered on *opinion leaders*.

Table 4
Results of Sociometric Analysis of the Communication Network Structure of Karapan Cattle Conservationists on the Use of Feed for Karapan Cattle in Sampang Regency

Communication Network Stucture	Value
Density	0,128
Diameter (step)	6,000
Average distance (step)	2,916
Degree of connectedness	0,894

Source: Primary Data Analysis in 2023

The *density* value of perfect networks is 1. The results of sociometric analysis presented by Table 4. show that the density value possessed by the communication network of carapan cattle conservationists on feed use is 0.128 which means very low. Density describes how well all actors interact with each other. In disseminating information about feed, carapan cattle conservationists have a bad and incomplete relationship. Communication is dominated by only a few people.

The diameter value of the karapan cattle conservation communication network on feed information is 6, which means that the farthest step a conservationist has to contact other conservationists in the network is 6 steps. The average distance of each conservationist in the network is 2,916 steps. Distance describes the cohesiveness between members in the network. A cohesive communication network is characterized by a small distance between each conservationist, the conservationist can contact other conservationists without passing through other conservationists. The maximum distance for farmers to contact farmers is 25 steps with the formula N-1 where N is the total number of conservationists who are members of the communication network. A value of 2.916 indicates that the distance of the conservationist belongs to the very close category. This indicates that every conservationist actually has the convenience of contacting other conservationists because the distance is very close. The value of the degree of communication network connectivity in Sampang Regency is 0.894 or 89.4%, which means that the degree of communication network connectivity is in the low category, and shows that the process of disseminating feed information is very poor. The closer to one or 100% the degree of connectedness, the better the process of disseminating information among karapan cattle conservationists.

The preservation of karapan cattle is a hobby carried out individually with the aim of preserving the culture on Madura Island. Apart from being detrimental to conservationists, competition is quite tight among conservationists causing low openness among fellow conservationists. Conservationists consider the matter of feed for each cow is the problem of each conservationist so it does not require discussion with other conservationists. Meanwhile, problems in feeding will definitely continue to be faced, especially for conservationists who have just preserved. The location of the residence also affects the ease and difficulty of finding feed, especially during the dry season. Therefore, it is important for conservationists to strengthen feed communication networks to deal with problems that come unexpectedly.

Sociometric Data Communication Network of Karapan Cattle Conservation Drugs

Unlike the feed for karapan cattle, medicines for karapan cattle are more secret by conservationists. Except with relatives or closest friends, conservationists will not share prescriptions for medicines that are owned, especially traditional medicines or commonly referred to as herbal medicines. But the medicines used by karapan cattle are not only traditional medicine or herbal medicine. There are also chemical drugs that are needed, especially when karapan cattle contract diseases that cannot be overcome by traditional medicine. The following is a sociometric analysis of drug communication networks in karapan cattle conservation communities in Sampang Regency.

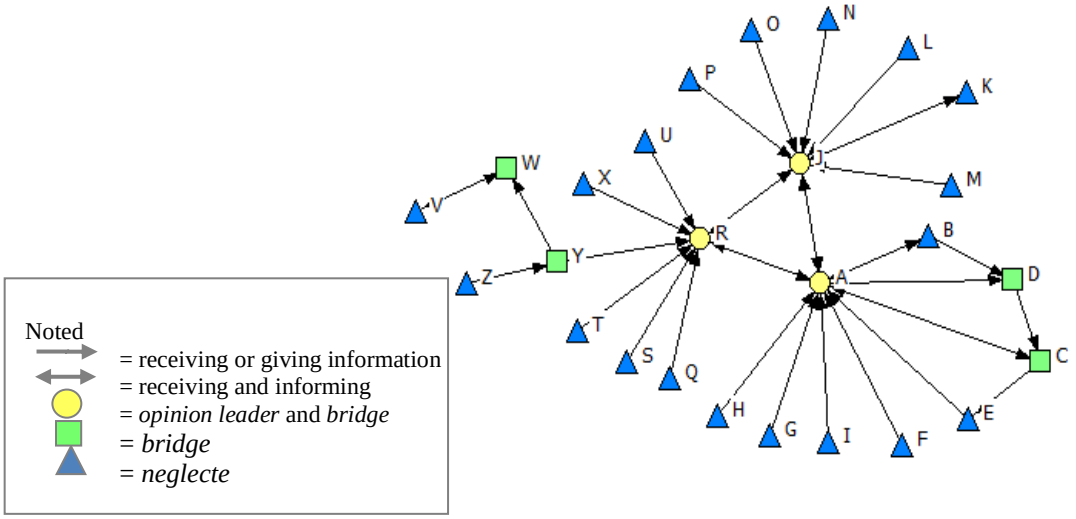

Figure 3 Communication Network for Drug Conservationists at Karapan Cattle Conservation Community in Sampang Regency.

