

Analysis of Sendang Agropolitan Area Development, Tulungagung

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Abstract The purpose of this study is to analyze the development of Sendang Agropolitan Regency, Tulungagung, East Java. We also explain the strengths and weaknesses in the development of Sendang Agropolitan, to be a concern for Tulungagung Regency to follow up the issue. This study used analysis tools of *Structural Equation Modeling* (SEM). Data collected from respondent in Sendang Regency, Tulungagung. The results show the strong affecting factors are work ethic, the availability of natural resources, availability of facilities, social organizations (the network), and adequate number and variety of infrastructure and facilities to support system development and agribusiness. Otherwise, weak affecting factors are income/ productivity, the impact caused by the available natural resources, accessibility to facilities, regulations/norms and potential resources and the environment. The results of this study have empirically proved the basic framework on the theory of Agropolitan development which attempts to integrate human resource capability and utilization of natural resources by increasing its additional value and artificial resource (*man-made capital*) and *social capital* that will enhance the ability of the region in the implementation of development.

Keywords Agropolitan, Human resources, Artificial resources, Social resources, Natural resources

1. Introduction

Agropolitan development becomes crucial in the context of regional development, considering: (1) region and the sector were developed appropriate to the local uniqueness; (2) agropolitan area development improved the equity considering selected sectors are the base activities of community; (3) sustainability of regional and sectoral development becomes more certain due to the chosen sector has competitive advantage compared to others; (4) the determination of Agropolitan center related to the system of national provincial, and district centers, to create a harmonious and balanced regional development [1].

Agropolitan is a farming county that grew and developed as the system passes agribusiness and able to serve and support agricultural development activities (agribusiness) in surrounding area. Agropolitan is an integrated government program that is implemented across sectors between the Ministry of Agriculture, Ministry of Settlement and Regional Infrastructure, and the Ministry of Internal Affairs and Regional Autonomy. This program is intended to establish

Agropolitan area that based on agribusiness of livestock, crops, food crops and horticulture [2].

The successful of regional autonomy implementation is highly dependent on the ability of local finance, local human resources, and the regional ability to develop all potential within the autonomy region. Centralized and qualified human resources in large cities can be distributed to smaller regions in line with the implementation of regional autonomy, because the construction activities will be shifted from central to regional. Exploration of potential resource area is highly prioritized, with the aim to increase local revenue that is based on the principles of justice and independence that will ultimately improve the welfare of the community.

Such efforts could be realized by combine the capabilities of human resources (*human capital*) and the use of natural resources (*natural capital*) to increase the additional value, artificial resource (*man-made capital*) and *social capital* that will enhance regional ability in the implementation of development. These four aspects of these resources will be optimized by concerning the empowerment efforts of local community to support rural financial market towards rural institutions strengthening [3].

The gap between urban, rural areas and rural poverty has pushed development efforts in rural areas. Nevertheless, the development approach of rural areas often separated from

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the urban area. This has resulted in the development process, i.e. the urban bias of rural areas which was originally intended to improve the welfare of the rural population areas turned oppositely, rural potential in terms of human resources, nature, and even capital that flow into the urban area [4, 5, 6].

The fact has been proved and aware us on the crucial strategic role of agricultural sector as a pillar or the main base of the national economy in the response against more severe crisis impacts. Smallholder agriculture sector as well as small and medium enterprises relatively resilient in the face of economic crisis and save our country from a more severe situation. Agriculture sector, small and medium enterprises relatively resilient against economic crisis and recover our country from a more severe situation. In addition to the partnership approach and network strengthening, it would also synergized with the approach of value improving on the production of small businesses which market or export-oriented appropriate to economic competence of local region [7].

Agropolitan area is defined as an area of regional agribusiness or selected agricultural production centers, where there is a farm county (Agropolis) as the agribusiness service centers that serve, encourage and support agricultural area and surrounding areas development [8-12]. Region requirements to be developed into an Agropolitan area are: land resources with appropriate agro-climate to develop marketable agricultural commodities (prime commodity), has adequate agribusiness infrastructure (markets, financial institutions, institutional farmers, Integrated Counseling Center, technology application assessment, accessibility and agricultural inputs), have adequate social facilities (health centers, school, etc.), public facilities and have sufficient infrastructure (transport, electricity, telephone, water) and assured environmental sustainability [13].

