

“IMPACT OF TECHNOLOGY ADOPTION ON RURAL DEVELOPMENT”

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Abstract:

In India technology act vital role so this study portrays its impact and adoption on rural development especially in villages. The use of agricultural technologies determines how the increase in educational technology output impacts on poverty levels and environmental degradation. Experience and evidence from countries within and around the Indian region indicate that returns to adoption of technology and its development could be very high and far reaching. The factors affecting technology adoption are assets, income, institutions, vulnerability, awareness, labor, and innovativeness by rural educate people. Technologies is requiring few assets, have a lower risk premium, and is less expensive have a higher chance of being adopted by rural educated people. Some of these technologies are more efficient in their use of scarce production resources than modern technologies. Modern researchers should therefore seek to understand the rationale behind traditional behavior in technology use.

Keywords: Impact of Technology, Technology adoption, Rural development, Effecting Technology, Indian Technology

1. Introduction:

Technology adoption in rural areas drives development by boosting agricultural productivity via precision farming, improving access to digital education, telemedicine, and financial services. It empowers local entrepreneurship, reduces reliance on middlemen, and enhances sustainability through eco-friendly solutions like solar energy. The widespread use of smart phones and internet connectivity has transformed rural communities, increasing efficiency, income, and quality of life.

Information and communication technology (ICT), and digital technologies in particular, are a strong influence on business today. Many observers argue that ICT use, strategies, and institutional arrangements have a critical bearing on a number of high-profile corporate concerns, such as globalization and adaptability. Major impacts on business success factors, such as cost structures, productivity, managerial capability, employee intelligence and opportunism, and innovation and change, are seen as originating from the innovative qualities of ICT, particularly their interactive dynamism. Management researchers, before responding by launching all sorts of different research strategies, first face the more modest existential challenge of carefully articulating underlying business, technology, and strategy phenomena, and relationships, as well as alternative spatio-temporal scales through which relationships should be examined. To help in addressing this fundamental challenge, and because of our

general interest in the impacts and management of the IT capital that lies behind the 21st-century enterprise, we have compiled the papers that appear in this special issue of the British Journal of Management. The collection, first presented at the Fourth Research Workshop on Strategic Change, held in Switzerland in 1998, addresses impacts at the level of the enterprise niche and the market's mean. This locational dualism is significant in itself, suggesting the need for integrative research strategies and perspectives. Of course, differing research strategies have called for very different grasping tools in management and social research. Rather than concentrate on conceptual tools to an innovative degree, as we usually have in our previous special issues, we asked contributors to help set the research agenda, as well as identify key phenomena and relationships, by concentrating on the business and technology phenomena through which impact was being mediated, and by drawing upon existing examples of solid and new empirical investigations in the field. These requirements for solid support, and for contributions to the articulation of underlying phenomena and relationships, priorities complementary to those of historians and critical theorists, should help in integrating these more alternative strands of management thinking with the core strategic science, offering new insights into strategic change and the management of both the strategic change and adaptability, and allowing feedback of specific research questions to both research field analysis and theory building in business, technology, and management science.

2. Review of Literature:

Johan J.C. Tambotoh, and Augie D. Manuputty (2015)¹ Information and Communication Technology (ICT) is considered to have the ability to address the development problems in rural areas. The adoption of ICT tools to access and distribute information becomes important for people in disadvantaged areas. The expansion of internet access networks to reduce the digital divide is a key trigger for the use of ICT by the society in rural areas. On that basis, the study aimed to see how the patterns of adoption and use of ICT by the society in rural areas using the model of Rural Technology Acceptance Model (RuTAM). RuTAM was used to measure the effect of socio-economic factors toward the adoption of ICT in rural area. There were 85 respondents participated in this research. They were villagers of Melung Village, Banyumas, Central Java, Indonesia, and they were taken by purposive sampling technique. **Kazushi Takahashi, Rie Muraoka and Keijiro Otsuka (2019)²** A review of the case studies on technology adoption provides support for the hypothesis that there are profitable technologies that are not diffused widely because of a weak extension system. Recent case studies commonly argue that desirable improved technologies, particularly in SSA, are knowledge - and management-intensive. They require integrated management of soil, nutrient, and water. Such technologies are likely to be complicated and their impacts are likely to be heterogeneous depending on agro climates, soil quality, and farmers' abilities. For successful diffusion of new agricultural technology, effective extension systems are indispensable. For this reason, a surge in extension studies is warranted. **Stavros Sindakis and Gazal Showkat (2024)³** This study investigates the factors that influence the adoption of digital technology in rural areas of India, with a focus on the Digital India Program (DIP). By analyzing the age distribution, education levels, technology adoption rates, and utilization