Based on Figure 3, the conservation communication network on the use of medicines in Sampang Regency has the same role as the conservation communication network on the use of feed, namely the role of *opinion leader*, *bridge*, and *neglectee*. Similar to the conservator's communication network on the use of feed, the *opinion leaders* in the conservator's communication network on the use of drugs are conservationists #A, #J, and #R. The dissemination of information to conservationists about medicines depends more on kinship relationships between conservationists. Conservationists #A have kinship with #C, #D, and #E conservationists, #J conservationists have kinship with #K conservationists, while #R conservationists have kinship with #S conservationists, and #T.

In addition to kinship, conservationists also share information based on trust with other conservationists. Conservationists #A, #J, and #R also act as *bridges* in addition to their role as *opinion leaders*. The role of *bridge* in the conservation communication network in the use of drugs is only owned by conservationists #C, #D, #W, and #Y. The prudence of conservationists in disseminating their drug prescriptions makes at least the role of *bridges* owned in the communication network of medicines to conservationists. Conservationists who have a *bridge* role in the communication network of medicine are conservationists who have close kinship or friendship. Conservationists who have a role as *neglectees* or conservationists who only choose to provide information to other conservationists but are not chosen by other conservationists are conservationists #B, #E, #F, #G, #H, #I, #K, #L, #M, #N, #O, #P, #Q, #S, #T, #U, #V, and #X. The role of *neglectee* indicates that the conservationist has a closed nature to information about medicines for karapan cows. The role in the communication network of karapan cattle conservationists in the use of drugs was then further analyzed using centrality, proximity, and intermediary.

Level Centrality in Drug Communication Network in Karapan Cattle Conservation Community in Sampang Regency

Tier centrality indicates the most contacted and *outdegree* conservationists. Based on calculations, the drug communication network in the karapan cattle conservation community in Sampang Regency is a *directed* network. According to Eriyanto (Eriyanto, 2014), the centrality of this level can be in the form of the number of links that lead to conservationists or the number of *links* that come out of the sustainable site.

Table 5
Calculation of Level Centrality in Drug Communication Network in Karapan Cattle Conservation Community in Sampang Regency

Aktor	*N Outdegree*	*N Indegree*	Sentralitas Tingkatan	Rangking
A	0,200	0,400	0,600	1
B	0,080	0,040	0,120	6
C	0,080	0,080	0,160	4
D	0,080	0,080	0,160	5
E	0,040	0,040	0,080	9
F	0,040	0,000	0,040	12
G	0,040	0,000	0,040	13
H	0,040	0,000	0,040	14
I	0,040	0,000	0,040	15
J	0,120	0,320	0,440	2
K	0,040	0,040	0,080	10
L	0,040	0,000	0,040	16
M	0,040	0,000	0,040	17
N	0,040	0,000	0,040	18
O	0,040	0,000	0,040	19
P	0,040	0,000	0,040	20
Q	0,040	0,000	0,040	21
R	0,080	0,320	0,400	3
S	0,040	0,000	0,040	22
T	0,040	0,000	0,040	23
U	0,040	0,000	0,040	24
V	0,040	0,040	0,080	11

W	0,040	0,080	0,120	7
X	0,040	0,000	0,040	25
Y	0,080	0,040	0,120	8
Z	0,040	0,000	0,040	26

Source: Primary Data Analysis in 2023

Unlike feed that can be freely consulted between conservationists, traditional medicines for (*jamu*) for karapan cattle are confidential between conservationists. This is because herbal medicine is one of the components and weapons favored by a team to be able to win a match. However, conservationists also continue to consult and discuss with relatives or friends who are considered familiar to him. Or a senior conservationist who is generous and willing to share his herbal medicine tips with other conservationists.