Terms and goal of Agropolitan is decentralization and autonomy authority in managing the resources of the region. It can be achieved if Agropolitan development coordinated vertically. On that basis, the district becomes the administrative thresholds for Agropolitan regional development. This is related to the tendency of public administration that realizes the greatest autonomy at Local Government District/City. Restrictions relations with outside Agropolitan territories can hamper Agropolitan economic sustainability. Horizontal coordination is needed between regions that have similar commodity/products with the same market area. For example, cooperation on the inter-regional production planning aligned the producers with consumers to create price stability. Selection of less prime commodity in an area also needed to minimize *land reform*. Commodity that has the potential and received more by public requires

minimal rearrangement of agricultural lands. Equitable development and welfare improvement of the rural population is expected to be achieved by the Agropolitan development [14].

Tulungagung is an East Java district that has predominately (42,44%) livelihood of farmers [15]. Supporting natural conditions and resource made agriculture as one of the primary commodity for regional economy and as the locomotive of development in Tulungagung. However, agricultural activities is limited to the cultivation and support of natural resource potential, and has not been followed up by processing and marketing. Potential agricultural sector in Tulungagung can be used as capital for regional development if managed optimally. Based on these considerations, Tulungagung government made agricultural sector as a focus in development. Agriculture developed further by predetermined Sendang District as Agropolitan area according to Regents Decree No. 524 of 2004. Agropolitan development concept is done through the efforts and consideration to create integration, not only in the cultivation (*on farm*) but also includes the development of agribusiness and supporting services. The activities that developed in this agropolitan area is in horticulture and dairy farm activities [16].

Encountered problems in the development area of Tulungagung Agropolitan are the utilization of prime product that has distinguished competitiveness especially unoptimized agribusiness products. Strong commitment from the local government to build supporting facilities is to accelerate sustainable Agropolitan development. Agropolitan is the concept of rural development that integrates regional development and community empowerment. Less developed community empowerment is a development concept that promotes participation and partnerships that lead to the people development. Agropolitan based on the concept of regional development with emphasis on infrastructure, institutional, entrepreneurship, and capital development.

In developing the Agropolitan concept in Tulungagung needed specific policies and strategies to strengthen the results of conducted research. Internal problems of Tulungagung Agropolitan include unoptimal supporting infrastructure, the government's role constrained to limited funding, and people in the region is not ready in developing Agropolitan region.

This study aimed to analyse the Sendang Agropolitan development, Tulungagung reviewed from human resources, natural resources, artificial resources, facilities and infrastructure, and social resources as basic problems solving that exist in the site of Sendang Agropolitan development area.

