Network Embeddedness Factor in Farmer Silvicultural System

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Abstract. The decision of farmers to apply the silvicultural system is influenced by socio-economic and cultural factors. Many farmers use simple tree planting and maintenance patterns. Forest farmers have certain limitations in implementing forest plant cultivation systems, these limits include : 1) land tenure; 2) access to knowledge and 3) access to capital and markets. These limitations are thought to be closely related to the social network factor (network embeddedness). This study aims to reveal the relationship between social networks and the silvicultural system used by forest farmers, including local social networks, markets, capital and knowledge that shape silvicultural practices. The data collection technique used in-depth interviews with farmers, traders, wood sawmill and those involved in the value chain. This study uses a qualitative method using a case study approach. The case study was conducted on the community forest farmers group in Dukuhdalem village, Kuningan District, West Java Indonesia. The results showed that silvicultural practices carried out by farmers were closely related to social networking factors. The form of social networking in the study area is an over-embeddedness pattern where the network structure. This network has an important role in making decisions about silvicultural methods. The "external" social network has not been effective in forming a strong tie due to the "pseudo" relationship between farmers and their external network. The pattern of over-embeddedness network structure has formed a simple silvicultural system which causes the incentives for forest products to be relatively low.

Keywords: Silvicultural System; Farming; Farmers; Forest

1 Introduction

Local people have certain cultivation pattern. This also applies to the pattern of planting and maintaining trees which are generally carried out in a simple manner. Sources of seeds obtained from nature, land preparation is done by burning and slashing, planting by making planting holes where this pattern generally does not have maintenance except cleaning weeds at the beginning of planting. The choice of a silvicultural system in a forest area is highly dependent on the direction and purpose of the stand formation, biophysical factors of the area, technology and knowledge that can be accessed by managers, economic considerations of business and depends on socio-cultural aspect related to its management [1]. People or local communities have diverse silvicultural patterns, although the more general trend of the pattern used is agroforestry. The decision of forest farmers to apply a certain silvicultural system is due to socio-economic and cultural factors that surround it. Forest famers have certain

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limitations in implementing forest plant cultivation systems, these limits include: 1) land tenure limits; 2) limitations on access to knowledge and 3) limitations on access to capital and markets. Therefore, forest farmers tend to adapt the silvicultural system according to their socio-economic and cultural conditions. From the aspect of land tenure system, forest farmers have implemented forestry business through two pattern, namely business on private land (people's forest) and business on state forest through social forestry programs. These two land tenure pattern have varied plant compositions with different silvicultural system techniques.

Irundu et al [2] stated that today's, community forests are mostly managed without regard to modern silvicultural techniques systems. The majority of community forests are managed by monoculture or mixed systems, although there are some community forests whose management uses an intercropping system. The understanding of farmers in managing their land, the community forest can become a promising source of income for the livelihood of community forest farmers. Meanwhile, Rizal et al [3] stated that several things became obstacles in optimizing the use of community forest land, including: the lack of public understanding of cultivation techniques such as setting cropping patterns, spacing and choosing plant species. In some places the performance of the folk silvicultural system has not shown optimal results and practices. As studied by Pratama et al [4] stated that the management system in community forest was categorized as moderate and not very good, from the aspects of planning, organization, maintenance, marketing and the overall management system. Social networks and farmers livelihood patterns are thought to have a close relationship that cause the form and pattern of the silvicultural system of community forest cultivation. Social networks can provide sources of knowledge, markets and factors of production such as land and capital. Based on this information, it is necessary to conduct research on the silvicultural system of the people from the perspective of social networks and local livelihood systems. This study aims to reveal information: 1) what are the forms of social networks in forest farming in the study area using an agroforestry pattern; 2) how are social networks related to the silvicultural system used by forest farmers including local social network, markets, capital and knowledge that shape silvicultural practices.

2 Methodology

This study aims to reveal the relationship between social networks and the silvicultural system used by forest farmers, including local social networks, markets, capital and knowledge that shape silvicultural practices. This study have a research question is how are social networks related to the silvicultural system used by forest farmers including local networks, markets, capital and knowledge that shape silvicultural practices. The data collection technique used in-depth interviews with farmers, traders, wood sawmill and those involved in the value chain. This study uses a qualitative method using a case study approach. The case study was conducted on the community forest farmers group in Dukuhdalem village, Kuningan District, West Java, Indonesia.

