



Digital Transformation: A way to sustainability

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Abstract: The buzz words like ecofriendly, sustainability, sustainable development, climate change, threshold, etc. are not only making the headlines but also the central focal points of policy making all around the world. The breach of world's annual average threshold of 1.5° C has been the hot topic of discussion among researchers and scientists across the globe. The policy makers and governments are working upon the plan to accomplish SDGs for a better sustainable world Digitalisation is undoubtedly a breakthrough measure towards sustainability and inclusiveness by integrating systems and creating synergies. In fact the digital technology and its continuous advancements is facilitating a fast transformation as well as transition to lower carbon emission levels pathways and reduced usage of resources, contributing to inclusive and sustainable development. It's applications are not confined to one or two industries.

Pushing for electric vehicles, solar energy, waste management systems, environment friendly products and processes in businesses, etc. are some of the well known and much talked initiatives that are being adopted. The significance of digital technologies in efficiency improvements, cross sector coordination, and sustainable development have been the focus of the present study. An attempt has been made to identify the significant contributions of digitalisation in different sectors for sustainable development, and to suggest some measures for catering the full potential of digitalisation in making the planet sustainable.

Keywords: Sustainability, SDGs, digitalisation, and inclusiveness.

I. INTRODUCTION

On our planet, the resources are limited and are shrinking at the pace higher than expected by humans few decades ago. This is primarily because of selfishly exploiting scarce resources to satisfy their never ending wants. The economists and policy makers at different times proposed different economic models of development to find the basic economic problem of finding optimum solution between limited resources and unlimited needs. Urbanisation and industrialisation had always been at the centre of development. This industrialisation and development is at the expensive cost of altering the nature of this planet. With depleting resources, environmental degradation and increased toxicities, the planet is facing adverse weather conditions, breaching all its records and falsifying all set trends. The rising temperatures, globally, are causing imbalances in different seasons. Attributing the degradation of environment solely to the industrialisation is false and unfair. There are numerous identifiable and unexplored reasons behind these unexpected adverse weather conditions. Thus, the scientists and researchers across the world have been working to discover innovative technologies and methods which are sustainable and environment friendly. Sustainability is for maintaining a process for the longer period of time Sustainability may be defined from three dimensions or core concepts: one is economic dimension, second is environmental, and the third is social. The innovations shall cater the core concept of sustainable development, i.e. development that fulfils the needs of the present without compromising the ability of future generations to meet their own needs. Digitalisation is major step toward this direction by safeguarding nature with minimum usage of paper.

India, the nation of huge diversities, different cultures and traditions, disparities or discrimination among various sections on the basis of one or the other cause, is also one of the fastest emerging economies in the world having a wide market base and cheaper resources, thus becoming an attraction point for the investors

across the world. But this change in the economic environment is also widening the gap between poor and rich sections. India having a huge population has limited means and has huge section unemployed who needs some immediate measures to combat the poverty and unemployment. Today's scenario of globalised i.e. interrelated and interconnected world provides huge opportunities as well as poses challenges to achieve inclusive growth in a country. To achieve inclusive growth, the entrepreneurs or businesses have major role to play along with government. India, having massive population of which youth (less than 30 years) accounts for more than fifty percent), faces a limitation of scarce job opportunities in various sectors of the economy. However, the Government adopts various means to generate jobs through various employment schemes but the supply is quiet short of its demand. The country today needs a combination of innovation, technology, leadership and inspired workforce to reap benefits of knowledge society. The famous philosopher Francis Bacon said, "Knowledge is power" which is the secret of success. The best use of innovative technology, simplified processes and new ideas enable firms to perform activities differently or to perform different activities and to deliver a unique mix of value in direction of inclusive growth.

When we are talking about sustainable development, there is today's need of the hour to attain inclusive sustainability. To safeguard future generation's interests, inclusiveness is the perquisite. The sustainable ways and means shall be in reach of all and affordable. If it gets limited to few individuals, then this may lead to acute social crisis pushing back deprived apart. Digitalisation helps to achieve inclusive sustainability in today's age of big data and artificial intelligence. Schemes like Digital India, Unified Payment Interface, Direct money transfer, etc. helped significantly to fix leakages and connect the distant dots to uplift the deprived sections of the society. Although in many areas of the nation, the desired infrastructure for getting benefits of digitalisation is not available. The present study attempts to trace significant key drivers that are enabling the digitalisation to transform the planet towards the sustainability, also to identify notable contributions across the sectors made by the digital technologies. The study also suggest some measures to encash the benefits of such technologies in achieving the goal of the sustainability.

II. A PUSH FOR INCLUSIVE AND SUSTAINABLE DEVELOPMENT

The growth and development indicates the rise in the income of the people. But this development needs not be balanced and even among different sections of the society. With rise in incomes, the inequality spreads even more widening the gap between rich and the poor. The development model shall include all the sections bringing them on the main streamline. Inclusive growth entails comprehensive growth, shared growth, and pro-poor growth. Digitalisation is being widely used across the world in different sectors to reduce the gaps in sections of the society. The objective of Financial Inclusion is to extend financial services to the large hitherto un-served population of the country to unlock its growth potential. Using digital technologies in the financial services and payments is the notable success story of digitalisation towards inclusive and sustainable development. A cautious approach is needed to proceed with theses changing technologies since its limited accessibility and affordability tend to widen the digital divide as well. The government is prioritising the digitalisation through its flagship programs to expand its scope and reach in the country.

