

Smart Village Development

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Abstract

Smart Village Sustainable Development (1)

Innovation, creativity and productivity in rural areas are generally limited by human resources, funding and technology. High poverty in rural areas in Indonesia reach 13.47% (bps.co.id). This condition caused difficulties to the community's development, especially an improvement of their economy and welfare.

One of the efforts that can be done to overcome these problems is through the development of Smart Village. Smart Village is an ecosystem consisted of various elements to improve the community's quality of life and the village environment involving various stakeholders such as the government, private companies, academics and the village community's elements.

This research aims to review the concept of Smart Village development and practices in Indonesia by using one case study from the development concept to the implementation. In details, the study seeks to:

- i. review the theory and concept of Smart Village development,
- ii. identify components or elements of Smart Village,
- iii. review the Smart Village development practices, and
- iv. formulate the strategic recommendation of Smart Village development.

A case study data was obtained from Lingsar Village, West Lombok Regency, Indonesia. The analysis will be done with descriptive analysis approach.

Finally, the paper covers a case study of small village and information to support the practice of smart village implementation. The initiative will be useful as a reference for rural development science.

Keywords

Smart Village, innovation, development

1. Background

Rural areas are susceptible to various social, economic, and environmental impacts at local, national and global levels. By the end of 2015, the ASEAN Free Trade Area (AFTA) and Asia Pacific Economic Cooperation (APEC) policies have a significant impact to the Indonesian economy, especially in rural areas where the main economic sector is agriculture.

BPS data of 2017 noted that during January - February 2017, imports of various vegetables reached 148,216 tons, with a value of US \$ 148.58 million, an increase compared to 2016 in the same period of 120,258 tons (detik.finance.com March 20, 2017). The entry of various imported products in the agricultural sector, causing the competitiveness of agricultural products will be high. Villages as producers of agricultural products are required to compete through various innovations so as not lost the competition by the import market.

Innovation, creativity and productivity in rural areas are generally limits by human resources, funding and technology. Welfare problems in rural areas are still high. The number of poor people in the village is still high compared to urban areas. High poverty in rural areas in Indonesia reach 13.47% (bps.co.id, 2017). This condition caused difficulties to the community's development, especially an improvement of their economy and welfare. Limitations of education, health and agricultural services also worsen conditions in rural areas.

The Indonesian government is currently applying the concept of "*nawacita*" in regional development. The concept prioritizes the development of rural areas. Various Efforts have been made to improve the welfare and the economy in rural areas, but many obstacles are faced by the government. According to the Village Ministry (2015), although economic development in particular in the production sector has been intervened through the development of science and technology, but institutional reforms still face constraints in farmer groups such as Village Unit Cooperatives/*Koperasi Unit Desa* (KUD) or Village-owned enterprises/*Badan Usaha Milik Desa* (BUMDes).

Based on the above problems, it is necessary to develop various innovations in rural areas, one of them is by developing smart village. Smart village is an ecosystem consisting of various elements to improve the quality of community life and village environment, involving various stakeholders such as government, private, academics and elements of village communities.

Smart villages can be developed with the support of infrastructure, facilities, and information technology. This will improve resource management, increase the value-added of rural products, and improve the efficiency of sustainable rural development. According to Skhula (2016), smart villages will not only bring internet connections to rural areas but will also support sustainable farming practices. The concept of smart villages can be an alternative to the development of rural areas in today's global era

2. Goals and Objectives

This paper aims to review concept of smart village development and its application in Indonesia. In this review, a case study will be taken at Lingsar Village, West Lombok District, which has implemented the concept of smart village development. From these goals there are several objectives:

- i. review the theory and concept of Smart Village development,
- ii. identify components or elements of Smart Village,
- iii. review the Smart Village development practices, and
- iv. formulate the strategic recommendation of Smart Village development

3. Study Benefits

The paper covers a case study of smart village and information to support the practice of smart village development. The initiative will be useful as a reference for rural development science.