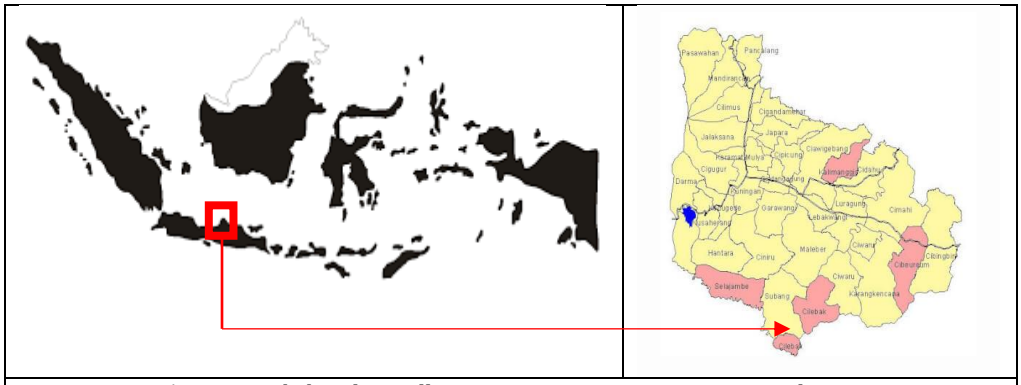

Figure 1. Dukuh Dalem Village, Kuningan District, West Java, Indonesia

3 Result and Discussion

In the economy of rural communities, timber has a unique household economic position. Several research in community forest locations, reveal that rural communities, give a position to timber in their household economy as “savings” or assets that can be used for larger purposes in their household needs such as the cost of celebrations/ party for circumcision children and weddings, school fees including registration fees and supporting cost such as uniforms and school supplies, the cost of building a house, cost to buy production equipment or other interest such as buying a motorcycles, as well as costs for other purpose such as investment in agriculture, land purchases and so on. In Dukuhdalem village, there has been a shift in the position of timber in the household economy. Currently, timber is positioned as “daily economy” or income earned to be used for daily/ short-term needs such as family food needs and daily living expenses. Community forest farmers in Dukuhdalem are dominated by farmers who position of timber as an economic support for their daily needs if these daily needs can no longer be met from income from crops, rice fields, income from trading, farm labour income, construction workers, harvesting workers and other income. The positioning of timber as a support for daily economy is influenced by several factors including the area of land ownership, mixed farming patterns (agroforestry), tree regeneration systems. Dukuhdalem farmers generally have narrow agricultural land consisting of rice fields and land (gardens). Not all farmers own paddy fields, but most of the farmers own land which is planted with secondary crops, fruit crops and perennials (timber).

Silvicultural is an activity related to the control of the formation, growth, composition and quality of forest vegetation in accordance with its management objectives, thus silviculture is based on a basic science that studies the interaction of plants with their environment or silvica, so that the treatments given in silvicultural practice will always following basic principles that are universal while the silvicultural treatment itself can be local [5]. Agroforestry systems are also included in the silvicultural system. Matthews [6] mentions that the agroforestry system is a variant of clear-cutting with artificial regeneration assisted by deliberately planted agricultural/ animal fodder crops. According to Nugroho, Siswahyono, Hidayat [1] in Indonesia this system has been implemented since the Dutch Colonial era where agricultural crops were planted at the time of planting teak to eliminate weed growth.

At the study site, the silvicultural system applied was simple. The cultivation pattern uses an agroforestry system with natural regeneration techniques, without intensive maintenance. With narrow land ownership with mixed farming/ agroforestry patterns, the number of tree in the garden is relatively small in the pattern of intercropping systems for crops and fruit crops. With this condition, tree with various ages are positioned as an economic support for daily needs because the number of tree harvested each year is only small, especially for farmers who use selective logging patterns. This type of farmer sells of tree to "middlemen" for two to four of tree with the highest age variation having the largest diameter class in the garden unit. The price obtained varies depending on the size of the diameter of the tree that is sold, ranging from IDR100,000 to IDR150,000 per tree which is sold using an above-ground sales system. This sales system puts the burden of harvesting and transportation on wood traders/ middlemen. Although the price is sold at a relatively low price, the proceeds from the sale of this wood have an important meaning for the survival of farmers in fulfilling their daily household needs.

