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A Survey Paper on Impact of Information Technology on Development of Rural Area of India

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***Abstract*—**Human society is developing with a rapid momentum and achieved various successes for making always a better livelihood. The civilization is witness for various changes related to its development through different catalysts like industrial development, green revaluation, science and technology, etc. India has more than 72% of its population living in villages. Near about seven decade had been passed since India got freedom, but the scenario in villages in our country is still unchanged. On one side India has recently selected 100 cities for Smart City project and ready to adapt all the advanced technologies for these smart cities and on other hand villages in our country are still struggling for getting basic amenities like 24 x 7 electricity. On the other hand 4G internet technology is being utilized all over the urban areas but on other hand villages in our country are still searching for genuine mobile networks. Our Governments are joining hands with developed countries like America, China, Japan to run bullet trains to connect big cities in India whereas villages in our country are still disconnected and are lacking with basic facilities like drinking water, healthy food, sanitization, toilets, transportation, education, etc. The technology that we use here can be availed to the people living in rural areas to help in improving their lifestyle. This paper summarizes such efforts which can definitely help us to introduce various technologies in these neglected parts of our country fulfilling our responsively to build up our nation. Thus new concept of smart villages can be introduced to make heaven in the heart of our India, because real Bharat is recognized by the villages in our country.

***Keywords*—** Information Technology, Rural, Smart Village.

I. INTRODUCTION

Human society is developing with rapid momentum and achieved various successes for making its livelihood better. The civilization is witness for various changes related to it's the development through different catalysts like industrial development, green revaluation, science and technology, etc. The present era is augmented on Information and Communication Technology. This technology has proved its potential in various sectors of development in urban and rural landscapes. Urban areas are seems to more inclined to accept and adopt Information and Communication Technology due to advantages of literacy and better infrastructure as compared to rural areas. Due to such suitable situations of urban landscapes good amount of success of this technology is visible in the form of smart cities and better livelihood of residing human beings. But the problems, consequences and opportunities in urban areas are different for effective utilization of Information and Communication Technology for sustainable development of rural masses. The present research article discusses about rural development in developing world for the up-liftmen of livelihood. The driving motivation behind the concept on **"**Smart Village**"** is that the technology should acts as a catalyst for development, enabling education and local business opportunities, improving health and welfare, enhancing democratic engagement and overall enhancement of rural village dwellers. The "Smart Village" concept aims to realize its goal through providing policymakers with insightful, bottom–up analyses of the challenges of village development.

A rural area is a geographic area that is located outside cities and towns, while rural areas are also known as 'village' in India. In these villages, agriculture is the chief source of livelihood along with fishing, cottage industries, pottery, etc. Much of India's rural population lives in nucleated villages, which most commonly have a settlement form described as shapeless agglomerate. India being a rural dominated country, the smartness concept is not even thought about the rural areas. All areas which are not categorized as urban area are considered as rural area.

It is growing fact that the rural population is suffering more consequences for livelihood as compared to urban areas. The difficulties of livelihood may be forcing rural population to migrate to the urban areas. The government has already recognized this issue and has put serious efforts through various schemes for enhancing livelihood of rural masses. Presently, rural development mainly focuses on poverty

alleviation, better livelihood opportunities, provision of basic amenities and infrastructure facilities through innovative programmes of self-employment. The population residing in the rural area also needs the same quality of life as enjoyed by people living in sub urban and urban areas. Better livelihood in rural area may reduce disturbing effects of poverty, unemployment and inadequate infrastructure on urban centres causing slums and consequential social and economic tensions. Hence, rural development is concerned with economic growth and social justice, improvement in the living standard of the rural people by providing adequate and quality social services and minimum basic needs becomes essential. Such rural development not only improve livelihood in rural area, but also may reduce the migration of rural population in urban areas for employment and reduce pressure on urban infrastructure. Such changes are not very uncommon for human beings as human civilization has passed through various phases of development. Some of the milestones, which are witness to this development, are Prehistoric age, Stone Age etc.; the current era of human development is quit ahead and popularly known as "Smart age". Human beings are using smart phones, smart TVs and live in smart homes. The concept of smartness is popular in respect of human development irrespective of rural or urban area, literate or illiterate in all the countries and India is not exception to it. Like many developing countries, India too is a rural dominated country. Though, the awareness of the smartness concept is well recognized by the planners and policy makers, but not effectively implemented for the rural areas.

