A study on the efforts made to the development of Rural India through Information and communication technologies (ICT) by innovative policies and measures

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If the invention is a pebble tossed in the pond, then the innovation is the rippling effect that the pebble causes -- *Tom Grasty*

***Abstract* - With the advent of new challenges of Rural India in the fields of agriculture, education, communication, health and infrastructure- India is rolling out innovative policies and programs successfully with the continuous evolution of the technological advancements from Department of Science and Technology (DST) as well as by Indian Space Research Organization (ISRO) in the areas of Communication, earth-observation, space science mission and navigation steadfastly from the past decade. In this context, this paper aims mainly to throw light on the various initiatives and measures by the government of India to connect the rural India to urban India using technology.**

Key Words - Development of Rural India, technology inclusion, Rural innovations, Digital India, Internet of things.

I. INTRODUCTION

The Indian enhanced technologies should target the fulfillment of minimum needs of the rural population, necessary training and development in farming through innovative means as well as in the improvement of the quality of life. This can be achieved with the advanced information and communication technologies (ICT), Bio-engineering, Soil health management, natural resources and disaster risk reduction management.

II. REVIEW OF LITERATURE

Ch.Sahyaja1, Dr.K.S.SekharaRao (2012)pointed thatThe Information and Communication Technology (ICT) can be used to promoteservices like: mobile banking, e-money, and pre-paid cards, which are offered by the commercial banks forpromoting financial inclusion.

Rajesh.K.JHA (2014) has highlighted that Rural Development strategies have to include the injection of newer technologies to sustain growth in the long run. Whereas, enough research and development activity is undertaken by our Agricultural Universities, only 30 per cent of the newly developed agricultural technologies are broadcast on the field.

DeepikaKachhal (2018) emphasized that the cutting edge areas of information and communication technology (ICT) can be a great relevance for the rural development. Tele-communication, information processing, data and image transfer have opened new frontiers of knowledge for accelerating rural development efforts.

III. OBJECTIVES OF THE STUDY

- Identifying the programsin the creation of innovation and technology eco-system
- To magnify the Government initiatives in the key areas of adoption of Ruraltechnologies.
- Important projects in the Rural mission by Indian Space Research Organization (ISRO) in agriculture and communication.
- Rural employment through digital India mission
- The implementation of technology in the innovation and renovation of the agriculture and allied segments.

IV. RESEARCH METHODOLOGY

This paper is basically descriptive and analytical in nature. In this paper an attempt has been made to analyze the new approach in the policies and initiatives which have the potential to see a breakthrough in the rural and urban connectivity. The data used in it is purely from secondary sources according to the need of this study.

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V. Development through Digitization

(a) Government e- Market place (GeM): It is a single window online procurement that enables direct purchases, e- bidding, reverse e-auctions, online registration facilities for government users, product sellers and service providers and facilitates a market place for government purchase.

(b) Pro-active governance and timely implementation (PRAGATI):

it is an ICT-based multi modal platform which initiates the meetings across all departments and geographical boundaries by the prime minister of India for pro-active implementation of numerous projects and so far till 23rd May 2018, 227 projects with total investments of over Rs.10 lakh crore. Resolution of public grievances has also been reviewed across a range of sectors.

(c) Jan-dhan-adhar mobile trinity (JAM): an ICT based initiative to link Jan dhan accounts, mobile numbers and Adhaar cards of Indian to plug the leakages of government subsidies.

(d) Unified Payments Interface (UPI) and Bharat Bill Payment system (BBPS): this facility simplified citizens' bill payments towards services provided by the government.

(e) Public Financial Management System (PFMS):it is a database of all started as a Plan scheme named CPSMS of the Planning Commission in 2008-09 as a pilot in four States of Madhya Pradesh, Bihar, Punjab and Mizoram for four Flagship schemes e.g. MGNREGS, NRHM, SSA and PMGSY. It is an integrate solution of core banking system which integrates all states treasurers. It tracks the fund flow to the lowest tier of implementation of plan schemes on real time basis.

(f) Ayushman Bharat Scheme: it will digitally link primary and community health centres with distinct hospitals ensuring health care through a paperless, cashless and portability.

VI. Skill India Mission

a) **National skill development agency (NSDA):** An autonomous body created with the mandate to co-ordinate and harmonizes the skill development activities in the county. It acts as a part of ministry of skill development and entrepreneurship (MSDE)

b) **Atal Innovation Mission (AIM):** entrepreneurship promotion through self employment and talent utilization wherein innovators would be supported and mentored to become successful entrepreneurs.

c) **Mudra Bank Scheme (PradhanMantri Mudra Yojana):** the scheme provides low interest rates to the groups of low socio-economic background.

d) **Director general of training- modular employable skills (DGT-MES):** the scheme targets the workers of unorganized sectors and school dropouts and provide vocational training and apprenticeship programs.

e) **Deendayalupadhyayagrameenkaushalyayojana (DDU-GKY):**
It aims at generation of diversified incomes to the rural poor families and provides career oriented aspirations as well.

f) Pradhanmantrikaushalvikasyojana: with the objective of providing skill development programs through the national skill development corporations aims at covering 10 million youth during the period of 2016-2020.

VII. Smart Initiatives

a) **E-choupal**: an project by ITC limited to link directly the rural farmers with the internet for purchasing of agriculture and allied products..

b) **E- *Sagu***: 'sagu' refers to 'cultivation' which intended to improve farm productivity by delivering farm related advices in timely manner.

c) **Decision support system for agro-technology transfer (DSSAT): DSSAT** is software integrating effects of soil, crop phenotype, weather & management options that allows users to ask queries and simulate results by conducting, in minutes on desktop computer, experiments that would otherwise consume significant part of agronomist's career.

