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Development of village as a smart village— A critical review

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ABSTRACT

“The Future of India lies in its villages” Mahatma Gandhiji. A smart village knows about its citizen, available resources, applicable services, and schemes. It knows what it needs and when its needs. The concept of the smart village makes the villages self-sufficient in respect of their needs. It will encompass a sustainable and inclusive development of all sections of the village community so as they enjoy a high standard of living. This paper presents the development of the village as a smart village by providing the basic facilities in a hasty manner from past literature. We make smart villages by taking a smart decision using smart technologies and services. The result of this paper gives the better rural development of smart villages in India.

Keywords— Smart village, IoT, Smart waste management

1. INTRODUCTION

In India there are 600000 villages out of them 1, 25,000 villages are backward so there is a need for designing and building the village as a smart village. With modernization and urbanization, people migrate from one place to another place for different facilities such as education, employment, and affinity of people towards the locality or City. The village is the main criteria for the development of the nation. So, develop the village in such a way that which is self-dependent in providing the services, employment and well connected to the rest of the world i.e., smart village. The smart village corrects social oversight by providing accommodations for sustainable family relationships without disturbing the lifestyle of different generations. The vision of smart village is that modern energy access can act as a catalyst for development in education, health, productive enterprise, clean water, sanitation, environmental sustainability and participatory democracy which helps to support further improvement in access to energy. Initially, the concept of development of villages is of Mahatma Gandhi i.e., swaraj and Suraj village. But nowadays it is newly termed as a smart village. We know that India is a developing nation, with the help of smart village we can India as an SS nation. Now-a-day, our government also gives a strong focus on a smart village. Government implements so many schemes on smart villages.

2. LITERATURE REVIEW

2.1 Honorable Neman B. Rice (1998) ^[1]

In this paper have written by a former mayor of Seattle, this article describes the smart growth movement as a way to sustain the livability of a large urban center in the twenty-first strategy. It mainly describes problem facing urban areas experiencing population growth, traffic, rising housing prices, and scarcity of open spaces. The smart growth movement seeks to address these problems in a cost effective and environment-friendly manner. Specifically, it seeks to do so through increased citizen participation in development decision a constructive dialogue regarding the development of individual neighborhoods. Ultimately the goal of the movement is to make urban areas more attractive to live and work in, creating both investment and jobs. This article describes some of the community sacrifices required by the movement, including and the separation of the middle and upper-income households from the urban poor, low-density residential neighborhoods, dependence on the automobile.

2.2 Pallavi Tak Rai (2012) ^[2]

Cities of emerging economies are their engines of growth, because if villages serve to agriculture and allied activities, then cities to the industry and service sector. In the expansion of cities, the absence of proper planning and preparedness, the challenges and repercussions of this haphazard growth become more evident and serious. The paper deals with the analysis of the problems associated with rapid urbanization, and seeks a possible and practical solution in the form of townships, for such cities. They will reduce the pressure on the local governing bodies and the city resources. Understanding and acknowledging the role and importance of these townships in the development of sustainable cities, the emerging economies have special policies in order. India is one such country where four states, Gujarat, Karnataka, Maharashtra and Rajasthan, have their own township policies. The objectives are to create intelligent cities, with smarter plans, better-built environment and happier.

2.3 Fan Tongke (2013) ^[3]

In this study, they concern the issues arises in agriculture, countryside, and farmers which have been always hindering China's development. The only solution to these three problems is agricultural modernization, they introduced the cloud computing technique and internet of things into agricultural modernization to solve the problem. China's agricultural development gave attention in the development of the agricultural information which trend development for world agriculture and achieve the remarkable result in the projects like "every village" "golden agricultural project" "three dian project". They applied the cloud computing method in planting management, an estimate of productivity, control and trace of the farm, monitoring plant growing. And implement the IoT technology in the modern farm for modernized the agriculture to make it efficient. They concluded by use of cloud computing and IoT convert agriculture as smart agriculture to develop the agriculture infrastructure in China.