According to Table 5, the conservationist who has the highest proximity centrality value is the #A conservationist with a value of 0.400. This is because #A preservationists are senior preservationists who have often won matches and even won several championships at the level of the president's cup. #A conservationists also have relatives who are also involved in the preservation and competition of cow karapan, such as #B and #C conservationists who are nephews of #A conservationists or #D conservationists who are also still relatives of #A conservationists so that #A conservationists often discuss cow karapan and several times tell tips for herbs or medicines consumed by their cows. Conservationists #A are conservationists who have the greatest *indegree* value of 0.400, which means that conservationists are many references for other conservationists when facing drug problems for karapan cattle. This is also because the cow karapan team from #A conservationists has won a lot so that many conservationists want to make #A conservationists as a reference in providing medicines, especially herbs for their karapan cattle. The *outdegree* value of #A conservationists is also the highest compared to other conservationists.

The next highest level of centrality is the #J conservationist who is a conservationist with a high level of centrality value in the karapan cattle feed communication network, which is 0.440. This is because the conservationist #J is the head of the Madura Family Cow Karapan Association in Sampang Regency is also an experienced figure and has been preserving carapan cattle the longest, so other conservationists feel trusted.

In addition to #J conservationists, #R conservationists who are vice chairmen of the Madura family cattle karapan association in Sampang Regency also have a high centrality value of 0.400. Apart from having relatives who also preserve karapan cattle, the #R conservation cow karapan team also often wins in karapan cattle competitions, even winning the president's cup once in 2012. The role of conservationists #A, #J, and #R is quite large in disseminating information about medicines for karapans cattle, these three are also references for conservationists in their respective regions.

Centrality of Proximity in the Communication Network of Medicines in Karapan Cattle Conservation Community in Sampang Regency

The centrality of proximity in the communication network of the preservationist is different from the centrality of the level. Level centrality indicates

how much a conservationist relates to other conservationists. While the centrality of closeness shows how close the relationship of conservationists with other conservationists. Electricity that has a high level of centrality value does not necessarily have a high level of closeness centrality as well. According to Eriyanto, actors who are at the center of the network have a higher probability of occupying the centrality of proximity than other actors who are on the periphery of the network(Eriyanto, 2014).

Table 6
Calculation of Centrality of Proximity in Drug Communication Network in Karapan Cattle Conservation Community in Sampang Regency

Aktor	*Closeness (Normal)*		Total
	Out Closeness	*In Closeness*	
A	0,214	0,510	0,724
B	0,205	0,352	0,557
C	0,207	0,357	0,564
D	0,207	0,357	0,564
E	0,205	0,275	0,480
F	0,210	0,167	0,377
G	0,210	0,167	0,377
H	0,210	0,167	0,377
I	0,210	0,167	0,377
J	0,208	0,490	0,698
K	0,198	0,342	0,540
L	0,205	0,167	0,372
M	0,205	0,167	0,372
N	0,205	0,167	0,372
O	0,205	0,167	0,372
P	0,205	0,167	0,372
Q	0,203	0,167	0,370
R	0,207	0,500	0,707
S	0,203	0,167	0,370
T	0,203	0,167	0,370
U	0,203	0,167	0,370
V	0,172	0,181	0,353
W	0,172	0,184	0,356
X	0,203	0,167	0,370
Y	0,219	0,172	0,391
Z	0,210	0,167	0,377

Source: Primary Data Analysis in 2023

Based on Table 6, the conservationist who has the highest proximity centrality value is the #A conservationist which is 0.724 which also has the highest level of centrality value. However, in contrast to the value of level centrality, the next highest value of proximity centrality is #R conservationists with a value of 0.707 then only #J conservationists with a value of 0.698 which at the centrality level of #J conservationists have a higher centrality value than #R conservationists. This closeness factor is the familial relationship between conservationists. Conservationists #A have kinship with conservationists #B, #C, #D, and #E, while conservationists #R have kinship with conservationists #S, #T, #U, and #X so that they have a greater level of closeness.

Centrality of Intermediary in the Communication Network of Cattle Conservationists in the Use of Feed for Karapan Cattle in Sampang Regency

Conservationists who act as intermediaries for information are important actors in the network. This is because conservationists who have a position as intermediaries can determine the membership of other conservationists in the network(Eriyanto, 2014).

