

Orchid Consortium Communication Network in Indonesia

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ABSTRACT

The problems of the national orchid industry, include small scale business, lack of seed stock, lack of mastery of cultivation and post-harvest technology, low quality and quantity of production, inadequate market linkages, and poor coordination, need collective cooperation among actors. The development of Indonesia's orchid agribusiness should be realized by building alliance to increase the added value and competitiveness of the Indonesian orchid. The consortium of orchids is expected to find a solution to overcome those orchid problems and to design future orchid business development. The purposes of this study was to determine the actor who played the local, global and betweenness centrality and to see the relationship dynamics of the group. The method used for this research was through survey. Data were collected by interview using a questionnaire. This current research used census sampling techniques. Communication networks were analyzed using Ucinet 6 software. The results of the study show: 1) orchid clonal propagation: the stars are educational organisation and research & development organisation, the population is homogeneous, the centrality index is about 9.55%; 2) the orchid cultivation SOP: the star is governmental public services organisation, the population is homogeneous, the centrality index is about 23.09%; 3) orchid domestic market: the star is agribusiness organisation, the population is homogeneous, the centrality index is about 2.56%; 4) orchid area development: the star is governmental services organisation, the population is heterogeneous, the centrality index is about 7.27%.

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INTRODUCTION

The bureaucratic organisation that handles the development of Indonesian floriculture is developing the activation of external networks as coordination media. The coordination media of the orchid alliance is named the Orchid Consortium. Orchid consortium is a new form of coordinated, collective actions, cooperation among associations of orchid farmers and other stakeholders. It is designed to produce the conditions which are necessary to produce an effective form of cooperation competence in the development of orchid propagation that will use the results of the development to compete in product markets and cooperation in developing policies that support conducive climate to the development of orchids and it also allows partners to provide better service together in order to compete as a team in the product market (Gandasari, Sarwoprasodjo, Ginting, & Susanto, 2015). It was built in order to increase the contribution of orchid farms to the national economy and competitive orchid production (DBPF, 2012). The concept of the alliance is the system of cooperation among organisations that drives the development of orchid floriculture to solve various problems in the orchid industry and to achieve the common goal of orchid floriculture development in Indonesia.

It is in line with the van den Ban's (1997) opinion that the farmers' problems could be solved through collective decision making by all people, institutions, and forces associated with the structure and

the other complexity processes (Rogers 1976). However, new forms of interaction and agreement are needed among the many players in the agricultural fields (Leeuwis, 2009), to increase the connectivity through the physical, social, institutional, individual (Monge et al., 1998), and technological areas (Kolb, 2008).

The study on orchid consortium communications network is important to see the communication behaviour of the consortium members in receiving, giving, and disseminating information. This is in line with Nohria's (1998) and Haris and Nelson's (2008) opinions that every organisation is an important social network, and the existence of these networks needs to be analysed because the network is the centre of organisation's communication, both internally and externally. Based on the analytic perspective of Moliterno and Mahony (2011) and Monge et al. (1998), studying communication networks among organisations is important because it correlates with the level of organisational development and is an important piece of an organisation's resources, which should be used to improve the organisation's effectiveness.

The results of the previous studies' reviews show that most of the studies on the external communication and inter-organisation communication studied the communication media (Breidbach, Kolb, & Sirivasan, 2013; Gallupe et al., 1995; Sarinastiti, 2004), which is the coordination of inter-government coordination, government-companies,

and government-company-academics outside the agricultural sector (Alwi, 2007; Amrantasi, 2008; Browning, Beyer, & Shetler, 1995; Handoko, 2008; Marigun, 2008; Sarinastiti, 2004). Though a lot of studies on the inter-organisation network and communication network in the field of social and culture (Gustina, Hubeis, & Riyanto, 2008; Lubis, 2000), diffusion of innovation (Ahuja, 2000; Anggriyani, 2014; Bulkis, 2013; Cindoswari, 2012; Rangkuti, 2009) and economics (Nohria, 1998; Utami, 2013) exist, a study on the communication networks and the alliance strategies that produce public goods in the agricultural sector, and particularly the orchid floriculture, representing multi-sector organisations has not frequently been conducted. The information in agricultural development perspective is very limited, so it is important for communication science to contribute in the study of communication networks among organisations that support the development of agriculture, especially orchid floriculture.