2.4 Norizan Abdul Razak, Jalaluddin Abdul Malik, Murad Saeed (2013) ^[4]

The present study aimed to investigate the Malaysian smart village project in a rural community which is labeled as kg besting in Malaysia. Specifically, the study intended to address the major issues faced by the community of farmers, identify the smart village indicators and put forward a strategic plan for the smart village implementation. Data analysis of the major issues faced by the farmers in this community in agriculture is limited involvement of human capital in agricultural activities, the small size of land and limited knowledge of using technologies to enhance agricultural processing and production. That the study emphasizes the importance of meeting the community needs in Kg besting and offers several useful recommendations. In conclusion, by incorporating the concept of smart village, it considers potential smart village as an innovative means of improving rural people life and it introduces a strategic implementation in three phases; social empowerment, the developing the village ecosystem and economic empowerment.

2.5 Yann Glouche, Paul Couderc (2013) ^[5]

In this paper, they propose a smart bin application based on information self-contained in tags associated with each waste item. The waste tracked by smart bins using an RFID based system without requiring the support of an external information system. RFID tags are used to improve current waste management processes. It improves the quality of selective waste sorting. With associating a physical waste with digital information by the smart waste approach. As a final, they provide a new solution to enhance waste collection efficiency using the RFID technology. The reported information about the content of each bin is also a way to compute statistics of each waste in the recycling process. This approach can also help to better plan waste collection and special intervention by operators in case of abnormal conditions.

2.6 Saansad Adarsh Gram Yojana (2014) ^[6]

On 11th October, the birth anniversary of Loknayak Jaya Prakash Narayan Ji, following the footsteps of Gandhi, we intend to translate the concept of gram swaraj into reality through Saansad Adarsh Gram Yojana. The SAGY will keep the soul of rural India alive while providing physical amenities to enable freedom of choice to shape their own destiny. The scheme is unique and transformative as it has a holistic approach to rural development. It envisages integrated development of the village across multiple areas such as agriculture, health, education, sanitation, environment, live hoods etc. it seeks to not only provide physical infrastructure and access to basic amenities but also improve the standard of living, enrich social capital and building community spirit. These are the ingredients that will make sure long-term positive change and sustainability of this changes.

2.7 Mr. Milind R. Hegade, Mr. Sachin R. Kuber, Mr. Pankaj P. Sathe. Mr. Ranjit R. Mote, Mr. Rohan R. Bhosale (2014) ^[7]

In this paper deals about the giving ideas from smart cities to the smart village. They introduce the android application to know all information directly to the farmers for example recruitment process, notification of government schemes etc., this application centralizes the management system such as ration, labor, tax payment, dairy product, and notifications. The user can access the application in a smartphone by use of WI-FI, 3G or 4G lite. They developed a new system which can reduce all hard work to zero and yielded a good result.

2.8 Heri Sustanta, Trias Aditya, Retno Astrini (2015) ^[8]

Developing smart cities requires many types of information, including geospatial information. This information serves as the base data from which other data will be referenced upon. To obtain information on the geospatial information availability in Indonesian cities, a survey has been carried out nationally from April- July 2015, as part of research on spatial data infrastructure. 90 cities/districts participated in the survey. The findings show the majority of the cities/districts have limited availability of large-scale topographic maps and land parcel maps to develop the smart cities.

2.9 Dr. Milind Kulkarni (2015) ^[9]

In India, the major populations still live in villages. A lot of work needs to be done in making the villages clean. There is a different aspect of the clean village such as water supply, sanitation, indoor air quality, solid waste management and renewable energy etc., all these aspects have different alternatives associated merits and demerits with a lot of work is required to be done. The paper discusses all this aspect with reference to Maharashtra and India. This discussion plans to give important inputs and alternatives to policymakers so that they can redirect and reformulate the policy. Engineering students can design and implement projects of clean and smart villages which will help in their skill development. At the end of this paper, they given the recommendations for the efficient making of the clean and smart village.

