

Digitalization: Paving the Way for Sustainability in India

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ABSTRACT

Purpose: In today's world, technology is the driving force of survival. Two of the most important megatrends of this century are digitalization and sustainability. The innovations have provided us the power of technology in order to make the best use of resources. All the sustainable development goals can be affected by technology either positively or negatively. The digital technologies like digital access, fast internet, cloud, IOT, artificial intelligence, extended reality and blockchain can help us attain most of our SDG targets. Green and sustainable technologies help us to achieve our environmental goals by conserving resources for sustainable development and wellbeing of our planet. This paper aims at exploring the role of digitalization for sustainable development. **Methodology:** A detailed review of research papers, articles and reports has been carried out in order to explore the various aspects of digitalization and sustainable development. **Findings:** It was found that digitalization has offered an opportunity to the people to build a more inclusive and sustainable society. This paper also discusses the role of Digital India Program in achieving the sustainable development goals. The reviews also caution us about the challenges posed by technology.

Keywords: *Digitalization, Sustainable Development, Digital India Program, Digital Tools.*

INTRODUCTION

In this era, each and every thing relies around the "e" word and digitalization has infiltrated every aspect of human existence. The widespread consumption of digital gadgets and our increasing reliance on them indicate that the use of technology is essential. It has the power to completely transform the parameters of all-inclusive growth thus creating an advantageous relationship with sustainable development (Bhutani and Paliwal, 2015). The development of technology has revolutionized interpersonal interaction. Modern devices, such as smart automobiles, smartphones, and other gadgets, have completely changed all sectors of our everyday lives. But world's resources are limited and resource depletion can

be a major apprehension. Therefore, it is important to make use of these resources properly in order to ensure their natural balance. Use of digital technology is not a new phenomenon but is based on the pillars of previous innovations. Digital technology is the 4th generation of innovation which is helpful in improving the quality of life. It helps in the transformation of any information (text or graphics) into digital format so that our future generations can be benefited by it.

In the 21st century, we could hardly imagine our lives without technology. Everyone is now able to interact anywhere, at any time. The *Digital India Program* was launched in July, 2015 with the goal to transform India into a society that is empowered by technology. This program ensured to improve the online infrastructure and internet connectivity in order to make our nation digitally advanced (Shallu et al, 2019). The digital revolution is an outcome of India's experience with revolutionary shifts in economic progress. The Digital India program aims to make the best possible use of computer science and technology, internet access, digital literacy and e-governance in order to empower sustainability in India (Sharma and Singh, 2018). Furthermore, for the Indian economy to become globally dominant, "Secure and Sustainable" digitization is essential. The explosion in the usage of information and communication technology was fuelled by several advances in digital technology. It has been observed that cellphones have been replaced by smartphones and more & more people have access to internet in the present era. Everyone has constant international connectivity thanks to the power of digitalization. Increased socializing has led to a reduction in social disparities and social growth.

Digitalization: Meaning and Concept

Digitalization involves usage of digital mediums and devices to exchange, access, and use information quickly, effortlessly, and affordably. The process of digitalization has made it possible to use digital technologies to enhance opportunities, modify methods of teaching, and encourage remote education.