Based on the above, this research focuses on the productivity of the orchid consortium through the analysis of communication networks. According to Rogers and Kincaid (1981) there were five levels of analysis unit in a communications networks which includes: (1) individual, (2) personal communication networks, (3) dyadic relationship, (4) click; and (5) the system (networks). Scott (2000) argued that a number of indicators that could be used in analyzing the communication networks. One indicator of the networks can be seen

from some degree of measurement, namely the centrality. Centrality is divided into three (Scott 2000): local centrality, global centrality, and betweenness centrality. Local centrality is the degree to which an individual dealing with other individuals in the system. Local centrality shows the number of relationships that can be created by individuals in the system. Global centrality measurements based on the terms surrounding the “closeness” or the proximity of the individual. Global centrality measurements are expressed in “distance” term between diverse individuals. Betweenness centrality which measures the extent to which a particular individual is situated between other individuals in a networks.

MATERIALS AND METHODS

This study used a descriptive quantitative approach. The variable used in this study was a communication network. The communication network in this study was assessed based on the information on orchid floriculture agribusiness consisting of information on the orchid clonal propagation, orchid cultivation Standard Operational Procedure (SOP), orchid domestic marketing, and orchid area development policy. The focus of this study is to describe communication network variables emphasized in the communication structure.

The study was conducted for five months from November 2012 to March 2013. Selected group was considered as the research sample and taken by census.

Total samples examined in this study was 30 respondents. The respondents of this study is all members of the orchid consortium, which includes as many as 30 participants that spread throughout eight cities/districts, namely Jakarta, Bogor, Depok, Bandung, Cianjur, Yogyakarta, Malang, and Malang district. The study uses census and sample design to collect the data of information sources. The data collected consists of primary data and secondary data. The primary data was collected from consortium members individually by asking sociometrist questions, specifically, how someone gains information on orchid agribusiness in the fields of orchid clonal propagation, cultivation, domestic marketing, and orchid area development policy, both within the internal agent/node (orchid consortium) and the external (people from organisations outside the orchid consortium). The secondary data was collected from literature reviews and reports of orchid consortium meetings.

Communication networks analysed in this study were: local centrality, global centrality, and betweenness centrality. Analysis of the communication networks data was using 6.0 Ucinet program.

RESULTS AND DISCUSSION

Communication Network Structure of the Orchid Consortium

In November 2010 the Orchid Consortium was formed and initiated by the Directorate General of Horticulture, Gadjah Mada University (GMU), University of Indonesia (UI), University of Muhammadiyah Malang

(UMM), Brawijaya University (Unibraw), Ornamental Crops Research Institute (BALITHI), Agriculture Office of East Java Province (Dinas Pertanian Provinsi Jawa Timur), Indonesian Orchid batch Malang, Indonesian Orchid batch Jakarta, and Bumiaji Batu Farmers Group.

The establishment of Orchid Consortium was motivated by the problems in the national orchid industry, including that the business scale and production centre are still small, and there is an inadequate seed source, a lack of mastery of orchid cultivation and post-harvest technology, a low quality and quantity of production, less extensive market network, lack of regulation support, inadequate human resources, lack of constructive research, and lack of collective work among all the players. The Consortium recognises that there should be an alliance built between all pieces of the orchid industry of Indonesia in order to improve the business performance and increase production, quality, value, and competitiveness.

The Orchid Consortium is an association of organisations that performs the following activities: 1) coordination and cooperation in the scientific study, socio-economics, and environments related to orchid plants in Indonesia, to support the factual and up-to-date knowledge development which is translated into a work program; 2) to disseminate information on research results and the implementation of these results through training, internship, consulting, publication, workshops, and seminars; and 3) to give inputs in the form of policy

concept to the government to encourage the improvement of orchid production, quality, added value, and competitiveness of Indonesian orchid.

The consortium members are organisations, not individuals. There were thirty consortium members when the study was conducted; twelve persons from four service organisations, six persons from five research and development organisations, three persons from three educational institutions, four persons from four associations, and five persons from five agribusiness organisations. The formal education levels of consortium members broke down into 15% holding a doctoral degree, 14% holding a master's degree, 43% holding a bachelor's degree, and 3% holding a diploma degree. This shows that the members of the consortium are the people from various organisations with various fields of expertise that have a high enough education level that they have gained various knowledge and experience

in different fields, and tend to actively seek and disseminate information. Penley (1978) stated that a combination of diverse viewpoints and knowledge would lead to a better solution for a sophisticated problem. Knowledge is a power; the more knowledge are accumulated, the more benefits will be obtained (Minei & Bisel, 2013). Knowledge is also an important resource for the success of the organisation (Tsai, 2000).