Table 7
Calculation of Intermediary Centrality in the Communication Network of Karapan Cattle Conservationists in the Use of Medicines for Karapan Cattle in Sampang Regency

Actor	*N Betweenness*	Note
A	17,833	Intermediary
J	9,667	Intermediary
R	8,167	Intermediary
C	3,667	Intermediary
Y	1,667	Intermediary
W	0,333	Intermediary
D	0,167	Intermediary
B	0,000	Not an Intermediary
I	0,000	Not an Intermediary
G	0,000	Not an Intermediary
H	0,000	Not an Intermediary
F	0,000	Not an Intermediary
M	0,000	Not an Intermediary
N	0,000	Not an Intermediary
O	0,000	Not an Intermediary
P	0,000	Not an Intermediary
K	0,000	Not an Intermediary
E	0,000	Not an Intermediary
S	0,000	Not an Intermediary
T	0,000	Not an Intermediary
U	0,000	Not an Intermediary
V	0,000	Not an Intermediary
Q	0,000	Not an Intermediary
X	0,000	Not an Intermediary
L	0,000	Not an Intermediary
Z	0,000	Not an Intermediary

Source: Primary Data Analysis in 2023

Basedon Table 7, the highest intermediary value is #A conservationist with a value of 17,833, which means that #H conservationist has an important role in connecting conservationists with each other. Conservationists #A are generous conservationists by helping other conservationists despite fierce competition to win the cattle race. The family relationship that #A conservationists have with other conservationists also makes #A conservationists more open to sharing experiences and information about medicines for karapan cattle.

The value of intermediary centrality is also owned by conservationists #J, #R, #C, #Y, #W, and #D which means that conservationists act as a *bridge* that connects the *preservationists' clicks* with one another. The state of dissemination of information about medicines for karapan cattle is not very good due to competition between conservationists is quite tight. So for medicine, conservationists only trust a few people.

Click Medicines Communication Network at Karapan Cattle Conservation in Sampang Regency

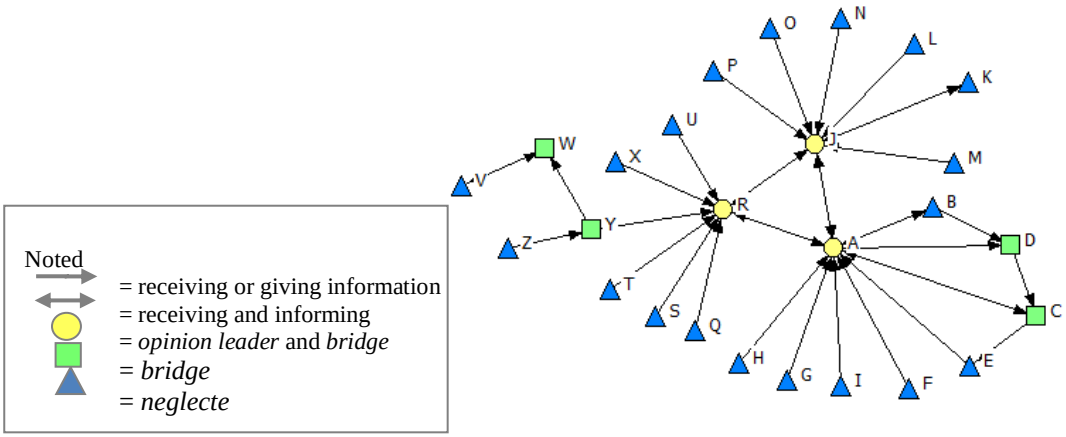

Figure 4 Medicine Communication Network at Karapan Cattle Conservation in Sampang Regency.

Click :

1: A C D	3: A B D
2: A C E	4: A J R

There are two characteristics of cliques formed from communication networks. First, the interconnectedness between fellow actors. Second, click to enter all relationships or interactions maximally with at least 3 people in one click. The conservationist who has the most clicks is one that is easily accepted by other conservationists in the network (Eriyanto, 2014). A conservationist who feels comfortable with other conservationists will tend to communicate more often with these conservationists. This communication may take the form of questions regarding the issue of medicines for karapan cattle.