patterns among rural populations, this research provides insights into the effectiveness of the DIP in targeting specific demographics and promoting digital inclusion. Quantitative data were collected from 400 respondents in Kalahandi District in the Odisha state of India. The data collected were analyzed using SPSS. The findings reveal a predominantly young population in rural India, indicating a workforce with significant economic potential and a higher likelihood of embracing digital technologies. Moreover, the study highlights the high levels of education among respondents, indicating a population well-equipped to understand and benefit from digital initiatives. Unexpectedly, the research shows a higher rate of digital technology adoption among female respondents, challenging the perception of gender disparities in technology access. **Wanglin Ma, Huangang Qiu and Dil Bahadur Rahut (2022)**⁴ Using the 2016 CLDS data, this study examines the impact of ICT adoption on access to credit and the joint effects of ICT adoption and access to credit on household income. Since both observed and unobserved factors may affect farmers' decisions to become ICT adopters or non adopters, an RBP model is used to address the selection bias issue associated with ICT adoption. Furthermore, a selectivity-corrected OLS model is applied to estimate the joint effects of ICT adoption and access to credit on household income. **Washington Muzari and Wirimayi Gatsi (2012)**⁵ The technologies people use play a significant role in determining how fast agricultural productivity grows and how that growth affects the poor and the condition of natural resources. The development of agricultural technology for both food and non-food crops, rural financial markets, the dissemination of assets and information, developing agricultural research and extension facilities targeted towards the smallholder farmer all work together to prevent long-term famine through increased agricultural productivity.

3. Objectives of the Study:

- 1) To know the Impact of Technology Adoption in India.
- 2) To identify the Impact of Technology Adoption on Rural Development.

4. Research Methodology:

The study has used secondary sources of data for evaluating the above said objectives, Impact of Technology Adoption on Rural Development in India. As detailed in the section of research problem and also in the relevance of the study, the reason behind the selection is the position occupied by the source among the Impact of Technology Adoption in India.

5. Impact of Technology Adoption in India:

This technology is most important now a day, so Technology adoption in India has profoundly transformed the nation, driving a \$1 trillion digital economy with 954 million internet users as of March 2024. Key impacts include the rapid growth of FinTech, e-commerce, and the world's third-largest startup ecosystem. Initiatives like Aadhaar (1.2 billion+ users) and UPI have revolutionized financial inclusion and governance. The digital economy is rapidly expanding, with UPI and Aadhaar facilitating massive, secure financial transactions for over a billion people. Digital technology and AI are driving efficiency in the service sector, while startups have flourished, with over 100 unicorns. Programs like 'Digital

India' have bridged the rural-urban divide, offering online education, telemedicine, and improved access to public services. Technology has enhanced farming through smart, data-driven techniques, reducing risks from pests and extreme weather. Digital technologies (e-commerce, digital lending) have enabled SMEs to access new markets, increasing production capacity and competitiveness. The shift towards AI and automation has increased demand for skilled workers in IT, e-commerce, and digital media, requiring a focus on critical thinking and technical skills. Technology has increased social mobility and facilitated the preservation of traditional arts and culture through digital platforms. Despite these advancements, challenges remain, including the digital divide between urban and rural areas, cyber security threats, and the need for greater technology adoption among SMEs.

Technology has profoundly transformed India, driving massive economic growth through IT, e-commerce, and FinTech, while democratizing information and services via smart phones and the internet, boosting education, healthcare (telemedicine), and financial inclusion (UPI). This digital revolution has created new opportunities, improved governance (e-governance), enhanced productivity, and empowered citizens, but also presents challenges like the digital divide, changing social norms, and the need to manage new risks like misinformation.

Economic Impact

- IT Sector Powerhouse:

India's IT industry is a significant economic contributor, generating jobs and attracting investment, with Indian tech firms leading globally in software and digital infrastructure.

- E-commerce & Entrepreneurship:

Online platforms provide market access for small businesses and fuel the growth of e-commerce.

- Financial Inclusion:

Digital payments (UPI) and mobile banking have brought millions into the formal economy, empowering individuals and businesses.

Social & Governance Impact

- Democratized Access:

The internet has broken down barriers, giving access to information, education, and services (healthcare, finance) to previously underserved populations.

- E-Governance:

Digital initiatives have improved transparency and efficiency in public services, reducing bureaucratic hurdles.

- Healthcare & Education:

Telemedicine connects doctors to remote areas, while online platforms make education more accessible.

6. Impact of Technology Adoption on Rural Development:

Technology adoption is transforming rural development by enhancing agricultural productivity, expanding access to education and healthcare, and boosting rural entrepreneurship. Key impacts include increased income through improved farming techniques, greater financial inclusion, and better infrastructure connectivity. It bridges the urban-rural divide by promoting sustainable growth, reducing, and providing access to digital, education, and health services.