The consortium members use various communication media. Electronic mail (email) is an interpersonal communications medium that is mostly chosen. Mailing lists as an information system and collaborative communication are the most widely used as a forum to find and share information. Consortium meetings are conducted once a year to discuss various issues in orchid agribusiness.

Communication Network of the Orchids Clonal Propagation Field

Figure 1 shows the sociogram of the

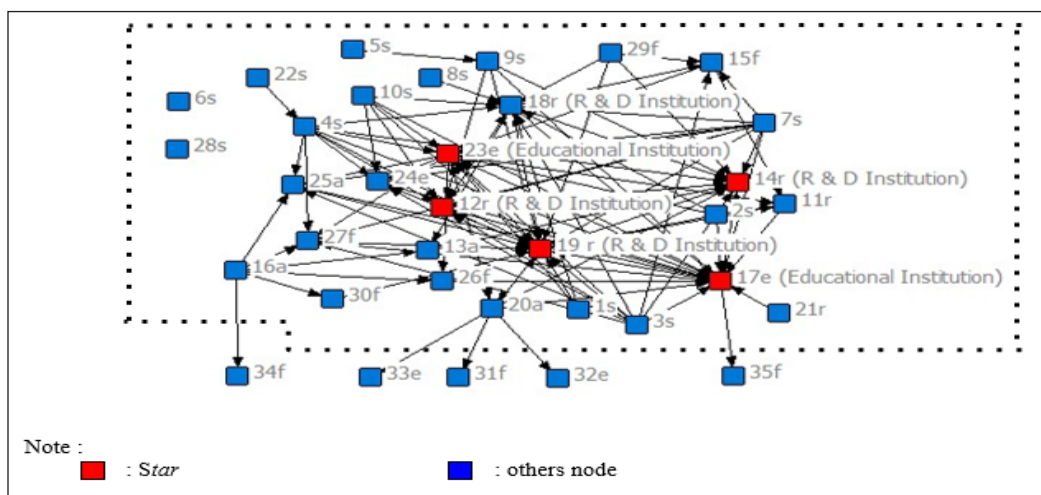


Figure 1. Communication network of the orchids clonal propagation

structure of the communications network among members of the Orchid Consortium regarding the orchid clonal propagation.

The sociogram shows that the member of the orchid consortium members which play a role as a star or source of information is represented by nodes with the highest connectivity degree. It means that certain individuals most contacted by other individuals are the members who can play the role as star. In the orchid clonal propagation field (Figure 1), the nodes who are the stars on orchid clonal propagation are Nodes 17 and 23 from educational institutions and Nodes 12, 14, 18, and 19 from research and development institutions.

Node 19 is a plant biotechnology expert representing BALITHI. The equipment mostly used by Node 19 in communication with other consortium members is the equipment to send email and mailing lists at least 4 times in a month. The information discussed covers SOP of orchid propagation and material/media of tissue cultures.

The purpose behind the analysis of the

communication network at the individual level in this study is to see the size of the local centrality, betweenness centrality, and global centrality of individual of organisations who are consortium members. The centrality value is based on the orchid clonal propagation theme in the communications network and can be seen in Table 1.

The stars in the orchid clonal propagation field are Nodes 17 and 23 from UI and UGM; Nodes 12, 14, 18, and 19 from Parent Seed Centre (BBI) Jakarta, Taman Anggrek Indonesia Permai (TAIP), and BALITHI. The identification results show that the stars in the orchid clonal propagation field are credible informants as expert persons with a high formal education background, having experience in orchid propagation technology, having power of information, and can play a role as information sources in orchid clonal propagation. It is different with cassava group (Cindoswari, 2012) where the star is an individual as an informal leader in the systems and agribusiness areas.

Table 1
The centrality value based on orchid clonal propagation

Communication Network Analysis	Nodes	Variation Coofisien (%)	Indeks		
			Average	Maximum	Minimum
1. Local Centrality					
a. In Degree	12,14,17,18,19,23	23.4	3.4	17	0
b. Out Degree	3,7	48.4	3.4	10	0
2. Global Centrality					
a. Infarness	14	-	-	-	-
b. Ourfarness	16	-	-	-	-
3. Betweenness					
a. Mediator	1,9,17	9.55	-	-	-

The nodes whose highest out-degree value have the highest external relations and can summon more network resources overall may be considered as the most influential members. This means that these nodes are most often related with many people and know or have information about the nodes being a source of information. The nodes with the highest out-degree value in orchid clonal propagation are Nodes 3 and 7 from the Directorate of Floriculture and Post-harvest.