There are only 4 clicks in the drug communication network for karapan cattle conservationists in Sampang Regency. This shows that conservationists are not very open to each other. Communication between conservationists is communication in a very small scope. Conservationists who are members of the clique are only conservationists #A, #B, #C, #D, #E, #J, and #R only. Other preservationists don't even belong to any clique. This is because intense competition between conservationists makes information about medicines, especially herbal medicines, very closed to karapan cattle conservationists. Less extensive communication causes the information obtained by conservationists is also limited. There are only 4 clicks on conservationists about medicines, which means that there are only 4 variations in

information exchange between conservationists. Dissemination of information so that it is easily accepted by each individual conservationist can be done with a minimum of close to one click representative formed. According to Kusumadewi *et al* (Kusumadewi et al., 2020), information will be more easily received by the conservationist if the giver of the information is someone close to the conservationist or someone who is trusted. Dissemination of feed information can be assisted through the help of opinion leaders, but if there are conservationists who cannot be reached by opinion *leaders*, information dissemination can be done by choosing one of the people contained in the click that has not been reached by the *opinion leader*. There is no role of *cosmopolite* and *liaison* in feed communication network for karapan cattle conservationists in Sampang Regency.

Struktur Jaringan Komunikasi Obat-obatan pada Pelestari Sapi Karapan di Kabupaten Sampang

Network structure describes the general picture of a *complete communication* network. The network structure involves all conservationists and relationships are formed among all *karapan* cattle conservationists in Sampang Regency. Having the same number of conservationists as the feed communication network, the total actors intertwined in the drug communication network are 26 actors who are conservationists of karapan cattle in Sampang Regency. The pattern of communication networks formed in karapan cattle conservationists is a wheel pattern. The wheel pattern shows that some conservationists in Sampang Regency still carry out communication that is centered on *opinion leaders*.

Table 8
Results of Sociometric Analysis of the Communication Network Structure of Karapan Cattle Conservationists on the Use of Medicines for Karapan Cattle in Sampang Regency

Communication Network Structure	Value
Density	0,057
Diameter (step)	5,000
Average distance (steps)	2,304
Degree of connectedness	0,294

Source: 2023 Primary Data Analysis

The density value of complete network is 1. The results of sociometric analysis are presented by Table 8. shows that the *density* value possessed by the Karapan cattle conservation communication network on the use of drugs is 0.057 which means it is very low. Density describes how well all actors interact with each other. Karapan cattle conservationists have a relationship that goes quite well and thoroughly. The diameter value of the drug communication network is 5, which means that the farthest step a conservationist has to contact other conservationists in the network is 5 steps. The average distance of each conservationist in the network is 2,304 steps. Distance describes the cohesiveness between members in the network.

A cohesive communication network is characterized by a small distance between each conservationist, the conservationist can contact other conservationists without passing through other conservationists. The maximum distance for conservationists to contact other conservationists is 25 steps with the formula N-1 where N is the total number of conservationists who are members of the

communication network. A value of 2.304 indicates that the distance of the conservationist is included in the very close category. This indicates that every conservationist actually has the convenience of contacting other conservationists because the distance is very close. The value of the degree of communication network connectivity in Sampang Regency is 0.294 or 29.4% which means that the degree of communication network connectivity is included in the very low category.

Information about herbal medicine for karapan cattle is quite exclusive and sensitive information for conservationists. Intense competition among conservationists makes this information cannot be discussed easily. The situation in the field shows that conservationists will not answer in detail about the traditional medicine or herbal medicine used. Preservationists will only mention commonly used ingredients such as chicken eggs, brown sugar, and coffee. Other materials are usually carefully hidden so as not to be discovered by the opposing team. Even so, there are conditions where conservationists must coordinate with each other such as when there was an outbreak of Foot-and-Mouth Disease that broke out among karapan cattle last year. The low number of connectivity between conservationists in the distribution of these drugs causes the death rate of cows due to contracting the plague is quite high.

Differences and Similarities in the Conditions of the Cattle Conservation Communication Network on the Use of Feed and Medicine for Karapan Cattle in Sampang Regency

The results of the analysis of feed and medicine communication networks show that there are differences and similarities in feed communication networks with drug communication networks in karapan cattle conservationists in Sampang Regency. This difference is one of the causes of the difference in the effectiveness of if an in disseminating information about feed and medicine to karapan cattle conservationists in Sampang Regency.