4. Methodology

The writing of this paper is conducted by secondary literature / data collection, ie literature on smart village theory and concepts, and literature related to smart village practices. The method of analysis in this paper is descriptive qualitative analysis using secondary data

5. Literature Studies

Smart villages are designed as new ideas in develop village potentials and resources. The concept of smart village can not be separated from the influence of the development of smart city concept. The concept of smart villages is formed from the demands of innovative

rural development, from conventional development model to development with the use of technological advances and information system. Smart Village is expected to address the challenges of sustainable development and can provide benefits to poor communities in rural areas (Holmes and Thomas, 2015). Smart villages can provide opportunities for communities, governments and others to build better villages by exploiting their potential and resources.

The concept of smart village development basically uses the local potential of villages, infrastructure, village resources, and the opportunities of interaction with urban areas.

5.1 Definition of Smart Village

According to Somwanshi et al (2016) smart village can be defined as a collection of efficient and effective services for rural communities, both at home and at their place of business. Another smart village definition by Shukla (2016), smart village is a village capable of mastering information about its citizens, available resources, services and schemes, and also knowing what is needed and when needed. From the two definitions above can be seen that the smart village is a village that is able to identify, know, and provide various needs and services for the village community to improve the quality of life.

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5.2 Ecosystems and Smart Village Components

Smart village is an ecosystem consisting of various components. According to Viswanadham (2010) smart village ecosystem consists of SME network, farmers, employees, central government, provincial government, local government, industry, social and political, infrastructure, logistics, information technology, communication services. Smart village are also affected by resources, which include human and financial resources. Each component in the smart village is integrated with resources to ensure the provision of services for a village.

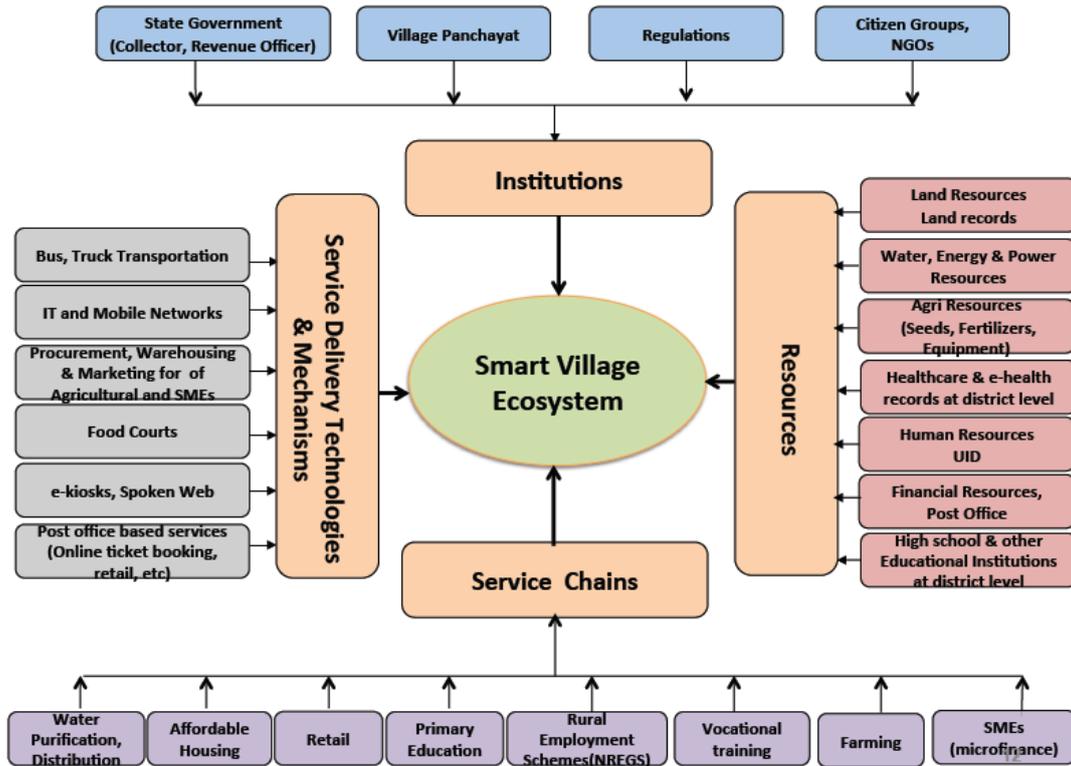


Figure 1. Smart Village Ecosystem (Viswanadham, 2010)

Concept of smart village (in the adaptation of Viswanadham model, 2010).