The variability range is low with an out-degree of 23.4% and in-degree of 48.4%. It means that the power of the individual agent is less varied, and there is a large number concentration or centralisation across the network. Strength of individual agents varies more substantially, meaning that there is uneven power in the network. The population in orchid clonal propagation field is homogeneous or centralised because the variability of in-degree is higher than out-degree. This means that the clonal propagation field is an expertise field that is very specific, so that the information is more centralised to certain people who have such expertise.

Networks centrality of the clonal propagation in-degree has a maximum value of 17 and a minimum of 0. While networks centrality of the clonal propagation out-degree has a maximum value of 10 and a minimum of 0. This means that people who are considered the most prominent in the clonal propagation networks in-degree has been linked to 17 other people, and the most prominent in the clonal propagation

networks out-degree has been linked to 10 people. Node 19 is a plant biotechnology expert representing BALITHI is the most prominent in the clonal propagation networks in-degree and node 3 and 7 are from Directorate of Floriculture and the Post-harvest are the most prominent in the clonal propagation networks out-degree.

The average out-degree and in-degree of 3.4 means that people who are considered in the clonal propagation networks has been linked to 3 people. It means the connectivity is low, in that participants only discuss the orchid clonal propagation with the star. It makes the star's role very important. Participants rarely share information or discuss the topic with other members.

The global centrality of communication network in the orchid clonal propagation field shows the in-farness of Node 14 and out-farness of Node 16. This means that Node 14 from the TAIP R&D is the agent most quickly contacted by members, while Node 16 from ASBINDO is the fastest agent in disseminating information obtained from the information source.

The nodes that can act as mediators in the orchid clonal propagation field are Nodes 1 and 9 from the Floriculture and Horticulture Seeds services institution, and Node 17 from UI. However, the low betweenness centrality index of 9.55% that means connection in the network can be made without the mediator's assistance.

Communication Network of Orchid Cultivation SOP field

A sociogram describing the structure

of the communications network among orchid consortium members in the orchid cultivation SOP field can be seen in Figure 2. The nodes who are the stars of the orchid cultivation SOP field are Nodes 1, 2, 3, 4, and 6 from the services organisations.

Node 2 is the Head of the Sub-Directorate that handles orchid cultivation, with a formal education level of master's degree in agribusiness management. The

media most widely used in communication with other consortium members is email, mailing list, SMS, and telephone. The frequency of the media use is 8 times a month for email and mailing list, and 8 times a year for telephone and SMS. The information discussed includes orchid cultivation SOP and implementation of orchid cultivation SOP field school.

The centrality value based on the

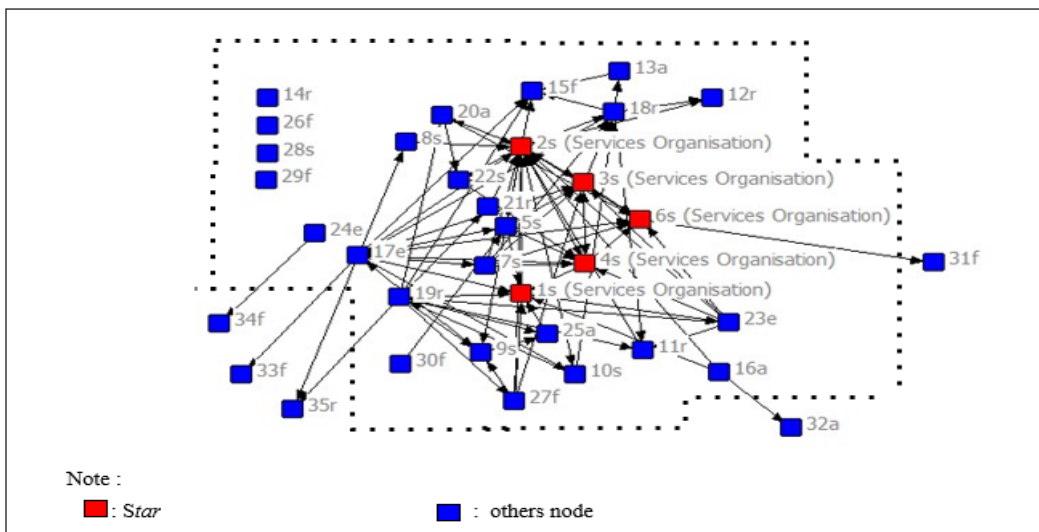


Figure 2. Communication network of the orchids cultivation SOP

Table 2
The centrality value based on orchid cultivation SOP

Communication Network Analysis	Nodes	Variation		Indeks	
		Coofisien (%)	Average	Maximum	Minimum
1. Local Centrality					
a. In Degree	1,2,3,4,6	39.9	2.8	14	0
b. Out Degree	17	29.3	2.8	11	0
2. Global Centrality					
a. Infarness	15	-	-	-	-
b. Ourfarness	16	-	-	-	-
3. Betweenness					
a. Mediator	2	23.09	-	-	-