Technology affects rural areas in both negative and positive ways. But the impact is more positive than its negativity. Thanks to technology, transportation has been made easier for farmers in rural areas. They can now transport their raw materials faster to long Km and miles in very large quantities for processing. On the other hand, labor-saving machines have been introduced in these areas for faster and efficient productivity. But this also makes the works of laborers less important.

Again, technology is helping a lot in the health sector. it has made it confidential in the delivery and prescribing of medications. An example is electronic ordering and delivery to help avoid medical errors. Do you think there is a disadvantage to this? if you do, I will like to hear it in the comment section below.

Technology in Agriculture: Technology has greatly transformed the agricultural sector in rural area, making farming more efficient and productive. Some of the key technologies in agriculture include precision farming, drones, automated machinery, IoT sensors, and genetic engineering. These technologies help farmers monitor and manage their crops more effectively, leading to increased yields and reduced wastage. Overall, technology in agriculture is crucial for sustainable and future-proof farming practices. Technology plays a crucial role in modern agriculture, transforming traditional farming practices and increasing efficiency and productivity. Some key benefits of technology in agriculture include:

1. Precision farming: This involves using GPS technology to optimize field-level management with information on soil quality, moisture levels, and crop health. This allows farmers to reduce waste and maximize yields.
2. IoT devices: The Internet of Things (IoT) technology is being used in agriculture to monitor and control various aspects of farming, such as irrigation systems, livestock tracking, and environmental conditions.
3. Drones: Drones are being used for aerial imaging in agriculture, allowing farmers to survey their crops and identify areas that may need attention.
4. Artificial intelligence: AI is being used in agriculture for predictive analytics, crop monitoring and even autonomous farming equipment.

5. **Robotics:** Robots are being developed to perform various tasks in agriculture, such as planting, weeding, and harvesting, reducing the need for manual labor. Technology in agriculture is revolutionizing the industry and helping farmers become more efficient and sustainable in their practices.

Technology in Healthcare: Technology has revolutionized the healthcare industry in recent years, bringing about significant improvements in patient care, efficiency, and accuracy. From electronic health records (EHR) to telemedicine services, technology has made it easier for healthcare providers to access and share patient information, leading to more coordinated and personalized care. Artificial intelligence and machine learning algorithms are being used to analyze large datasets and identify patterns that can help in diagnosing diseases, predicting outcomes, and recommending personalized treatment plans. Additionally, wearable devices and sensors can monitor patient vitals in real-time, enabling early detection of health issues and remote patient monitoring. Robotic surgery systems are another technological advancement that allows for more precise and minimally invasive surgeries, resulting in faster recovery times and reduced risks for patients. Virtual reality (VR) and augmented reality (AR) are also being utilized for medical training, patient education, and even pain management. Technology has the potential to greatly improve healthcare outcomes and enhance the patient experience, making healthcare more accessible, efficient, and effective in rural places.

Technology in Education: Technology in education has transformed the way students learn and teachers teach in rural areas. With the integration of computers, tablets, and interactive whiteboards, students can access vast amounts of information at their fingertips and engage in interactive learning experiences. In addition, technology has also made it easier for teachers to track student progress, create personalized learning plans, and provide immediate feedback. Technology has the potential to enhance learning outcomes and make education more accessible and engaging for all students.

Technology in Infrastructure: Technology plays a crucial role in infrastructure development, helping to improve efficiency, reduce costs, and enhance safety in rural area. Some key technologies being used in infrastructure projects include Building Information Modeling (BIM), Internet of Things (IoT), Artificial Intelligence (AI), and drones. BIM allows for better planning, design, and management of construction projects by creating virtual 3D models. IoT enables the monitoring and control of infrastructure systems in real-time, leading to predictive maintenance and improved asset management. AI is used for data analysis, risk assessment, and decision-making, while drones are utilized for surveying, inspection, and monitoring of infrastructure projects. Overall, technology is transforming the infrastructure sector, making it more sustainable, resilient, and innovative.

7. Conclusion:

Technology adoption and development in rural area is an essential strategy for increasing agricultural productivity, Technological Education for rural students, achieving food self-sufficiency and alleviating poverty and food insecurity among smallholder farmers

and get jobs as well as doing self business ability for rural people in India. This strategy is particularly relevant for the rural people in the Indian rural because they are disadvantaged in many ways, which makes them a priority for development efforts. These people live and farm in areas where rainfall is low and erratic, and soils tend to be infertile. In addition, infrastructure and institutions such as irrigation, input and product markets, credit and extension services tend to be poorly developed. It is recommended that further research and rural development efforts should focus on the development of infrastructure and institutions in these areas. The technologies people use plays a significant role in determining how fast people adopt it and how that growth affects the poor and the condition of natural resources. The development of agricultural technology for both food and non-food crops, rural financial markets, the dissemination of assets and information, developing agricultural research and extension facilities targeted towards the rural people all work together to prevent long-term famine through increased agricultural productivity, technological education, Social connection and tech information etc.

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