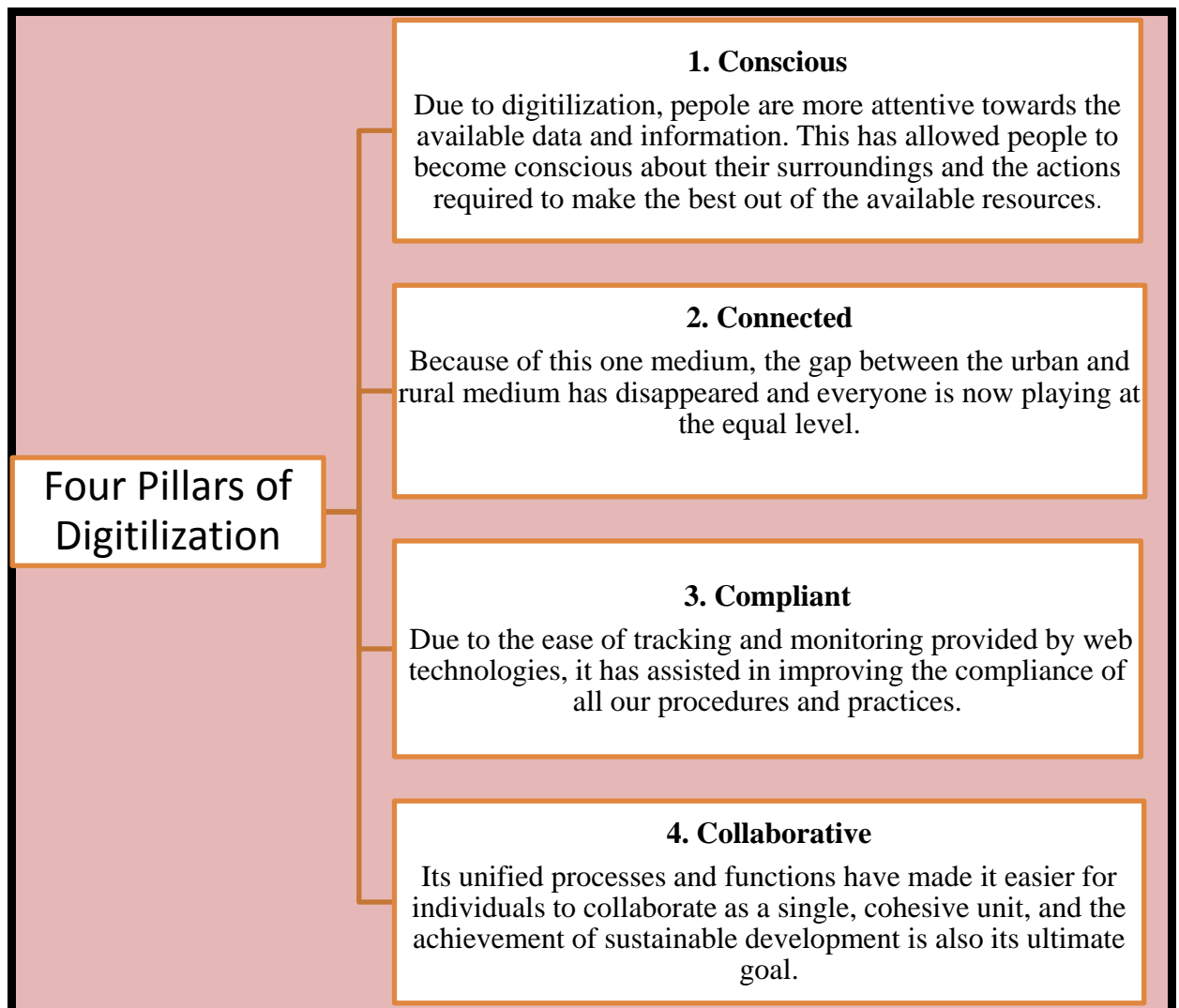


Fig.1: Four Pillars of Digitalization

It is termed as a fast pace change that is pushing all sectors (educational, business and government) towards growth. The concept of digitalization includes information and communication technologies, networking and interconnection. Therefore, digitalization can be explained by the storing and sharing of information in the form of digital data. Many technologies such as big data, artificial intelligence (AI), blockchain technology, cryptocurrency, 3D and 4D printing are included in digitalization. It transforms the capabilities of audio, video, software, pictures and information in unimaginable ways. Amit and Zott (2001) stated that digitalization can be explained as a shift from “analogue” to “digital” (e.g., a shift from cash to electronic payments).

Sustainable Development: Meaning and Goals (SDGs)

Everything a man does on the planet has direct implications on the society, economy and most importantly on the environment. We leave carbon footprints with every paper we use. The resources of our planet are limited and it is important to consider the requirements of future generation also. To fulfil this requirement, the concept of *Sustainable Development* was introduced. According to Brundtland (1987), sustainable development is the process which caters to the requirements of humans without endangering the resources for future generations. Sustainable development requires the management and proper use of water, agriculture, energy, livestock and land. It is important to use alternative methods to replace the traditional practices such as using electronic mail instead of paper. Another important aspect which determines the sustainability is the knowledge of people. It is important to teach children from a young age about the importance and conservation of environment. A vital instrument for attaining sustainable development is digitalization.