In recent times, there is an immense interest in the development of Smart Cities [3]. Making a city "smart" is emerging as a strategy to mitigate the problems generated by the urban population growth and rapid urbanization [4]. Globally, the concept of 'Smart City' is a significant initiative that seeks to improve the quality of life of urban citizens. The smart city initiative is having good potential for urban development and India has also recognized this potential and is at the edge to start implementing this concept. This will facilitate better living for about 30% of the population, who live in urban area. But, more than half population will not be benefited from smart city development. Conditions in rural area are very different as compared to urban, so the same model of smart city cannot be implemented for the villages. The efforts of rural development may not work on the same principle as of smart city. Hence, utilization of Information Technology, which has proved its potential for the development, may be used for rural development through a concept of "Smart Village". The Smart Village concept will be based on the local conditions, infrastructure, available resources in rural area and local demand as well as potential of export of good to urban areas.
In the Indian context, villages are the heart of the nation. Hence, for the development to percolate to the grass root level, focus must be devoted to the progress of villages and to smarten the rural population using ICT solutions.-sustainability. One of the main consequences of uncontrolled urbanization is lack of livelihoods, good standard of living and amenities in the villages of India. Smart village concept may play crucial role in maintaining the balance between the development of rural and urban areas and help to reduce migration of rural population in urban areas. Urban population density is increasing in uncontrolled manner, while the numbers of cities are still inadequate to accommodate the migrating population from villages. This needs to be reversed and suitably managed to improve quality of life in Indian cities. The concept of "Smart Village" will also address the multiple challenges such as under-development of villages, better standard of living etc.

II. NEED FOR SMART VILLAGES

The village communities are little republics, having nearly everything that they want within themselves, and almost independent of any foreign relations [5]. In the development process, there will be many changes in the demand and supply of various needs, as rural population will pass through the process of change. At present, one of the major challenges in India is growing population and rapid urbanization. This needs to be reversed and suitably managed through a balance between rural and urban quality of life. The concept of "Smart Village" will address the multiple challenges faced for sustainable development of rural India.

A "Smart Village" will provide long-term social, economic, and environmental welfare activity for village community [6], which will enable and empower enhanced participation in local governance processes, promote entrepreneurship and build more resilient communities. At the same time, a "Smart Village" will ensure proper sanitation facility, good education, better infrastructure, clean drinking water, health facilities, environment protection, resource use efficiency, waste management, renewable energy etc.

There is an urgent need for designing and developing "Smart Village", which are independent in providing the services and employment and yet well connected to the rest of the world. Based on various programs undertaken taken by Central and state governments along with further technological initiatives, the Smart Village can achieve SMART infrastructure, SMART service delivery, SMART technology and innovation, SMART institutions along with optimal mobilization and utilization of available resources, leading to faster and more inclusive growth. A 'Smart Village' will encompass a sustainable and inclusive development of all sections of the village community, so as they enjoy a high standard of living.

IV. TOWARDS DEVELOPMENT OF SMART VILLAGES

It is clear that the situations and challenges in developing urban and rural area are different due to the constraints and opportunities. Many researchers believe that the existing technologies developed for the smart city may be useful for the smart village concept. Researchers [6] reported that the Smart village system can be developed on the lines of smart city model. The components taken in to consideration will vary from region to region for villages, based on the available resources and opportunities. Following are some generalized guidelines for the development of Smart Villages (Fig. I):

1. Economic Component: This component will include local administration and economic factors. It will cover governance models, bandwidth, mobility, cloud computing, entrepreneurship etc.
2. Environmental Component: This component will address the issues related to resources and infrastructures available at local level. It may covers cleaner technologies, public and alternative transportation, green spaces, smart growth, climate change etc.
3. Social Component: This component may address issues related to community life, participatory democracy, social innovation, proximity services etc.

Figure: 1

V. CHALLENGES AND ISSUES FOR RURAL IT

So now far we have seen the effectiveness and advantages of implementing IT in rural sectors. By implementing IT tools how we can raise the economy and development of rural sectors and so overall development of India. So it is true if we want to make our country-developed country we cannot neglect the rural sector of India as a major part of India population lives there. No doubt that government of India had taken a lot of initiatives in this direction but due to the lack of transparency, not full involvement of peoples of rural sectors or we can say less awareness, lack of information about government policies and schemes rural sectors could not do better till now. Defiantly IT now days becomes a solution for IMPACT OF INFORMATION TECHNOLOGY ON THE DEVELOPMENT OF RURAL ECONOMY OF INDIA 189 imparting knowledge to a mass of peoples at a single time, increases the involvement among peoples in government schemes and policies which in turn called as e-Governess. So if we want to implement E-Governess then we have to implement IT tools. If we want to set up an example of good democratic country then we have to implement e-Governess which means government is near to a common people of India. Now in this context my paper is going to describe the challenges and issues in implementing IT in rural sectors.