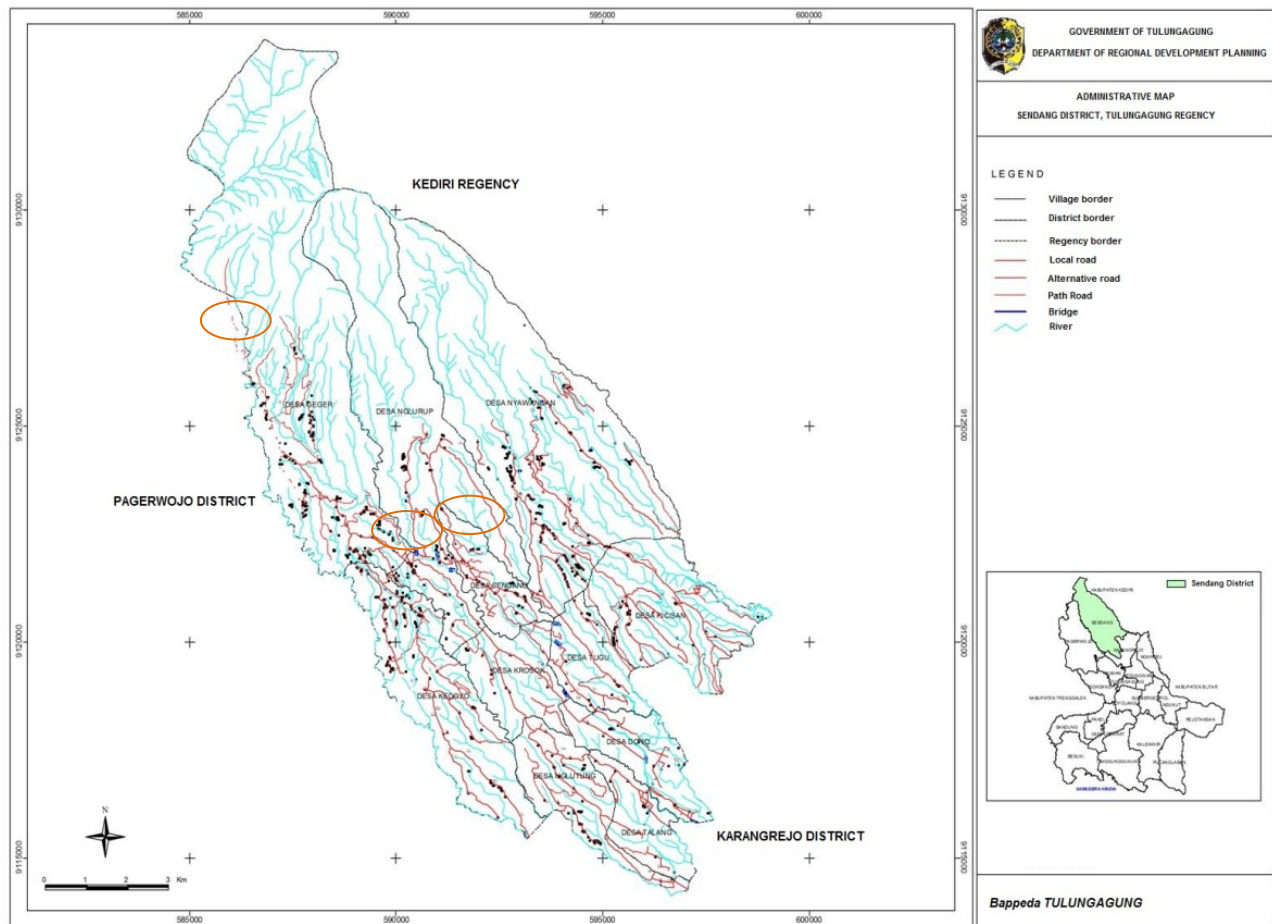


Figure 1. Sendang Agropolitan Study Area [19]

2. Materials and Methods

The study analyzes the development of Sendang, Tulungagung Agropolitan area by *mixed method* approach (quantitative and qualitative methods) [17]. Quantitative approach was done to obtain an overview of human resources, natural resources, artificial resources, facilities and infrastructure, and social resources in Sendang Agropolitan area. Otherwise, qualitative approach was done to gain description clarity of the resource on Sendang Agropolitan. Period of this study is four months (April-August 2013) by involving four field personnel to engage interview to respondents.

2.1. Study Area

The site was selected by *criterion-based selection* method, i.e. selection based on specified criteria to ensure certain events actually attempted to achieve information completeness [18]. This study conducted in Sendang District, Tulungagung, East Java Province. We use Regent Decree No. 524 of 2004 as a basic consideration. The sample villages are Geger Village, Krosok Village and Tugu Village. Agropolitan activities in Sendang District are concentrated in these three villages (Fig. 1).

2.2. Data Collection

Quantitative data obtained from households respondents in the study site by questionnaire. Otherwise, qualitative data were from three community leaders as the key person to the problems by interviews. Sampling technique (respondent) is a method to determine the sample size according to Solimun [20]. This study used 18 indicators with 90 respondents (village communities) as subjects. Total respondents from three villages are 270 respondents (villagers).

2.3. Data Analysis

This study uses analysis of *Structural Equation Modeling (SEM)* to assess the models structurally and the effect of exogenous variables, i.e. human resources (X_1), natural resources (X_2), artificial/infrastructure resource (X_3), and social resources (X_4), to exogenous variables of Agropolitan Area Development (Y). We also tested the correlation between the four exogenous variables. All variables in this study are *unobservable (latent variable)*, which mean the variable cannot be measured directly via the indicator, but it must be analyzed by *Confirmatory Factor Analysis (CFA)*.