discussion topic of orchid cultivation SOP in the communication network can be seen in Table 2.

Stars of the highest in-degree on orchid cultivation SOP are Nodes 1, 2, 3, 4, and 6 from Directorate of Floriculture and the Post-harvest, which are responsible for producing orchid cultivation SOP guidelines. So the stars in the orchid cultivation SOP field can act as information centres for other members in accordance with one of the represented organisation functions in serving orchid cultivation SOP. The Node that has the highest out-degree value in the orchid cultivation SOP field is Node 17 from UI. As a researcher, Node 17 has a wide relation with other relevant organisations.

The range of variability is low, with an out-degree of 29.3% and in-degree of 39.9%. This means that the power of the individual agent is less varied, and there is a large number of concentration or centralisation across the network or there is a somewhat uneven power in the network. The population is homogeneous, meaning the orchid cultivation SOP is a specific expertise field so that the information becomes more centralised to certain people who have such information.

Networks centrality of the orchid cultivation SOP in-degree has a maximum value of 14 and a minimum of 0. While networks centrality of the orchid cultivation SOP out-degree has a maximum value of 11 and a minimum of 0. This means that people who are considered the most prominent in the orchid cultivation SOP networks in-degree has been linked to 14

other people, and the most prominent in the orchid cultivation SOP networks out-degree has been linked to 11 people. Node 2 is the Head of the Sub-Directorate that handles orchid cultivation is the most prominent in the the orchid cultivation SOP networks in-degree and node 17 is a researcher from UI that mostly keeps in touch with people in orchid area development is the most prominent in the orchid cultivation SOP networks out-degree.

The average out-degree and in-degree of 2.8 mean that people who are considered in the orchid cultivation SOP networks has been linked to 2 people. It means that the connectivity is low. The participants only communicate about orchid cultivation SOP to the star, thus the star's role becomes very important. If the participants do not share or discuss such information with other members, then there are no solid bonds among members of like a group.

The global centrality of the communications network of the orchid cultivation SOP field shows the in-farness of Node 15 and out-farness of Node 16. This means that Node 15 from the agribusiness organisation is the agent with the fastest response, while Node 16 from ASBINDO is the Agent who disseminates information most quickly among the others.

The agent who can act as mediator in the orchid cultivation SOP field is Node 2 from the services organisation. However, connections can be made in the network without the mediator's assistance due to the betweenness centrality index is low about 23.09%.

The interesting finding in orchid cultivation SOP field is that although the star is the node who provides orchid cultivation SOP guideline, the global centrality shows that Node 15 from the agribusiness organisation is the node with the fastest response when contacted by other members in the system. This individual is considered to have various and useful

information on orchid agribusiness, quickly responds to communications with other member, and is easily contactable.

Communication Network of Orchid Domestic Marketing field

The sociogram describing the structure of the communications network among members of the orchid consortium regarding

