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A Study Of Indian Rural Sustainability Concepts In A Technology And Science Setting

Rajesh Upadhyay School of Management, Graphic Era Hill University, Dehradun, Uttarakhand India, 248002 **,** rkupadhyay@gehu.ac.in

Narendra Singh Bohra Department of Management Studies, Graphic Era Deemed to be University, Dehradun, Uttarakhand India, 248002 **,** nsbohra.mba@geu.ac.in

Rupa Khanna Malhotra Department of Commerce, Graphic Era Deemed to be University, Dehradun, Uttarakhand India, 248002**,** dr.rupakhanna@gmail.com

Abstract

India's socio-economic progress and overall rural sustainability can be attributed in large part to technology and science. Due to low productivity and inadequate infrastructure, developing nations like India currently face the problem of raising the sustainable living standards of rural citizens. But through ARTRA (application of Science and Technology in Rural Areas), a mission-driven programme to meet the concerns and prerequisites for the rural population in different areas including the living status of the people, schooling, health care provider, village industries, and agricultural techniques, the technology and utilisation of technology and science in Rural Areas have developed the lucrative livelihood in in terms of effectiveness in manufacturing, efficiency, and advertising However, scientific approaches, awareness and consideration, research, and innovations are vitally important due to the issues of poverty, varying geographical conditions, different socio-cultural position, jobless, incompetence, and the living situations of the people. Therefore, a standardised technology model wouldn't be suitable for all of the country's rural areas; rather, a location-specific model must be incorporated with the aid of scientists, governmental organisations, local residents, political parties, and non-governmental organisations to meet the minimum requirements.

Keywords: technology, Science, living standards, sustainable awareness, unemployment,

1. Introduction

The recent advances in science and technology in rural areas need to be encouraged urgently to increase the socio-economic status of the rural population by various interventions to reduce the difference between urban and rural, replacing conventional beliefs and superstitions with science or modern approaches [1]]focused on new knowledge in different fields, such as people's livelihoods, educational institutions,

medical and health care centers, small scale industries, agriculture sources, etc. Although in the sense of the use, security, and development of natural, physical, and human capital, much more knowledge and thoughtfulness are needed to increase production to reduce poverty.

[2]suggests that rather than focusing too heavily on drugs and vaccinations, all relevant agencies should now investigate and develop ways to avert such calamities and pandemics by changes in lifestyle (being in line with Hindu civilization and Vedic philosophy). Power needs to be interpreted differently, and Nepal shouldn't be overly pessimistic about its economic future.

[3]Technology's exponential rise in India has significantly contributed to the overall improvement and expansion of the national economy. Due to its focus on the socioeconomic development of every person, sustainable development is a growing field. India has chosen to use a smart combination of domestic and imported technology. Technology transfer, as the act of purchasing technology is also known, is typically governed by a technology transfer agreement.

[4] Researchers disagree over the precise mechanism via which the impact of high-performance work practises (HPWPs) extends to organisational performance, despite the fact that HPWPs are thought to have a significant impact on organisational performance. In order to better understand the relationship between HPWPs and organisational performance, this research will examine two explanatory theories of HRM (the job characteristics theory and the psychological impact hypothesis).

[5]The idea of a poverty trap, which is typically defined as a self-perpetuating circumstance below an asset barrier, has had a significant impact on how poverty is described, as well as the connection between poverty and sustainability. Although the definitions and terminology of traps and the forces that contribute to them vary across disciplines, development economics work has had the greatest influence on how the concept of a poverty trap is understood.

[6] The papers presented at the international conference (Pre-International Geographical Union 2016 Conference) on "Land Use and Rural Sustainability," organised by the Institute of Geographic Sciences and Natural Resources Research, Chinese Academy of Sciences in Xi'an, China, on August 17–20, 2016, are the foundation for this special issue on Land Use Sustainability in China. The purpose of the conference was to examine the effects of changing human socioeconomic activity on land-use change and related policy.

[7] Smart city technology are progressively being incorporated into everyday life. Smart City technologies offer effective city services, serving as a focal point for citizens to access a variety of services (energy and water supply, urban infrastructure, transportation etc.).The definition of methodological techniques for a settlements development

modelling is the goal of the research. Modeling the geographical evolution of urban and rural settlements can be done using a combination of local and international knowledge.

[8] examines the relationships between rural development, farm modernization, and the robustness of agricultural and rural systems. The study begins by determining the reasons why agriculture and food systems require systemic transformation. Four subject areas—the resilience of farms and rural regions; prosperity and well-being; knowledge and innovation; and the governance of agriculture—are investigated using data from case studies conducted in fourteen different nations.