Dukuhdalem forest farmers do not have much "outside" social interaction. Like most small-scale farmers, Dukuhdalem forest farmers rarely have a wider outreach network. They only rely on social relations around them for both socio-cultural interests and economic activities such as production, distribution and consumption. This small land farmer, does not invest much time in developing outward relationship. This small land farmer, does not invest much time in developing outward relationships. Their time has been spent on life fulfilment activities which are mostly spent in the garden. For the purpose of trading garden products, they rely on "inside" social networks that have strong ties due to kinship lines or "close neighbours" including their relationship with local middlemen. There is no patron who dominates the circulation of farm products as is generally the case in rural communities because many farmers also work as intermediary traders where they buy garden products and resell them to larger middlemen. Almost half of the Dukuhdalem farmers are trading garden products. This relatively large number makes the pattern of patronage not applicable in the trading system of agricultural products. Farmers as producers and at the same time as traders in large number make the trading pattern "unbinding". Farmers have many trade channels to their internal relations (trader farmers) around them. This trade relationship mainly accurs in agricultural commodities in the garden system, including bananas, cassava, taro, chilies and other secondary crops. Meanwhile, the timber sales pattern generally uses an "external" network that has weak ties because it has no kinship or "close neighbour". This external network consists of traders or middlemen from outside the village as well as middlemen who have sawmills in Dukuhdalem village, which are mostly owned by entrepreneurs outside the village. As described by Granovetter [7] in [8] in his explanation of the act of embeddedness in relations at the micro level, that action is embedded in concrete personal relationships so that the network exists in the structure of relationships embedded in the actors.

Dukuhdalem farmers do not have many external networks that influence their community forest farming practices, so the silviculture they apply is relatively simple. Although these farmers are accompanied by NGO's and facilitated by the West Java provincial government to obtain timber legality verification system (SVLK) certification, this network is temporary and is "elitist" in nature where the process of network formation is only at the level of the head and administrator of the farmer group. After obtaining the SVLK certificate, social relations from this network are no longer intensive and even disappear. So that farmers social network with NGO's/ Provincial Forestry Service are temporary in nature and have not increased the knowledge of farmers in community forest farming.

The practice of tree silviculture is not influenced by external networks but internal networks in the form of networks between neighbours that have strong ties. A strong network of neighbours has an influence on community forest farming practices. For example, the decision to select a new crop species such as the Sengon Solomon species which is spread among farmers as a result of social relations within from one farmer spreads to other farmers. The application of agroforestry community forest cultivation patterns is influenced by this internal network so that it becomes a common practice applied by community forest farmers in Dukuhdalem. The application of natural regeneration systems, non intensive maintenance pattern, agroforestry land processing and timber product regulation system based on needs (cutting by household needs) are farming practices that result from internal relationship between farmers that form a system of local knowledge and habits. The knowledge system originating from this internal network is a collection of strong ties that are connected to each other and form a network pattern of over-embeddedness.

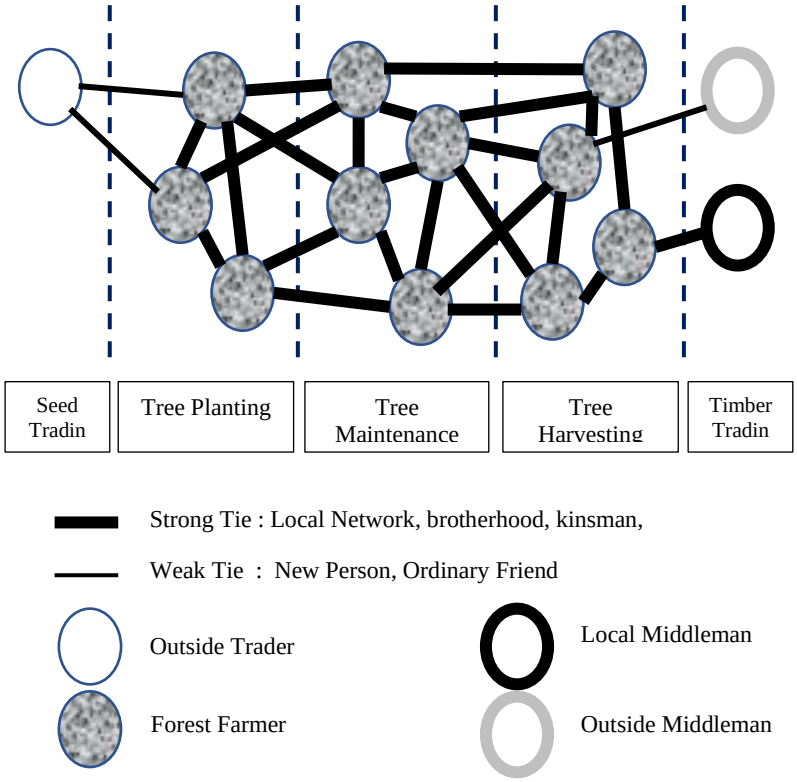

Figure 2. Network embeddedness by Dukuhdalem Forest Farmer

Granovetter and Sweddberg [8] classifies two forms of social networks, namely relational embeddedness and structural embeddedness. Relational embeddedness is an economic act that is socially situated and embedded in ongoing personal social networks among actors. Relational embeddedness refers to the pattern of relationships between individuals (dyadic personal relationship) [9]. The concept of being socially situated has the meaning that economic action occurs in economic activity related to other actors. For example, economic action in customer relationship between sellers and buyers is a form of relational