- Smart farmers: individual farmers and groups who are able to make the best decisions,
- Smart Communications: able to communicate and obtain information by utilizing ICT facilities, and make various adjustments with various changes / phenomena in accordance with the needs of farmers.
- Smart Institutional: Formal and informal institutional regulations to control the conditions of farmers.
- Smart facilities: Building / hardware and software

6. Lingsar Village Case Study

6.1 Lingsar Village Profile

Lingsar Village is one of the villages in Lingsar District (*Kecamatan*), West Lombok Regency, Lingsar Village is the Capital of Lingsar District. The land is fertile with irrigated rice fields. Each year can plant rice 2 times and 1 time planting crops. Lingsar village currently has

an area of 355 ha. Lingsar Village is a superior village because it is a National Champion Village in 2016. Lingsar village can be categorized as smart village because it has fulfilled 4 requirements of smart village, that is smart institution, smart resources, smart service and smart technology.

Smart Institution

The organizational structure of the Lingsar Village Government consists of *Kepala Desa* (Village Leader) who oversees the village secretary, the three heads of affairs (head of administration, finance and planning), 3 sections (general government section, welfare section and public service section) and a number of *kepala dusun* (hamlet Leader).

In carrying out its duties and functions, the Village Leader is accountable to the community and gives accountability information to the Village Consultative Board/ *Badan Permusyawarahan Desa* (BPD) and submits the report on the execution of duties to the Regent through the District Leader/*Camat*.

The organizational structure of the Lingsar Village government is quite complete and well suited to the development needs of Lingsar Village. Every head of affairs and secretary has a clear and well-functioning. Human resources in each section is quite good. Coordination and synergy between each section works well.

Lingsar Village government also supported by Village Consultative Board/*Badan Permusyawarahan Desa* (BPD), Family Welfare Development/ *Pembinaan Kesejahteraan Keluarga* (PKK), Village-owned enterprise/*Badan Usaha Milik Desa* (BUMDes) and youth organizations (*Karang Taruna*).

Lingsar Village Consultative Board (BPD) consists of Elders in Lingsar Village that serves to maintaining traditional culture, make village regulations, accommodate and channel the aspirations of the community and supervise the implementation of Lingsar Village Government

Family Welfare Development (PKK), is a community organization that empowers women to participate in village development. PKK programs include mutual cooperation, food, clothing, housing, education and skills, health, livelihood development, environmental sustainability and healthy planning

Youth organizations/*Karang Taruna* is a forum for the development of the young generation, which grows on the basis of awareness and sense of social responsibility of the community, especially the younger generation. Youth organizations in Lingsar Village are quite active in improving people's economy, green park management, tourist villages and cultural preservation.

Village-owned enterprise (BUMDes) is a village business entity formed and managed by the village government to strengthen the village economy. BUMDes includes efforts such as service business, distribution of nine basic economic goods, trading of agricultural products, small production units and people's crafts, manpower distribution, kiosk and village market management etc.

Resource

Lingsar village is a fertile village dominated by agricultural land with technical irrigation, which can be cultivated paddy 2 times and one time vegetables (*palawija*) in one year. Lingsar village also has an abundant water source, besides being used to irrigate rice fields, abundant water is also used for fishing activities. Some people also use the land for livestock activities, especially chickens, goats/sheeps and cows.

Lingsar village has tourism potential such as *Sarasuta* Pool, Lingsar Park, *Malean Sampi*, and war attractions

Sarasuta pool is one of the tourist sites in Lingsar Village, this pool site has not been managed optimally, *Surasuta* pool located in West Lingsar Hamlet. Lingsar Park is one of the cultural tourist sites visited by many tourists, both domestic and foreign. Lingsar Park is a cultural heritage of the kingdom of *Anak Agung Karang Asem* Bali

Another potential tourist attraction in Lingsar Village is *Malean Sampi* (Cow Race). One of the declining traditions in Lingsar Village. *Malean Sampi* is a cow race conducted by the village community.