Stages in the SEM analysis are [21, 22]: (1) the development of theory-based models. Development on a series theoretical model of scientific exploration was

conducted by literature review to obtain a theoretical justification for the developed model; (2) development of flow charts. Theoretical models that have been built previously described in a path diagram, to make it show a clear causal relationships. In the diagram, the relationship between the constructs will be expressed with arrows. Straight arrows indicate a direct causal relationship between the constructions, while curved lines with arrows on each end showed inter-construct correlation. Measurement of the relationship between variables in SEM named *structural models*; (3) Goodness of Fit criteria evaluation; (4) assessment on the SEM model assumptions; and (5) assessment on the structural model.

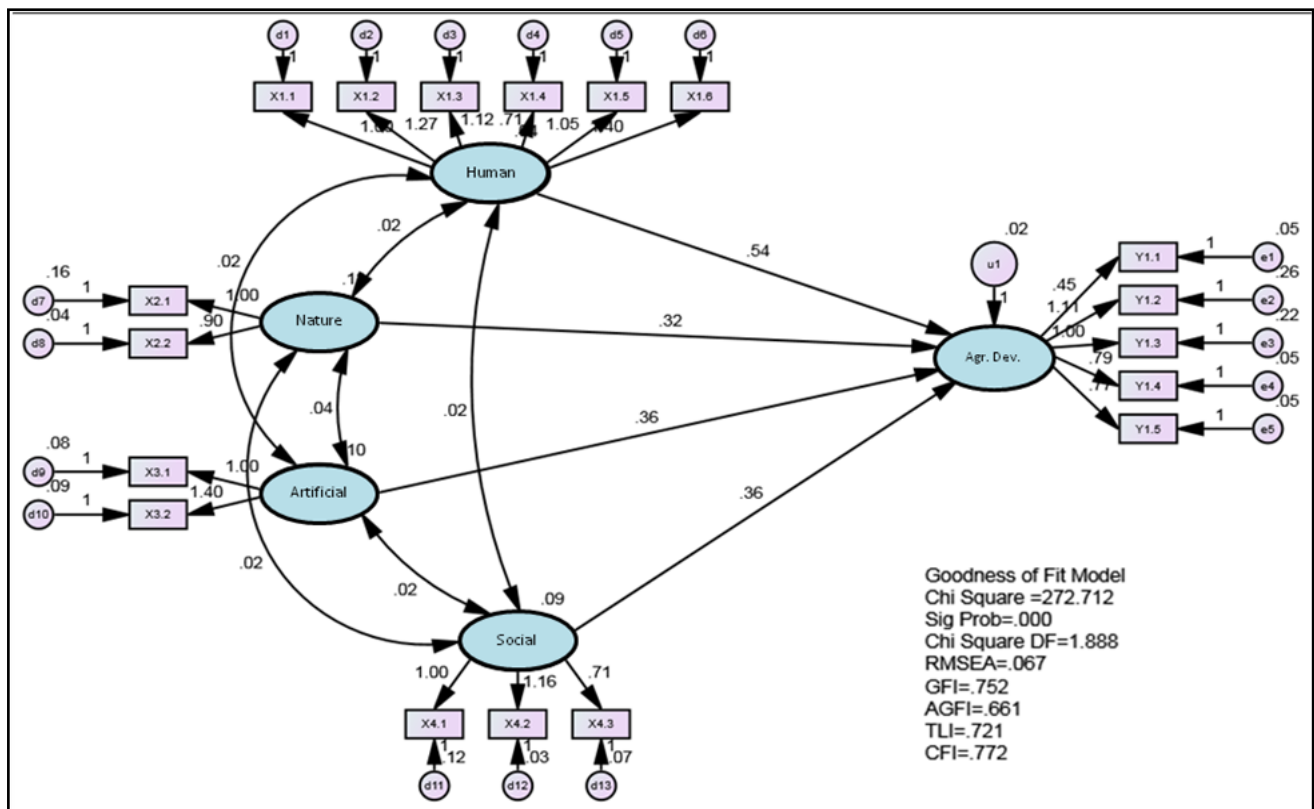
3. Results and Discussion

The results of the *goodness of fit overall model* of this study were described in Table 1. Goodness of Fit overall on

almost all criteria showed poor models. However, the value of the *Root Mean Square Error of Approximation (RMSEA)* and *CMIN/DF* for 0,067 and 1,888 have met the *cut off value* that is smaller than 0,08. Therefore, the model is suitable and feasible to use. The depiction of the model is showed in Fig. 2.