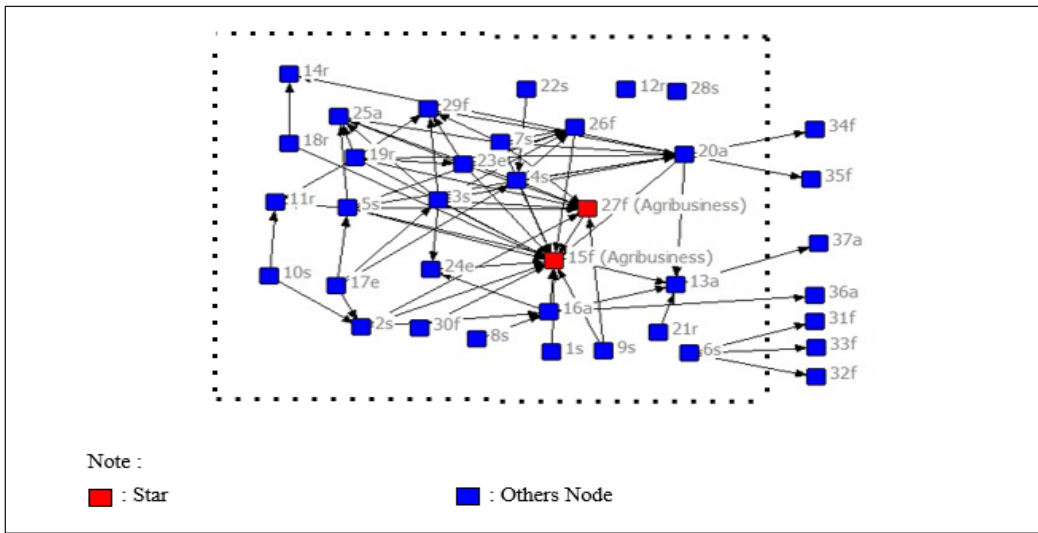


Figure 3. Communication network of orchid domestic marketing

the orchid domestic marketing field can be seen in Figure 3.

The nodes who are the stars of the orchid domestic marketing field are Nodes 15 and 27 from the agribusiness organisation. Node 15 is a marketing manager at one of the famous orchid companies in Indonesia. The media Node 15 uses to communicate with the other consortium members are email and a mailing list, at least 4 times a month. The information discussed includes consumer preferences, problems in inter-island goods shipping, and the procedures that must be passed to smooth inter-island

marketing. Node 27 is an owner at one of the famous orchid companies and he also is the member of the Indonesian Orchid Farmers Association in East Java. The media Node 27 uses to communicate with the other consortium members are email and a mailing list, at least 5 times a month. The information discussed includes consumer preferences and problems in business.

The centrality values based on the discussion topic of orchid domestic marketing in the communication network can be seen in Table 3.

The nodes that have the highest in-

Table 3
The centrality values based on orchid domestic marketing

Communication Network Analysis	Nodes	Variation Coofisien (%)	Indeks		
			Average	Maximum	Minimum
1. Local Centrality					
a. In Degree	15,27	45.9	2.1	15	0
b. Out Degree	3,5,19	17.4	2.1	7	0
2. Global Centrality					
a. Infarness	15	-	-	-	-
b. Ourfarness	17	-	-	-	-
3. Betweenness					
a. Mediator	20	2.56	-	-	-

degree value, or the stars, of the domestic orchids marketing field are Nodes 15 and 27 from the agribusiness organisations. The nodes that have the highest out-degree value in the domestic orchid marketing field are Nodes 3 and 5 from the services organisation, namely the Directorate of Floriculture and the Post-harvest, and Node 19 from BALITHI.

The range of variability is low, with an out-degree of 17.4% and an in-degree of 45.9%. That means the power of the individual agent is less varied, and there is a large number of concentration or centralisation across the network. The population is homogeneous, meaning that the marketing field is a field of expertise which is very specific so that the information is more centralised to certain people who have the expertise and experience in marketing.

Networks centrality of the orchid domestic marketing in-degree has a maximum value of 15 and a minimum of

0. While networks centrality of the orchid domestic marketing out-degree has a maximum value of 7 and a minimum of 0. This means that people who are considered the most prominent in the orchid domestic marketing networks in-degree has been linked to 15 other people, and the most prominent in the orchid domestic marketing networks out-degree has been linked to 7 people. Node 15 is the marketing manager from the agribusiness organisations that handles orchid market is the most prominent in the orchid domestic marketing networks in-degree and node 5 from the services organisation, namely the Directorate of Floriculture and the Post-harvest that mostly keeps in touch with people in orchid development especially in business is the most prominent in the orchid domestic marketing networks out-degree.

The average out-degree and in-degree of 2.1 means that people who are considered in the orchid domestic marketing networks has been linked to 2 people. It means

that connectivity is low, participants communicate about marketing orchids only to the star, so the role of star becomes very important. Participants do not much share information or discuss it with members.

The global centrality of the communication network of orchid domestic marketing field shows the in-farness of Node 15 and out-farness of Node 17. It means that Node 15 from agribusiness organisation is agent most quickly contacted by other members, while Node 17 of UI is the fastest agent in regards to spreading information obtained from the information source.

The node that can act as a mediator in orchid marketing is Node 20 of the Indonesian Orchid Farmers Association (APAI). However, the betweenness centrality index is low, about 2.56%, meaning the connections can be made in this network without mediator assistance.