A common roadmap for peace and prosperity for people and the planet is provided by the 2030 Agenda for Sustainable Development, which was accepted by all United Nations Member States in 2015. To guarantee the maintenance of the natural balance, the United Nations has formulated 17 Sustainable Development Goals (SDGs) (Khan et al., 2018). All the developed and developing nations have been instructed to achieve these 17 Sustainable Development Goals (SDGs). It was pointed out that eradicating poverty and other forms of deprivation requires concerted efforts in order to combat climate change, protect our biodiversity, enhance health & education, and lower inequality in addition to promoting economic growth.

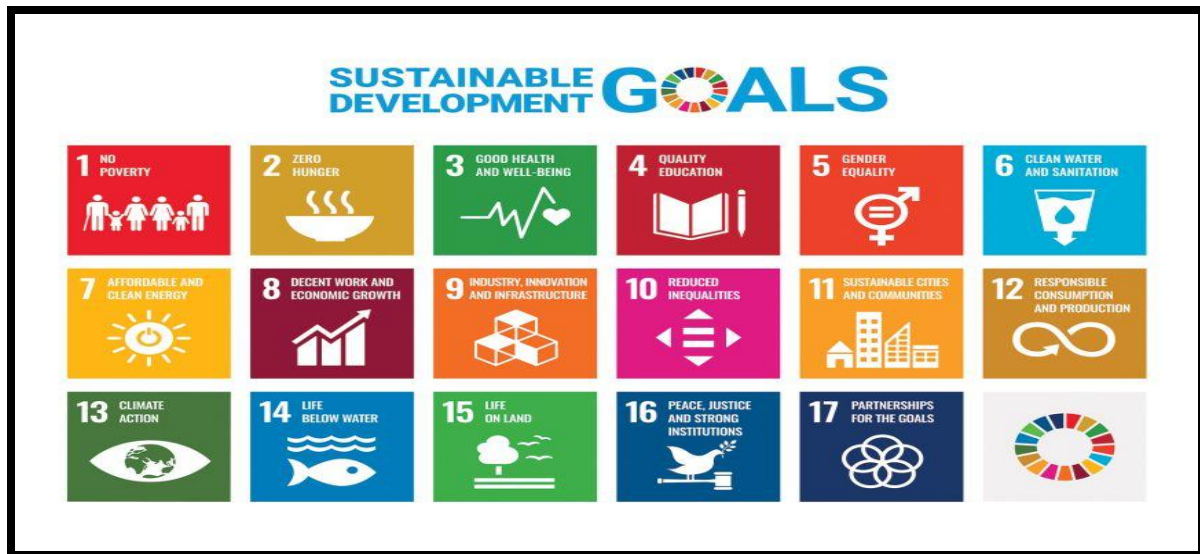


Fig.2: Sustainable Development Goals proposed by UN (2015). Retrieved From- <https://education.nationalgeographic.org/resource/sustainable-development-goals/>

Role of Digitalization in Sustainability: A Review

Technology is always evolving, but sometimes advancements come at a high cost. Therefore, it is important to determine how technological advancements affect sustainable growth of the society and environment. Based on the previous revolutions, the 4th revolution is guided by artificial intelligence, augmented reality and virtual reality. Bhutani and Paliwal (2015) noted that digitalization is an essential instrument that has improved procedures in planning, regulation, administration, and socioeconomic domain of various sectors resulting into the high quality of life. The disparity between people and products becomes thinner as more services become digital. It improves the mobility of information thus satisfying the demands of each individual. It provides an array of opportunities for investment, innovation, and the development of new companies. Digitalization is expected to be one of the primary forces for sustainable growth in the future. Therefore, it can be said that digitalization leads to the sustainable development of a nation.

Javanovic et al., (2018) in their study noted that digitalization is significantly and positively correlated with the components of sustainable development. It was noted that high use of digitalization results into higher economic growth, innovations, and positive social growth. Digitalization provides an opportunity to explore creativeness, online education, virtual sports, working from home, and learning from OERs. These activities

are all done digitally and do not use any natural resources (Miroshnik, 2021). Digitally empowered civilizations are more aware, connected, cooperative and content with their progress. They are able to utilize the resources judiciously which leads to conservation of resources for future generations.