Table 9
Condition of Feed & Medicine Communication Network in Sampang in 2023

Communication Network Structure	Food	Medicine
Various roles	*Opinion leader, bridge, neglectee*	*Opinion leader, bridge, neglectee*
Number of clicks	20	4
Structure analysis:		
1. Pattern	All channels and wheels	Wheel
2. Density value	0,128	0,057
3. Diameter Value	6,000	5
4. Average Distance Value	2,916	2,304
5. Value the degree of connectedness	0,894	0,249

Source: Primary Data Analysis in 2023

Table 9 shows that from the role conditions, feed and drug communication networks both have the roles of *opinion leader*, *bridge*, and *neglectee*. The role of

opinion leader in feed communication network is 2 conservationists, while the role of *opinion leader* in medicine communication network is 3 conservationists. Dissemination of information through bridges, feed communication networks have 22 conservationists who act as bridges, while drug communication networks only have 7 conservationists who act as bridges. The clicks found on the feed communication network are 20 clicks, while the clicks found on the drug communication network are 4 clicks which are much lower clicks on the drug communication network than the feed communication network. This shows that the dissemination of feed information on karapan cattle conservationists is much better than the dissemination of information about medicines.

The network differences that are quite striking even with the same actors indicate that the discussion and information about drugs is information that is disseminated very carefully. This is due to intense competition between conservationists. Even so, conservationists are still quite open about information about feed for karapan cows. The lack of assistance received from the government makes conservationists can only rely on each other. The easier spread among relatives is because most karapan cattle conservationists in Sampang Regency conserve karapan cattle because of the offspring obtained from the preservation's parents. Few conservationists who preserve are not because of descendants, there are not even conservationists in Sampang Regency who preserve, not because of descendants.

CONCLUSION

Based on the results of the analysis and discussion that has been carried out regarding the communication network of feed and medicine in Sampang Regency, carapan cattle farmers, it can be concluded that the communication accompaniment of feed and medicine has the role of *opinion leader*, *bridge*, and *neglectee*. The role of opinion leader in the feed communication network is owned by conservationists #A, and #J. While the role of *opinion leader* in the communication network of medicines is the conservationist of #A, #J, and #R. The conservationist #J is the chairman of the cow carapan association in Sampang Regency, the #R conservationist is the vice chairman of the cow carapan association in Sampang Regency, and the #A conservationist

Based on the results of the analysis and discussion that has been carried out regarding the communication network of feed and medicine in Sampang Regency, carapan cattle farmers, it can be concluded that the communication accompaniment of feed and medicine has the role of *opinion leader*, *bridge*, and *neglectee*. The role of opinion leader in the feed communication network is owned by conservationists #A, and #J. While the role of *opinion leader* in the communication network of medicines is the conservationist of #A, #J, and #R. The conservationist #J is the chairman of the cow carapan association in Sampang Regency, the #R conservationist is the vice chairman of the cow carapan association in Sampang Regency, and the #A conservationist is a respected and respected conservationist by other conservationists. The highest centrality value of the feed communication network is the #J conservationist with a value of 0.958 while for the drug communication network the highest centrality value is the #A conservationist with a value of 0.724. The role of the *bridge* owned by the feed communication network is

22 conservationists while for the medicine communication network is 7 conservationists.

The clicks contained in the feed communication network are 20 clicks, while the clicks contained in the drug communication network are 4 clicks. The more the value of click variation, the better the closeness between conservationists. The variation of the feed communication network clicks more than the drug communication network indicates that the proximity of conservationists in the dissemination of feed information is better than the dissemination of information about drugs.

The structure of the communication network formed includes, the density in the feed communication network of 0.128 is higher than the drug communication network of 0.057 which means that conservationists interact more in disseminating information about feed than drugs for carapan cattle; diameter formed in the feed communication network is 6 while in the drug communication network is 5 which means that the farthest distance the conservationist in contacting other conservationists in the feed communication network is 6 steps while in the drug communication network is 5 steps; The degree of connectivity in the feed communication network is 89.4% lower than the drug communication network of 24.9% indicating the spread feed information is better than dissemination of information about medicines.

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