VIII. Internet of Things (IoT) for Rural India

Internet of things (IoT) is an interconnection of computing devices, permitting them to send and receive data.

a) Sustainable land and water resource management: it's a real time system for monitoring the environmental and climate changes that can greatly impact on the Indian agriculture.

b) Disaster Management:

- It is used to predict earth quakes based on microscopic vibrations and help reduce losses.
- Drinking water supply can be examined to detect any disease causing elements at the initial stage.
- Used to predict the occurrence of flood.

c) Food Security: monitor through the usage of sensors. Plants get watered with the exact amount and right areas with the exact amount required in order to get rid of wastages in automated drip irrigation.

d) Public Health: through wearable devices to examine the body conditions for patients suffering from conditions that require continuous check-ups and treatments that could be evaluated based on the information.

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IX. Mobile Apps by Ministry of Rural Development

Gram Samvad- allows access on Gram panchayat level development programs.

1. **Janmanrega**- provides an interface to improve quality of public services under MGNREGA.
2. **Awaas App**- to inspect and report the houses constructed under PMAYG or other schemes.
3. **MeriSadak**- enables the citizens to give feedback on the quality of works built on PMGSY or NRRDA
4. **Kaushal Panjee**-A skill register- Rural youth can register at free of cost and be connected to training partners and banks working in collaboration with the Ministry of Rural Development.
5. **GSA 18**- made to monitor the events organized for the rural areas during Gram Swaraj Abhiyan (14th April 2018 to 5th May 2018)

X. Rural Technologies in the Irrigation

[a] Kisaan SMS Portal: Kisaan SMS Portal was launched on July 16, 2013 for Farmers. SMSs to be sent to the farmers can be broadly classified into three categories, viz. information, services and advisories. The content may include information about the schemes, advisories from the experts. The farmers can register to this service by calling Kisaan Call Center on the toll free number**1800-180-1551** or through the web portal.

[b] Application of remote sensing in water resources management:

Remote sensing and Geographical Information System (GIS) were accepted as effective tools in water resources development and management to complement and supplement ground data. Space borne remote sensing data provides timely and reliable information on available water resources and its utilization. Remote sensing input shave been significantly contributing in water management in India, both in its conservation and control aspects

[c] Laser land leveling for conserving natural resources:

Laser land-leveling is laser-controlled land leveling. It is generally used for achieving very fine leveling with desired grade on the agricultural field. Laser leveling uses a laser transmitter unit that constantly emits 360° rotating single, very thin ,high energy beam about 2 to 3 meter above ground level. This beam is received by a laser receiver(receiving unit) fitted on a mast on the scraper unit. The signal received is converted into cut and fil level adjustments and the corresponding changes in scrapper level are carried out automatically by a two way hydraulic control valve.

[d]Green house farming- an innovative technology for food security and rural development:

Greenhouse technology allows growers several advantages over those who grow their plants outdoors in the natural environment and weather. Greenhouses are climate controlled year-round and can be customized to for the needs of the particular crop of plants choose to include. Greenhouses have some advantages over traditional outdoor growing that make them popular for those who place a great deal of importance on the success and quality of their plants. Advantages are,

- Yield increases by 5 - 10 times or even more.
- Uniform and better quality
- Reduction in labour cost
- Less fertilizer requirement thus reduction infertilizer cost.
- Low water requirement thus saving in water.
- Less chances of disease attack, thus reduction in disease control cost.
- Higher Efficiency of Water & Fertilizer Use.

XI. Findings of the Study

1) Digital support for agriculture advantage- the dissemination of information through the most advanced technologies paves the way to better feedstock inputs, seed sourcing and market prices that in turn reflected in the better profits..
2) Robust allocation, distribution and supervision of funds in ‘skill India mission’ and ‘smart initiations’ have a positive impact.
3) Capacity building through Innovation and technology- as they enable land claims, infrastructure projects, GPI communication, reduction in the cost and encouraging local markets and easy access to credit banking.
4) Empowering and enablement by e-choupal for better returns, and by the functioning of e-governance, transparency is created at the root level and creates a sense of ownership of the rights.
5) Empowerment of rural women observed in DAY-NRLM (Deen Dayal Upadhyaya Antyodaya Yojana), Mahila Kisan Sashaktikaran Pariyojana (MKSP)
6) Market expansion- through various ICT applications, some of them are achieving success rate, namely Kisan SMS portal, Gram Samvad, Janmanrega.

XII. Conclusion

a) Through the information and technology, the government has developed a strong communication strategy by providing supportive measures to the states in dealing with rural problems, but the rural employment generation is not on the track due to which we need to have a strategy to take the

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demographic dividend in the first place and in a full fledged way

b) The PMGSY (PradhanMantri Gram SadakYojana) scheme is spending 500 million dollars by the approval from ADB (Asia Development Bank) in order to rural urban connectivity. But Still 33% of the area is not electrified. A recent major initiative of the government is the launch of Saubhagya scheme on 25 September 2017 to provide electricity to over 40 million families in rural and urban areas. Therefore the more commitments at the states level for raising funds is needed.

c) The current focus of the government has all the allocations to make rural village as a livelihood place and create more employment opportunities locally.

d) By establishing IT infrastructure in the rural eco-system, the socio-economic conditions will certainly change and eventually the rural population equip to deal with the urban connectivity.

e) The inclusion of consistent and significant Information and communication technology initiations will advance the rural infrastructure scenario and will positively influence the rural India and on the billions of people living in.

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