Communication Network of Orchid Area Development Policy field

Figure 4 shows the sociogram of the communications network structure among consortium members in the orchid area development policy field. The star agents

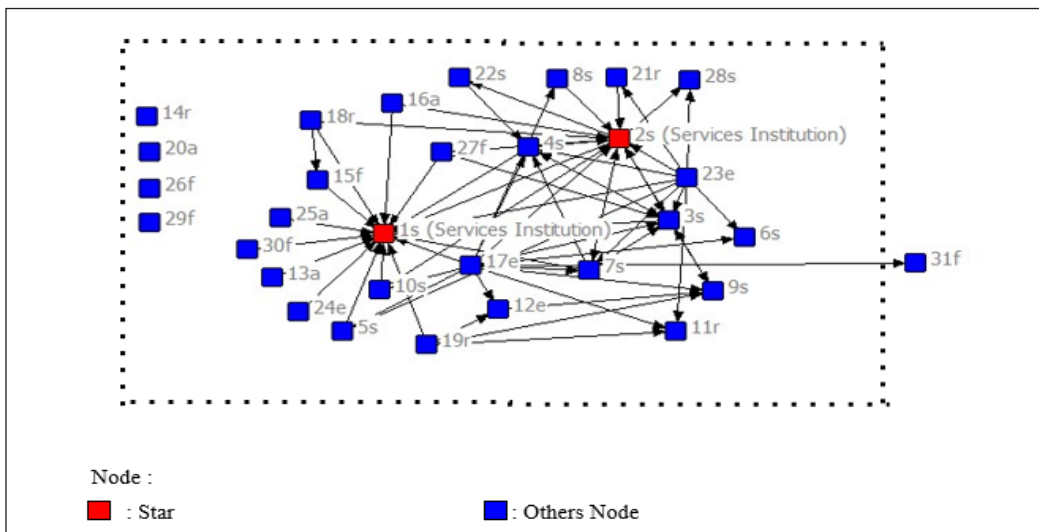


Figure 4. Communication network of orchid area development policy

on orchid area development are Agents 1 and 2 of the related orchid cultivation and post-harvest services organisation.

Node 1 is a Director of Floriculture and Post-harvest with a doctoral level education. The media that is widely used by Node 1 to communicate with other consortium members is the media for sending email and a mailing list, about three times a month.

Node 2 is the Head of the Sub-Directorate that handles orchid policy, with a formal education level of master's degree in agribusiness management. The media most widely used in communication with other consortium members is email, mailing list, SMS, and telephone. The frequency of the media use is 8 times a month for email and mailing list, and 8 times a year for telephone

and SMS. The information discussed consists of orchid area development policies, programs, support, and problems related to orchid area development.

Table 4

Centrality value of network communication on orchid area development policy field

Communication Network Analysis	Nodes	Variation Coofisien (%)	Indeks		
			Average	Maximum	Minimum
1. Local Centrality					
a. In Degree	1,2	50.9	2.7	17	0
b. Out Degree	17	93.7	2.7	29	0
2. Global Centrality					
a. Infarness	1	-	-	-	-
b. Ourfarness	17	-	-	-	-
3. Betweenness					
a. Mediator	2	7.27	-	-	-

Table 4 shows the centrality value based on the discussion topic of orchid area development policy in communication network.

Table 4 The stars of orchid area development policy field are Nodes 1 and 2 of the services organisation of the Directorate of Floriculture and the Post-harvest, which makes policies on orchid development in Indonesia. The identification results show that the information source in the field of orchid area development policy is a credible informant who has the information power and can act as an information source for other members in accordance with the functions of the represented organisation in policy development of floriculture.

Node 17 of UI has the highest out-degree value. She is the node who mostly keeps in touch with people in formulating

policies on orchid area development.

The variability range for out-degree is a relative high of 93.7%, while the in-degree is still a relative low of 50.9%. It means that the individual agent's power in this field is relatively more evenly distributed throughout the network. Directorate of Floriculture and the Post-harvest as a services organisation has disseminated the policy on orchid area development to stakeholders so that the information is properly spread to the other nodes in the network. The population of the orchid area development policy field is heterogeneous because the variability of in-degree is lower than out-degree. This means that the orchid area development policy is a common or public issue.