Digitalization has provided knowledge, opportunities, platform and expertise to people from different employment sectors to collaborate and work towards achieving sustainability. The integration of digitalization with sustainability can provide creative means for resolving global issues, developing a sustainable community in order to accomplish the Sustainable Development Goals. The emerging and future digital technology will also have novel applications, data analysis capabilities, and user-friendly services. Therefore, it can make a substantial contribution to social progress and quality of life. Furthermore, it encourages the exporting of environmental friendly goods, reducing manufacturing costs, and in fostering green globalization which contributes to sustainable development and economic success.

The alignment of digital technology with sustainable development goals enhances the sustainable outcomes of an organization. Integration of digital technology and sustainable principles have a positive impact on the economy, society and environment. Implementation of innovative digital technologies with robust integration, changed management strategies, and stakeholder involvement significantly contributes in achieving sustainability goals.

Digitalization for Sustainable Development in India

In India, digital technology continues to develop quickly. India's population is turning into empowered users of digital technology. Furthermore, the technological gap between cities, towns, and villages will soon be filled in terms of digital services. By keeping this in mind, the government of India has started a development program in order to promote economic growth. The primary goal of The Digital India Program is to make all services available to all citizens electronically or through web portals. The government is spending additional funds on technological advances in an effort to eradicate corruption and black money from public life. According to Bhutani and Paliwal (2015), digital platform would bring the rural and urban areas together under the banner of sustainable development. In addition to

the societal upliftment, there would be significant economic growth that would result in a prosperous country.