[9] aimed to define the sustainability of the landscape in terms of the landscape services (LS) offered in seven study locations with various features situated in the province of Malopolska. The outcomes of the quantitative assessment utilising indicators and the outcomes of the qualitative categorization of LS were compared. Due to the bundle of given LS, the study areas were separated into three categories.

[10] The social aspect of sustainability is essential for the success of rural development, according to research on the experiences of China's recent massive rural construction and restructuring. However, environmental sustainability and building performance are the core foci of the majority of conventional built environmental sustainability assessment tools (BESATs). There are currently no effective or comprehensive methodologies for evaluating social sustainability in the built environment of rural areas.

[11] devoted to exploring the problems with rural tourism in the context of tourist loyalty to the place and sustainable development. The research's findings are presented in particular with a focus on the interactions between the rural destination's qualitative attributes, visitors' overall pleasure, and their devotion to the place. To investigate the relationships among quality aspects, overall satisfaction, and loyalty in the particular setting, a structural model was adopted.

[12] In rural areas, social demands and current commercial demand compete with historical ideals and traditional crops. Finding a methodology that can combine socio-economic trends with cultural and historical values is crucial for sustainable development. An integrated empirical work was created in order to find shared activities, strategies, and policies for the management of rural historical sites. Understanding how to foster a bottom-up planning strategy, including stakeholder perceptions in policy, was the key objective.

2. The Objective of the Study

This study focuses on the connection between rural technology and Sustainable Development in the context of the ASTRA model from the Indian perspective to promote various appropriate technologies in rural India.

3. Methodology

For this descriptive method of analysis, I have searched various materials, policy and media reports, blogs, surveys, and study reports, reviewed research reports and papers, journals, and news articles published on science and technology development in a rural setting in the Indian scenario based on the secondary data collection process.

4. Connection of Rural Technology with Sustainable Development

The idea of sustainable development originated on the interdependence of civilization and the environment referred to the Brundtland Commission in 1987. The Rio Conference in 1992 appeared to separate itself from its empirical and technological basis by mobilizing our national institutions to discuss research and technology. From a sustainable development viewpoint, the goals of research and technology must take into account the dimensions of economic performance, wealth, soundness of the environment, long-term viability, and self-reliance. In the wider context of sustainable development, it is also important to set rural goals.

5. ASTRA: The Rural Technology Mission from the Indian Perspective

Technology and research are related to each other. Mahatma Gandhi and a group of well-known scientists started the science and technology revolution, named 'Science for People' in India. ‘All India Village Industries Association’ set up a new technology extension service framework to implement science and technology in rural areas in 1935 to focus the study and production of effective rural technology. Following democracy, infrastructure projects, inventions, improvements and the implementation of new research techniques have increased. Nevertheless, the importance of science and technology for the 'ASTRA' (Application of Science and Technology to Rural Areas) initiative, recently renamed the Centre for Sustainable Technologies,]was focused on a model of interactions between science and technology to address the typically overlooked needs of the grassroots level focusing on cost-effective technological interventions. It was intended in rural areas to be a tool against poverty, from which a groundbreaking structural experiment was created.

6. Characteristics of Appropriate Technologies

- Low expense and low upkeep for a balanced lifestyle, for economic resilience.
- Repairs of locally available expertise, equipment, and supplies can be performed more regularly.
- It is normally 'acceptable' to use only devices that can at least be restored locally.

7. Implementation of Appropriate Technologies so far in Rural India

7.1 Information and Communications Technology

Creation of low-cost computers are used on a large scale with internet access to find out information about any region, sector, subject, or problem. Students and youth in rural areas are using computers for their research purpose. Most village areas now have computing centers.

7.2 Construction

For the construction of houses or other buildings in rural technology, such as cheap rammed earth, Dutch brick, and cob are used to make the buildings solid, adaptable, and well-built to all environmental conditions.

7.3 Energy

It is possible to provide electricity from solar panels, wind power, or micro-hydro, with the energy contained in batteries. Energy sources are known to be biobutanol, biodiesel, biogas, and vegetable oil.

7.4 Cooking

Smokeless and electric stoves, solar cookers add to wood protection and function more effectively, save time and energy, decrease deforestation, and provide major health benefits.

7.5 Health care

There is an application of science and technology in the creation of healthcare centers, the distribution of hospital services, patient insurance, advanced devices.

7.6 Refrigeration

There are food products that need to be refrigerated. People tend to drink ice water in rural areas now in hot weather conditions. The pot cooling machine has been supplied, which holds things even without power in cold climates.