2.10 Ramachandra T. V, Ganesh Hedge, Subhash Chandran M. D, Tejaswini Ananth Kumar, Vishnumayananda Swamiji (2015) ^[10]

In this research paper, the term of Smart village is self-reliant manpower appropriate rural technologies. They formed the framework system consists of technology, institution, sustainability and resources to develop the village infrastructure under *Sansad Adarsh*

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Gram Yojana (SAGY) Scheme initiated by the Indian government. The vision of SAGY to make at least one gram panchayat as an ideal panchayat from each Member of Parliament constituency every year. In this paper they elaborate about Ragihalli village which is Ragihalli gram panchayat of Bengaluru urban district is adopt under SAGY program by Shri Ananth Kumar, Member of Parliament. In this village implement the smart village framework as department wise to improve the quality of people in that village.

2.11 Tejas Bangera, Akshar Chauhan, Harshdedhia, Ritesh Godame, Manoj Mishra (2016) [11]

This paper elucidates the research and implementation by IoT based smart village. It created to enable paths to connect anytime, anywhere, with anything and anyone ideally. Wearing linkitone devices is all in one prototyping board for IoT wearable devices, integrating GSM/GPRS features into a basic arc to create a significant development unit. In a form factor. This device is a co-design production by a seed studio and mediate. It brings together two-way duplexing techniques into the open hardware and industrial leading reference designs for iot/wearable to create a significant development.

2.12 Dr. Pritesh Y Shukla (2016) [12]

In this paper, they focus on improved resource- use efficiency, empowered local self-governance, access to assure basic amenities and responsible for individual behavior to build a vibrant and happy society in the village. They discussed the government scheme *Saansad Adarsh Grama Yojana* which is to be develop village as smart with appropriate technology and internet connectivity. And they recommended the awareness programs to improve the agriculture, employment, nutrition security in the village. Finally concluded as the overall development of the country can be possible with the development of villages only.

2.13 Mr. Nayan Kakadiya, Mr. Purvang Kumbhani, Mr. Bhautik Bhatt (2017) [13]

In this study, the Gujarat government has launched the project entitled with “*Vishwakarma yojana*” – an approach towards rurbanisation, which has been undertaken by Gujarat technological university. The rurbanisation is to provide urban elements to the rural areas. Chansad village is allotted for the updation of urban elements in this project. Primary and secondary Survey data were collected based on UDPFI guidelines and according to the GAP analysis for the village and suitable designs. There are some recommendations and suggestion to develop a sustainable village. That concludes, this scheme mainly implemented for preserving the “soul of villages” by providing all the civic and infrastructure facilities available in big town and cities to arrest the migration process.

2.14 Roshini Pandey (2017) [14]

Mahatma Gandhi national rural employment guarantee act (MGNREGA) is an employment guarantee scheme enacted by legislation on August 25, 2005. it is a social security employment act which guarantees employment to the poor rural people in India. The main aims to remove the extreme poverty and at making villages of country self – sustaining through productive assets creation. The agenda is to provide 100 days of employment to all adults in every village to do unskilled manual work. The role and impacts of MGNREGA act in employment generation, economic and infrastructure development of rural India. As they concluded, this act monitors the implementation of the scheme in a large number of states and it reduced the overall poverty is visible.

3. CONCLUSION

Smart village needs development for both rural and urban areas for better livelihood and information technology will offer an effective solution. The major problems in Indian villages are unemployment, agriculture, and migration to urban areas and it can be overcome by smart ideas. Each village is a unique example and having a diverse set of problems solved by smart technologies available, which have been implemented in the rural area. The village becomes self-dependent and contributes towards the development of the nation. This smart village concept is having high replication potential in other countries of the developing world. It may also be extended to small towns and townships surrounding the big cities.

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