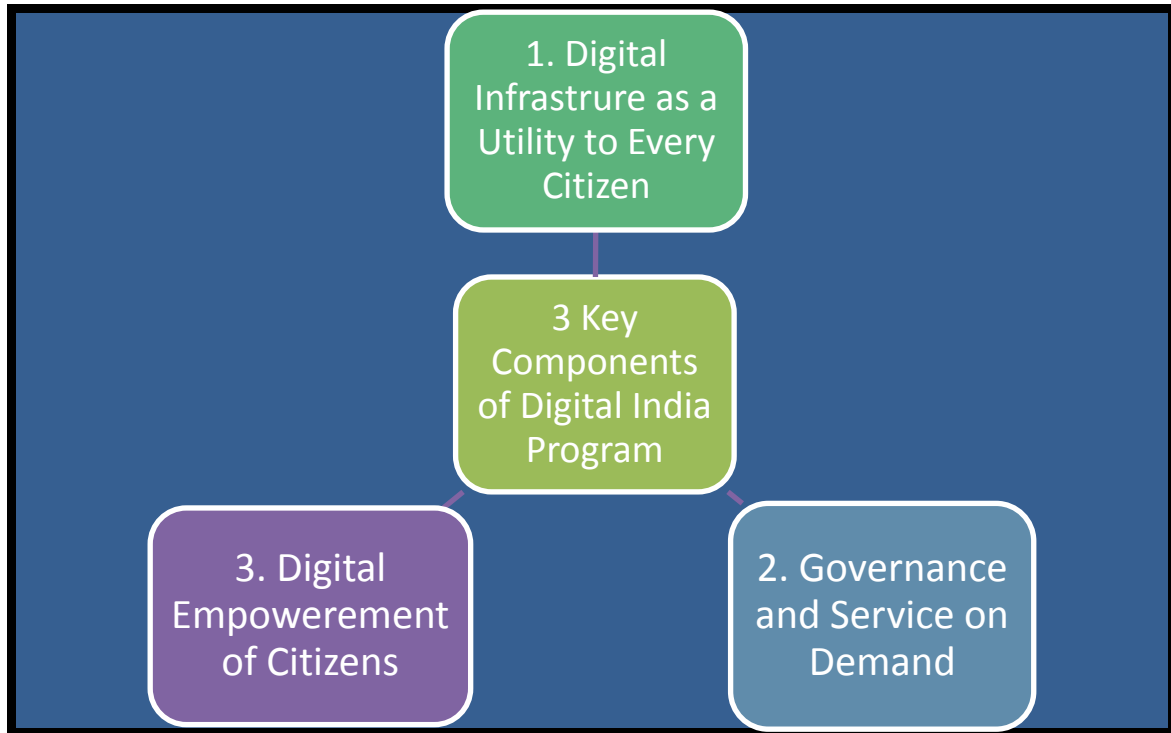


Fig. 3: Key Components of Digital India Program

Some of the facilities provided under Digital India program are digilocker, e-education, e-health, national scholarship portals and biometric attendance. By using these facilities, it is possible to reduce the utilization of resources. It is now possible to store important documents on digilocker thus reducing the utilization of papers. The use of digital technology has also boosted commerce and business. Public access to medical care and education has become much easier. The information required appears on the screens of digital tools in a matter of seconds. These tools have provided an opportunity to learn, make informed decisions and earn thus contributing in the economic growth of the country. (Rao, L. & Markendeyachari, P.2021). The Digital India Program is focused on three aspects i.e., creation of digital infrastructure, digital delivery of government services and digital literacy. India will accomplish the Sustainable Development Goals of the UN by 2030 thanks to this program (Vijayan, A. 2019).

Challenges

Digitalization has been useful in solving the national and international problems. However, it has also been observed that digitalization can have both positive and negative consequences.

1. **The Tools:**The smartphone is one of the greatest technologies of digitalisation, but at the same time it is one of the most unsustainable digitalisation technologies. Despite having its benefits of increasing economic development, it has also created environmental footprint. According to the Shift Project (2019), almost 3.7% of world's carbon pollution comes from increasing digitalization which is higher than 70% from 2013-2020. In their study, Sharma and Singh (2018) also noted that under the impression of being sustainable these tools (smartphones, tablets, computers) have created significant environmental, criminal and health risks. The fascination with branding and image has caused the consumers to buy more tools regardless of their requirement.
2. **The Understanding:**Environmental illiteracy is one of the major causes that hinders the sustainable growth of a nation. There should be education programs on the goals of sustainable development for the residents. The sensitisation programmes should be directed at ensuring that each country's residents understand the concept and principles of sustainable development and engage in responsible environmental, economic and social behaviour.
3. **The Quality:** With everything being digital it is now a race between companies to produce more digital products. However, it leads to the production of bad quality products with no guarantee of return. These products get easily damaged and sometimes also have negative impact on human health. Poor product designing is directly related to the increased recycling cost.
4. **The Cybercrimes:** There has been a huge jump in cybercrimes in recent years. Now that every information is available online it has become easier to scam people or to damage the economic growth of a nation by spreading rumors.

Therefore, it can be said that the consequences of digitalization are complex and can also present risk for sustainability. However, it is possible to manage these issues by

maintaining a harmonious relationship between government, business and education sectors.

Implications of the Study

1. The public should be educated about the connection of digitalization and sustainable development. They should be made aware of sustainable choices as it is not possible to recycle tons of electronic waste every year.
2. Government should make sure that the use of digital technology should be relevant to the concerned country. Not every tool is ideal for the sustainable growth of a specific region. Hence, the production and consumption of digital tools should be fully aligned with the nation's ecological processes.
3. New tools of digitalization that could embrace sustainability should be created. This responsibility applies to governments and businesses.
4. Sustainable development requires the generation and application of creative ideas and innovative design and techniques. For this reason, the UN should partner with government, private sector, development agencies and civil society organisations (CSOs).
5. Financial support should be provided for universities and other research institutions for research into education, agriculture, ICT, health sector and planning for proper land use.
6. In prosecuting the SD agenda, UN should acknowledge and consider different national capacities, national policies and priorities. The UN should also ensure that all countries provide regulations for the proper implementation of policies and to achieve goals (country specific and global).
7. The developed countries should extend support to the developing nations in the implementation of the global agenda.

Conclusion

The modern world is heavily reliant on technology, therefore staying up to date on current advancements is becoming more and more important. The industrial revolutions that have happened during the previous three centuries have had a significant impact on the characteristics of modern society. The preservation of environment is now highly depending on the technological capabilities. Digitalization is one of the primary factors

that will preserve the culture and resources for our future generations. Sustainable development aims at achieving the economic and social harmony which is possible by digitalization. To achieve this objective, global citizenship education, lifelong learning, and high-quality education are all emphasized in the Agenda for Sustainable Development Goals to be achieved by 2030 (United Nations, 2015).

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