Table 1. Assessment Result on Goodness of Fit Overall Model

Criteria	Cut off value	Test Result	Model Category
Sig Prob	≥ 0.05	0.000	Poor
Chi Square/DF	expected small	1.888	Excellent
RMSEA	≤ 0.08	0.067	Good
GFI	≥ 0.90	0.752	Poor
AGFI	≥ 0.90	0.661	Poor
TLI	≥ 0.95	0.721	Poor
CFI	≥ 0.95	0.183	Poor



Description: Agr. Dev. (Agropolitan area Development): Y_{1.1} Potential/capacity of natural and environment resources; Y_{1.2} The number and variety of infrastructure and facilities are adequate to support system and agribusiness development; Y_{1.3} The number and variety of adequate public infrastructure and facilities; Y_{1.4} The number and variety of infrastructure and facilities of social welfare (health, education, recreation); Y_{1.5} Environment conservation (natural resources, social cultural and harmony relations between rural and urban area). **Human Resources:** X_{1.1} Knowledge; X_{1.2} Skill; X_{1.3} Competence; X_{1.4} Work ethic/social; X_{1.5} Income/productivity; X_{1.6} Health. **Natural Resources:** X_{2.1} natural resources availability; X_{2.2} Impact of existing natural resources. **Artificial Resources/infrastructure and facilities:** X_{3.1} Facilities accessibility; X_{3.2} Facilities availability. **Social Resources:** X_{4.1} Trust; X_{4.2} Social organization (Network); X_{4.3} Custom or cultural Regulation (Norm)

Figure 2. Analysis of Sendang Agropolitan Development, Tulungagung

The high coefficient in SEM analysis illustrates the power of indicators to Agropolitan development. The strong indicators are $X_{1.4}$ (work ethic/social), $X_{2.1}$ (resource availability), $X_{3.2}$ (facilities availability), $X_{4.2}$ (social organization/network) and $Y_{1.2}$ (number and variety of adequate facilities and infrastructure to support the development and agribusiness systems). According to the criteria of Agropolitan, a feasible region for Agropolitan are: (1) has sufficient carrying capacity include suitability of soil and agro-climate; (2) have prime processed agricultural commodities, (3) the area's width and residents must meet the economies scale requirements (ideally with a radius of up to 10 km and involved villages of one to three different districts); (4) have accessible production facilities to local community; (5) has a strong economic institutions of local communities; and (6) have adequate access to economic resources for local communities [8,23-27].

The weak indicators in development of Sendang Agropolitan are indicators of income/productivity ($X_{1.5}$), the impacts of existing natural resources ($X_{2.2}$), facilities' accessibility ($X_{3.1}$), custom or cultural regulations ($X_{4.3}$) and the potential of natural resources and environment ($Y_{1.1}$). That implies that community in Sendang with the program of Agropolitan development still not getting the maximum benefit. It is characterized by the same income/productivity with the period before the program. Sendang Community is basically cattle ranchers. They were expected to get a line with the regional development program, i.e. to alter Sendang land use as horticultural areas. Agricultural counseling is not maximal. It leads to non optimal development region into horticultural area. Therefore, people have not got the additional value of the program. This is contrary to Habibah *et al.* [28], that suggested the Agropolitan program could improve the welfare of society. So we suggest Tulungagung Government to optimize the agricultural counseling and conduct knowledge transfer to the community of Sendang area about horticulture cultivation.