Topat War, it is one of the traditions in the Lingsar Village to celebrate the differences that exist in the village of Lingsar. The Lingsar Village area has a water surplus that allows its citizens to cultivate freshwater fish. It can be a tourist attraction for fishing or harvesting fresh fish directly.

Technology

Information technology in Lingsar Village was developed based on Lingsar Village Regulation No. 09 of 2016, in the form of web site, blog and radio. The content in the web site includes village profiles, village history, village organization structure, village news, village potential, legal products in the form of village regulations, village libraries and information on the Village Consultative Board (BPD). Although not yet perfect but this web information system is good enough in providing village information and community services.

Beside the web, Lingsar Village also has community radio, which routinely conveys village development news, community welfare, education, health, village infrastructure development and community empowerment

Service to the community

The service to the community in Lingsar Village is quite complete and good. Public service activities include general services, population administration, licensing, and non-licensing.

6.2 Analysis

Lingsar Village has 4 smart village components, namely smart institutional, smart resources, smart service and smart technology. These components have been working well and are able to encourage Lingsar Village to become an advanced village, so that in 2016 won championship of the National Village Competition.

The success of development in Lingsar Village is inseparable from the leadership of the Village Leader, who has a good vision and is able to operationalize and empower all community components to realize the vision. At the beginning of his leadership, the Village Leader attempted to increase the competence of the village human resources and the improvement of organizational culture in the Village Office.

Development of competence of village officials is done through training in appropriate with the position and main task of each village officials. In addition, the village leader also clarified the job descriptions of each village officials.

The guidance of organizational culture is done directly by the Village Leader through enhancing coordination, cooperation and synergy between parts of organization. The

development of organizational culture is intended to improve the efficiency and effectiveness of the organization in realizing the vision and development plan.

Village Leader make efforts to improve communication with all related parties such as Village Consultative Board (*BPD*), Family Welfare Development (*PKK*), Youth organizations (*Karang Taruna*), Village-owned enterprise (*BUMDes*) and society in general. The efforts of the Village Leaders have an impact on improving the performance of village officials, related institutions and community participation in development.

Village Leader makes efforts to improve the utilization of information technology such as website, blog and community radio. The technology is used to inform village development potentials and plans. Web site also informs the development budget plan and development report in a transparent manner. Such information disclosure creates public trust in the village government which further encourages the community to voluntarily participate in various village development programs.

The village leader also facilitates the increasing role of BPD in village development, through the development and improvement of infrastructure and facilities of the BPD office. These efforts have been able to encourage increased productivity of BPD. Various village regulations have been created by BPD such as village regulations related to income and rural development costs (*APBDes*), Standard Operating Procedure (*SOP*), park management and Tourism Village, increasing village income, institutional, education, health, IT utilization, cultural preservation, security enhancement and increasing the role of *BUMDes*.

The existence of these village regulations is very useful in improving the development of Lingsar Village, especially in the development of social, cultural, economy and village infrastructure.

The Lingsar Village Development Process as a smart village can be described as follows