VI. POWER SUPPLY

First of all power supply is the major problem in implementing IT in rural sectors in developing country like in India. However use of battery backup and solar energy is the solution for the problem. Battery backup and implementation of solar energy will increase the implementation cost. Battery backups are a very partial solution to the lack of reliable power supplies, and solar technologies may be more promising in the near future: they are already in use in existing rural IT efforts. The difficulty is that having to rely on these alternatives and backups unnecessarily raise costs of operation. Of course this is true for all of India's economy. It is well recognized that the power sector is the major bottleneck, with capacity well short of demand, and the quality of transmission and distribution remaining poor. 2.1.Cost Factor in Implementation of IT in Rural Sector It is the main challenge for implementing IT in rural sector in developing country like India because IT implementation includes installation of hardware components like computer machines, networking tools like routers, hubs, cables, printers and software components like operating system, other application software. However it is also true that with standardization of components of desktop computing and peripherals, rapid technological improvements, falling costs of production, and, most recently, price reductions resulting from changes in tariffs on imported hardware. It is now possible to fully equip a single computer rural Internet kiosk for less than Rs. 50,000, including CD drive, printer, scanner, power backup, and web camera. But this cost will become huge when we have to install computer machines throughout the country. This is the main prerequisite in implementing IT in rural sector that we have to make awareness among rural peoples about the using of IT and its benefits. Training of rural kiosk operators, whether they are formal franchisees or independent farmer operators, becomes a key aspect. Training the field personnel at various levels (village and district hub) is also critical. For this training programmes government have to take initiatives and there is also need of participation of NGO's in this direction.

VII. IMPLEMENTATION OF IT: VARIOUS CASE STUDIES AND THEIR IMPACTS

Government and some private sectors had introduced a number of programs through which the people of rural India can come forward and use the I.T. enabled services and work more systematically. Some of the programs run by the Government and private sectors are:

VII (I). Community Information Centers The program is designed especially for providing the Internet access and I.T. Enabled services to the citizens through which the interface between the Government and the Citizens can be setup. These centers connect seven northeast states namely; Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland and Tripura. The center helps to gain the connectivity at the time of unsuitable environmental conditions. The centers are commonly termed as CIC, which are generally situated at the school, college or any governmental office. People can come for the Internet access, and for accessing the Internet, a nominal amount is charged from the people through which the daily expenses of the centers are maintained.

VII (II). ITC stands out as a large Indian corporation serving global markets. Its kiosks are called e-choupals, and they have several differentiating features. The key distinguishing factor is that the e-choupals are totally designed to support ITC's agricultural products supply chain. In addition, the echoupals are totally owned and set up by ITC, with the operators not having any investment or risk of their own. Furthermore, e-choupal operators are, because of the focus, always substantial farmers, and therefore always male. All these features make the e-choupals different from the previous three initiatives. The e-choupal initiative has involved a clear focus and strong direction from the head of ITC's International Business Division. ITC has been able to turn its substantial organizational and managerial capabilities toward this initiative. Management trainees are heavily immersed in the e-choupal model as part of their inculcation into ITC's workings. There are four kinds of echoupals, tailored very specifically for four different products: shrimp, coffee, wheat and soybeans. E-choupals also provide access to local market (mandi) prices and global market price information on soybeans and derivative products, to allow farmers to compare prices. They give access to operational information, developed by ITC experts, pertaining to cropping, seeds, and fertilizer.

VIII. CONCLUSION

The face of Indian rural market can be transformed only with the deployment of I.T. The paper has provided the brief description of the various services offered in the rural areas of different states of India and simultaneously the advantages these services have. This paper has briefly surveyed several initiatives to provide IT-based services in rural India All the services have difference in degree of connectivity, level of service offered and basic organizational structure. The increase in the services provided to the rural people (in terms of various services offered) will result in the overall betterment of the society on one side by enriching the people with updated market information and providing latest technological developmental news and organizations on other side by creating more market opportunities for them and adjustment of the market prices. I.T. services need to be developed in reference to the present rural infrastructure. Internet based services blended with customer support services should be provided in the rural areas, which can increase the acceptance rate of the services by the rural people. In the long run, bringing rich information to the population of rural India, whether in the form of education, market prices, market opportunities, and more, can only have positive impacts.

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