7.7 Television and Radio

These are the technical instruments that have changed rural people's lives through different TV shows, movies, and radio programs. Farmers benefit from television programs related to agriculture and use the required techniques in their trade.

7.8 Agricultural Technologies

Rising crops such as rice, wheat, and maize has been seen as a significant development in agricultural technology. More and more people have sought jobs and hunger has been minimized immensely. The challenges of deforestation and land and water scarcity have been addressed with the advent of technology.

7.9 Mobile Phones

The use of cell phones is popular among rural people. Although most persons are non-literate or have poor reading skills, they commonly use cell phones for contact and entertainment purposes.

7.10 Water

To increase the production of drinking water in rural areas, modern techniques for water harvesting, storage, and recycling would have to be adopted through community involvement, the transfer of technologies, restoration of springs and the use of hydraulic rams for water supply in hilly areas, the use of solar energy for rural water supply, the production of water supply systems.

7.11 Biotechnology

In the field of biotechnology, advances in the field of bio-fertilizers, aquaculture, the processing of biomass by tissue-cultivation techniques, embryo-transfer technology for cattle upgrading, herding, etc., have immense potential for job growth and improved quality and productivity for everyday activities in rural areas.

7.12 Space Technology

There is a wide variety of remote sensing technology applications in coastal fishermen's flood warning zones, marine fishing, minor agriculture, drinking water tracking, wasteland detection, improved satellite-view fish catching activities, landscape analysis, drought control, etc.

7.13 Women

In India, women play a very important role in field operations, plantation practices, livestock management, fisheries, sericulture, apiculture, planting, forestry, etc.

7.14 Employment

Inputs from science and technology in the fields of agricultural practices, animal husbandry, small-scale industries, training, and skills enhancement program, schooling, biomass production, recycling, and agro-processing have created job opportunities in rural areas.

7.15 Sanitation

Sanitation system has been developed through BIPU and other types of latrines having low-cost, secure means of disposing of human waste.

7.16 Dress Code

The Internet, television, online marketing, and Western fashion have influenced people's sense of dress in rural areas. Jeans and T-shirts have now become universal, and formal dresses, such as weddings or celebrations, are still reserved for special occasions.

7.17 Transportation

With the aid of cycles, tractors, motorcycles, villages are well connected by roads and rail lines to support people with mobility.

7.18 Environment

Modern Indian life is deeply tied to nature. But with the introduction of modern forest clearing technology, riverbanks, livestock hunting, and natural resource extraction, deforestation, environmental destruction, the human-animal clashes are being triggered.

7.19 Animal Husbandry

Improvement has been done in livestock, dairy, improvement in fodder supply, production of new fodder, poultry production, fish farming, etc.

7.20 Rural Education

Science and technology have strengthened the phase of schooling and learning in terms of computer technologies, initiatives for learning, participation increase, dropout prevention, etc. In several rural regions, online courses have opened borders.

8. Barriers to Implementation of Science and Technology in Rural India

- Bias against urban settlements and the imitation of practices as westerners do through the industry.
- The job and budget of research and development (R&D) are not up to the mark.
- Investment and the cost in the implementation, management, and servicing of related systems of technology by the rural poor is difficult to achieve.
- Manufacturing engineering requires qualified personnel, technological equipment, and large funds to successfully commercialize rural technologies.
- The level of awareness among rural people is very low.
- S&T job in Rural India is seriously hampered in terms of software, commercialization, and patenting due to the lack of ties with industries.

9. Suggestions and Actions to be Taken Further

- Equal distribution of investment and the number of constituent S&T organizations, technical workers in research and development against rural needs, and R&D allocation should be implemented.

- Fairness should be there in the glare with proposals, plans, budgeting, and policies.
- Promoting eradication of poverty in rural areas improving livelihoods of the people.
- Providing social security services for the benefit of disadvantaged families, and the unemployed in rural areas arranging new employment and income opportunities.
- Ensure the protection of the ecosystem and environment in rural areas.

10. Conclusion

Technology academies have been formulating goals and objectives for the application of research in all fields of rural development to achieve sustainable growth. 70 percent of the population of the nation lives in rural areas. It is therefore important, with the aid of science and technology, scientists and scholars, to recognize the main problems of hunger, education, illiteracy, and the living conditions of people. In improving infrastructure and renewable technologies, discrete fields of special research interest must be discussed. As India is a very wide country with complex geographical and ecological environments and varied socio-cultural history of the rural population, a generic technology model will not be appropriate for all the country's rural regions, but with the aid of scientists, government agencies, local citizens, a location-specific model should be applied to meet the basic requirements of human beings.

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