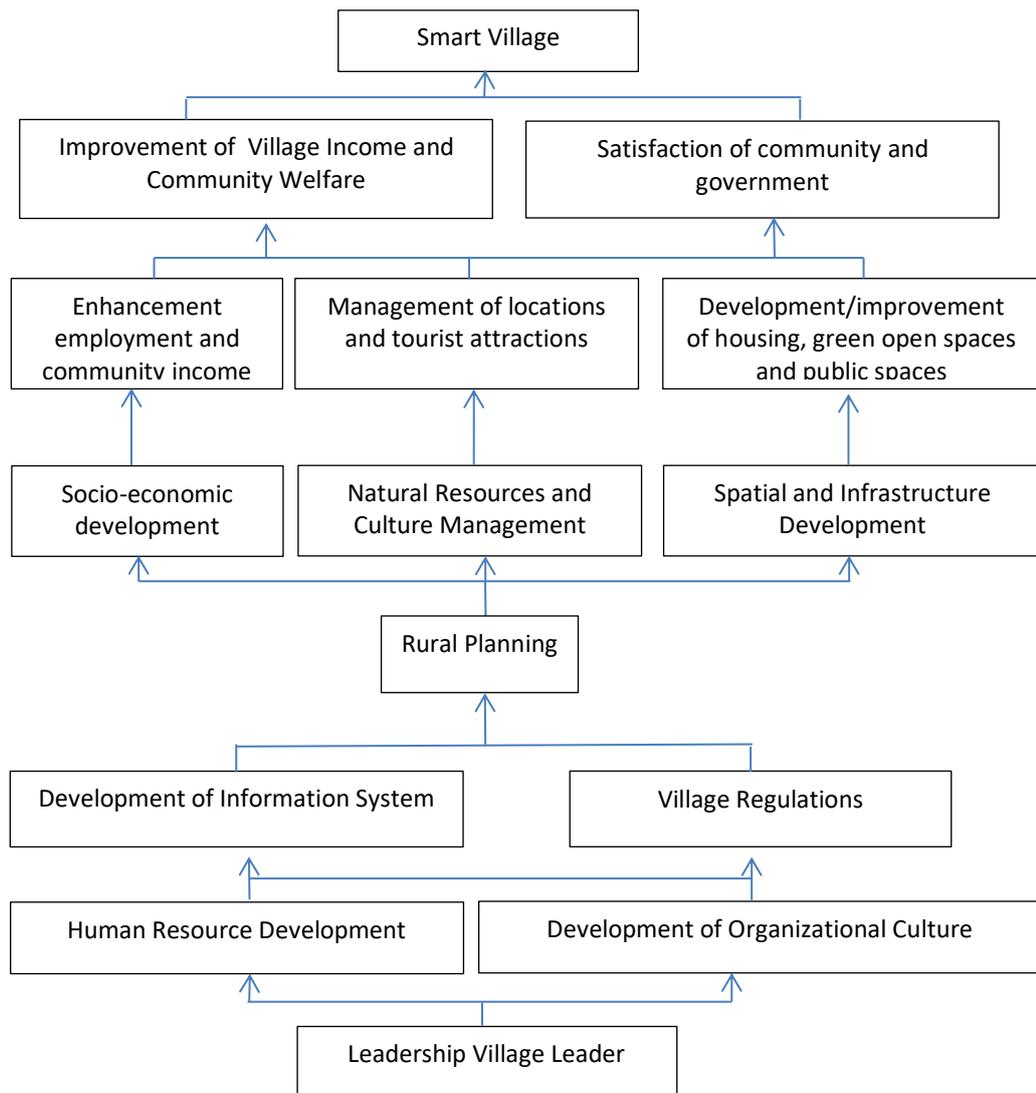


Figure 1. Smart Village Development Process

Development of Lingsar Village as a smart village is determined by the role of village leader. The process of development begins with improvement of human resources and organizational culture, improvement of information systems and various village regulations, especially village plans.

Good village planning and organization, encouraging effective implementation of village development such as spatial and Infrastructure, natural resources and culture,

improvement of housing, green open spaces, public spaces, tourism, employment and community income.

The success of development in all sectors, encouraging improving incomes and people's satisfaction, including satisfaction of the district, provincial and central government.

7. Conclusions

Based on the above information and analysis can be concluded:

- i. Lingsar village can be categorized as smart village by smart institutions, smart resources, smart service and technology
- ii. Development of Smart Village in Lingsar Village is determined by the leadership of Village Leader. He has a good vision, a good village plan and strategy, implement the village plan well, control of village development well, and transparent in development cost.
- iii. The Village Leader is able to empower all parties to participate in organizing village development plans and strategies.

8. Recommendation

The success of smart village development and community welfare in Lingsar village can be an example for other villages development, through:

- a. empowerment of village government, especially Village Leader,
- b. enhancing the role of district / provincial / central government in smart village development, and
- c. strengthening business participation and higher education in rural development.

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