embeddedness. In customer relationships, interpersonal relationships occur between sellers and buyers that involve various socio-cultural, religious and political aspects of their lives. Customer relationships occur because of asymmetric information)information imbalance) between sellers and buyers so that buyers need to do a clientization, which is a reciprocal process in a symmetrical, egalitarian and oppositional relationship [10]. While structural embeddedness he defined as the relationship between this dyadic group with individual or a wider group. The wider network of relationship can be institutions or social structures. In economic activities, we can see structural embeddedness between producers and consumers in buying and selling activities. If the consumer or buyer wants to get goods from the producer or seller then he must issue an amount agreed upon by both parties. If a group has both forms of social network then the group is not only able to disseminate economic information but also form a social and cultural structure which in turn is seen as having a strategic position in economic exchange.

At Dukuhdalem, relational embeddedness (dyadic relationship) plays an important role in forming the structure of the network (Structural Embeddedness). This Structural Embeddedness will form a network structure that has a pattern of being over-embedded. In the farmers silvicultural practice, relational embeddedness forms a pattern of over embeddedness where strong ties dominate in the process of social exchange. No new network (weak tie) was formed in forest silvicultural practices and timber trade. Farmers have an local network with strong ties that are dominant and form a pattern of over embeddedness. Networks with over embeddedness patterns affect how silviculture is applied among them. The structure of over embeddedness causes farmers' silvicultural knowledge and practice to not develop much. This also applies in the trading network, so that farmers do not have incentives for their certified forest products (SVLK).

4 Conclusion

The form of social networking in the study area is an over-embeddedness pattern where the network structure has an important role in making decisions about silvicultural methods. The “external” social network has not been effective in forming a strong tie due to the “pseudo” relationship between farmers and their external network. The pattern of over-embeddedness network structure has formed a simple silvicultural system which causes the incentives for forest products to be relatively low.

References

[1] Nugroho Putranto, Siswahyono, Hidayat. Model Pembangunan dan Sistem Silvikultur Hutan Tanaman Rakyat Berbasis Sosio Ekologi Tempatan Guna Peningkatan Kesejahteraan Masyarakat Sekitar Hutan Kabupaten Seluma, 2009.

[2] Irundu D, Arafat A, dan Rahmania. Nilai Ekonomi Langsung Berbagai Sistem Pengelolaan Hutan Rakyat di Desa Mirring, Kabupaten Polman, Sulawesi Barat. Jurnal Hutan dan Masyarakat. Vol 10(1): pp. 185-191, 2018.

[3] Rizal A, Nurhaedah dan Hapsari E. Kajian Strategi Optimalisasi Pemanfaatan Lahan Hutan Rakyat Di Provinsi Sulawesi Selatan. Jurnal Penelitian Sosial dan Ekonomi Kehutanan. Vol 9 (4): pp. 216-228, 2012.

[4] Pratama RA, Yuwono BS dan Hilmanto R. Pengelolaan Hutan Rakyat Oleh Kelompok Pemilik Hutan Rakyat Di Desa Bandar Dalam Kecamatan Sidomulyo Kabupaten Lampung Selatan. Jurnal Sylva Lestari, Vol 3(2): pp. 99-112. 2015.
[5] Wilarso. Sri. Penerapan Multisistem Silvikultur pada Areal Hutan Produksi (IUPHHK) di Indonesia, Tinjauan Aspek Teknik Silvikultur. Prosiding, 2008.
[6] Matthews, J.D. Silvikultur Systems. Clarendon Press. Oxford, 1992.
[7] Granovetter, M.*"Economic Action and Social Structure:* The Problem of Embeddedness. J American Journal of Sociology", Vol. 91, pp. 481-510, 1985.
[8] Granovetter, M., & Sweddberg, Richard (edit). *The Sociology of Economic Life.* Granovetter, M., & Sweddberg, Richard (edit). Boulder, San Francisco, Oxford (US): Westview P, 1992.
[9] Achwan, Rohman. Sosiologi Ekonomi di Indonesia. UI Press, Jakarta, 2013.
[10] Damsar, *Pengantar Sosiologi Ekonomi*. Jakarta (ID): Kencana Prenada Media Group, 2009.