Networks centrality of the orchid area development policy in-degree has a

maximum value of 17 and a minimum of 0. While networks centrality of the orchid area development policy out-degree has a maximum value of 29 and a minimum of 0. This means that people who are considered the most prominent in the orchid area development policy networks in-degree has been linked to 17 other people, and the most prominent in the orchid area development policy networks out-degree has been linked to 29 people. Node 1 is the Director of Floriculture and Post-harvest the agribusiness organisations that handles orchid policy is the most prominent in the orchid area development policy in-degree and node 17 who mostly keeps in touch with people in formulating policies on orchid area development is the most prominent in the orchid area development policy networks out-degree.

The average out-degree and in-degree of 2.7 means that people who are considered in the orchid area development policy networks has been linked to 2 people. It means that the connectivity is low. The participants discuss the orchid area development policy only to the star, so the star's role becomes very important. The participants do not share much information or discuss the issues with other members, so there is no solid bond among members.

The global centrality of communication networks on orchid area development policy shows the in-farness of Node 1 and out-farness of Node 17. That means Node 1 of the orchid services organisation is the fastest contactable node while Node 17 of the University of Indonesia is the fastest

node in disseminating information.

The node that can act as a mediator in the policy field is Node 2 of the orchid culture services organisation. Even though the betweenness centrality index is low, 7.27%, connections can be made in this network without the mediator's assistance.

The identification results of the information centre of four orchid agribusiness fields show that the orchid consortium is built by credible informants who have the power of information and can play roles as information centres for the other members in accordance with the duties and functions of the represented organisation. Wahyuni, Sumardjo, Lubis and Sadono (2016), Zulkarnain, Lubis, Satria and Hubeis(2015), Anggriyani (2014), Cindoswari (2012), Rangkuti (2009) and Saleh (2006) found that the individuals who scored as stars in a communication network were the individuals who had experience and knowledge in certain fields, had a high education level, were willing to share knowledge, and were actively involved in social groups or organisations in their surroundings.

The population in the fields of orchid clonal propagation, orchid culture SOP, and orchid marketing are homogeneous, while the population in the field of orchid area development policy is heterogeneous. This means that the specific information is more centralised towards certain people who have the needed expertise. However, general information and information related to public policy are spread throughout each population. These findings are in line

with Cindoswari (2012), in that general information on cassava, such as fertiliser and harvest yield, is more decentralised in the population, while the specific information, like pests and diseases, is more centralised.

The Orchid Consortium performance based on the communication structure within each communication network shows that members can directly contact other members to gain information without the intervention of the mediator. This means that the consortium can act as coordination media for floriculture development in Indonesia. Thus the need for information on orchid clonal propagation, orchid culture SOP, orchid area development, and the domestic market can be met by stakeholders through the enlargement of access to mailing lists and emails in the orchid communication networks. Some studies on agribusiness communication shows different patterns of communication. In vegetable agribusiness, interactive communication among farmers, field advisors, and experts is not going well (Mulyandari, 2011). In cassava agribusiness, the communication is performed verbally and face to face (Cindoswari, 2012). In beef cattle agribusiness, despite a shift to communication by media, the organisation role is not optimal. Compared with those commodities, orchid floriculture is more adequate and more interactive among stakeholders.

Orchids are a commodity with a high economic value that can be an alternative source of income for communities. It is also has potential as the centre of economic development when supported by a strong

consortium communication network. The orchid agribusiness needs more attention and support from the government and other policy makers in order to ensure that orchid floriculture can be well developed and the Indonesian orchid will be popular at international level.

CONCLUSION

Every field group of orchid consortium has different stars based on the most important role within that particular population. The stars who play the most important role in each field are: 1) orchid clonal propagation: education and research and development; (2) procedure and policy: governmental service institution; and (3) marketing: agribusiness organisation.

Service organisation and education organisation are the agents who have the highest external communication, particularly since they can summon more network resources. They are also considered the most influential organisations, which means that those organisations are involved as facilitators and mediators in the organisational empowerment, attempting to increase the Indonesian orchid production, quality, added value, and competitiveness.

Based on population type, the homogeneous populations are orchid clonal propagation, orchid culture SOP, and orchid marketing. Only the population of orchid area development policy group is heterogeneous.

The range of overall degree variability is low because the coefficient of variation is still under 80%. There is an exception

for the external network local centrality of orchid area development, which has degree variability of 93.698%.

Based on the communication structure, the orchid consortium has been a good coordinator of the communication media because it was developed by very credible informants, and the network communication is direct without mediator assistance. This means that the Orchid Consortium can play the role as media coordinator in the floriculture development in Indonesia. To provide information on orchid agribusiness, such as clonal propagation, cultivation SOP, orchid area development, and domestic market, stakeholders must improve the network communication access in the consortium.

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