Human resource is the strongest variable in determine the development of Sendang Agropolitan. The most powerful indicator of human resources is work ethic/social while indicator of income/productivity of community becomes the weakest indicator. The variable of natural resource is the weakest aspect in the development of Sendang Agropolitan, where indicator of natural resource availability becomes the most powerful indicators. Otherwise, impact indicator that caused by the presence of existing natural resources became the weakest indicator. This result implies that the community of Sendang Agropolitan basically already has a good ability to develop Sendang Agropolitan. This area should concern to the available natural resources, especially the sustainability of the available potential natural resources within the area. Habibah *et al.* [28] stated that the presence of Agropolitan will reduce poverty and improve the welfare. However, it would requisite the work ethic within the Agropolitan program in Malaysia. Parmawati *et al.* [29] described that Agropolitan in growing areas of Batu City has a specified human capital and natural capital only

supported the plantation area. But it was completed by financial, social and physic capital.

Accessibility to the existing facilities is still very weak. Accessibility in this study concerns the public accessibility to education, health, and the utilization of natural resources that exist in the Sendang area, and accessibility to available infrastructure. Supporting facilities (e.g. education, health, infrastructure and production facilities) is already available in Sendang Agropolitan area. However, Sendang people preferred travel to Tulungagung to meet their needs in spite of fewer facilities. Although the population has a lower willingness to travel, accessibility is a key factor that affect their decision to visit the city center. Accessibility is crucial factor for Agropolitan function of an area. Rodrigue [30] stated that the high accessibility in Agropolitan area improved the welfare of farmers and increased production of the Agropolitan area. Parmawati *et al.* [29] also stated that good accessibility to the area led to higher natural capital compared to physical, human, financial and social capital. If a capital or resources of Agropolitan is not optimal, it means they need improvement or addition to create absolute accessibility.

Norms is a set of rules that expected to be obeyed and followed by members of the community in a particular social entity. These norms are usually institutionalized and contain social sanctions that prevent an individual to do something that deviates the prevailing custom in the community [31]. The results showed a weak application of norms or regulations. Whereas norms is a part of social resource that will greatly assist the development of agropolitan if properly executed. However, the government socialization for Sendang community is lack on regulations that related to the area development. In addition, less participation of community leaders in composing the rules (norms) related to natural resource management, which regulated social sanction for rules violation. Social resources is also a crucial element in improving the welfare of society. Salleh [32] explained support of social norms/culture is an ideological element of contemporary Malaysian traditional welfare system, which consists of a coherent society family with strong mutual support between family members. They assumed harmonious society formed by cooperation between various ethnic, races, gender and class groups. This social norms will greatly support in improving the community's welfare by the kinship system.

However, Saravanamuttu *et al.* [33] argued that the family structure and relationships change entities rather than static. Economic growth, industrialization, urbanization and modernization has led to major changes in family relationships and the concept of existed social norms. Parents were more bound to nature and agriculture. But globalization, modernization and industrialization have led to a paradigm shift among youth. Consequently, this led to a huge wave of urbanization (or emigration to developed countries) to seek a better living and higher incomes. Suprihanti [34] explained that social norms in society of Sleman district, Yogyakarta reduced along with

modernization and globalization. The government is trying to regrow social norms among farmers by alter the region into agropolitan and agro-tourism area to improve the economy of Sleman community's.

This study have empirically proved the basic framework of the theory of agropolitan development which attempts to integrate human resource capabilities (*human capital*), the use of natural resources (*natural capital*), artificial resource (*man-made capital*) and *social capital* that will increase the implementation of development. This study has analyzed the effect of these four resources to the development of Sendang Agropolitan Area, Tulungagung. The most affecting factor is human resources, followed by artificial resources, social resources and natural resources respectively. The improvement strategies for Sendang Agropolitan Area are to maintain the strong factors while the weak factors used as a reference to more optimal development.

4. Conclusions

Human resource is the most powerful aspect in the development of Sendang Agropolitan, followed by artificial resources, social resources, and natural resource respectively. The strong indicators in development of Sendang Agropolitan are work ethic, availability of natural resources and facilities, social organizations (network) and the number and variety of adequate infrastructure and facilities to support the system and agribusiness development. Otherwise, the weak indicators are income/productivity, impacts caused by the available natural resources, accessibility to facilities, regulations/norms and potential resources and environment. Unoptimal utilization of natural and environment resources in the Sendang Agropolitan area is one causal factor that led to the less successful of Agropolitan development programs. Another causal factor is the lack effort of government in socialized the Sendang Agropolitan area to the local community.

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