The meaning and implication of sustainability is quite different in the developing nations to that of developed nations. In nations like India, the cost of sustainability is quite high, far from the reach of the poor. Sustainability investments lead to new jobs and business models, but at the same time an energy transition typically hits the poorest first, negatively affecting inclusion. So the picture is complex. The cost of meeting decarbonization and resource management pathways depends on decisions made today on changing behavior and generating innovation. Benefiting all the segments of the society while safeguarding the interests of future generations is the implication inclusive and sustainable growth, which aims to improve standard of living / well being by reducing poverty and inequality and by fostering social cohesion and participation. It also aims to minimal the negative impact of economic activity on the natural resources and the entire ecosystem of the planet.

III. DIGITAL TRANSFORMATION FOR INCLUSIVE AND SUSTAINABLE DEVELOPMENT

Digital technology has been innovated and grown more rapidly than expected which is reshaping economic, social, and cultural systems. Digitalisation is revolutionising the way we interact with the ecosystem and its stakeholders from monitoring to influencing markets and consumer behaviour, from conserving resources to virtual social world, from big data analytics to induced demand.

For digitalisation for sustainability, the emphasis is to be given for proactively developing the digital tools and expanding its applications so as to achieve environmental targets and also to foster positive outcomes for all its inhabitants. There is another dynamic- sustainable digitalisation, implying the sustainability by

design. It is essential to prioritise environmental sustainability and ethical considerations throughout the lifecycle of the digital technology.

Bijpai & Biberan (2021) highlighted that the vast perspective contributions of digital revolution towards inclusive economic growth, environmental preservation, social mobility and equity had no recognition in SDGs. They also portrayed digital revolution as single societal transformation for unifying other five technological transformations (AI, VR, IOT, Machine learning and existing technologies) possible. A study of MIT Sloan Management Review highlighted three key areas to transform enterprises – Customer experience, Operational processes, and Business model by leveraging digital tech so as to augment the physical offerings with digital tools and services.

The digital technology is evolving our lives as well as the businesses from old fashioned to real time automated processes and service providers. The instant bill generation and payment mechanisms of basic amenities, virtual bookings of services, automated consumer grievance and feedback mechanism, online education, etc. are some of the applications which are now part of our lifestyle. The industry/ enterprises are going through evolution of automation and digital technology. For instance, the insurance companies are selling health insurance without any personal interaction with the customer and providing the entire claim processes in virtual mode. The entire business models have been changed with the incorporation of digital technologies in core businesses ranging from automated manufacturing plants to virtual hiring processes, from digitalised operations to digital marketing, etc. these are not merely examples in few big multinational companies but has spread even upto small enterprises. The blockchain technology has brought a revolution in the data-based companies providing a more secure encrypted networking. The cryptocurrencies, Blockchain accounting, blockchain enabled cloud computing, neural networking, etc. are some of the widespread applications in today's high-tech ecosystem.

This transformation is undoubtedly increasing productivity and effectiveness on one hand while causing unbalanced disparities and widened digital divides as an outcome of ICT disparities. The desired infrastructure and accessibility are major roadblocks besides digital illiteracy in pan India. There is a mental block and fear of frauds among people who have lesser knowledge due to which this divide gets widened. In rural areas, the infrastructure and poor connectivity are the major facets of digital divide in India.

Digitalization would facilitate a fast transition to sustainable development and low carbon emission pathways because of its contribution to efficiency improvements, cross-sector coordination, and a circular economy by introducing new services and reducing resource use. Online shopping has accelerated since the pandemic when consumers had to stay home due to lockdowns. Hence, online sharing platforms have seen increased activity in purchases of daily needs such as food, drinks, and clothes. These activities will generate synergies to attain the SDGs: energy efficiency, food and water provision, health access from telemedicine, and education from online training. Developing countries may not be able to reap the opportunities from digitalization due to their limited internet access and poor infrastructure unless major investments are made to improve internet access. Digital technologies can contribute significantly to the fulfilment of several SDGs. AI-based solutions can be used to support and more accurately quantify this natural process by analyzing satellite imagery to detect forest land cover and to estimate ecosystem carbon sequestration. Cleaning the data and harmonizing the diversified data sources of climate change information could become an important agenda in the future. Digitalization in the energy sector will support network control, data availability, and consumer engagement. Energy management strategies based on digital apps could help ensure high precision of the demand and supply, which could lead to more sustainable energy consumption and production.

The digital transformation could be achieved across several SDG sectors: Agriculture & ancillary, energy, building, transport, and industry. These digital and green transitions provide huge opportunities for technological innovation, economic prospects, and job creation. Examples include using innovative technology to generate food and land systems at scale and achieving high well-being with low energy demand by using digital technology across end-use sectors such as food, building, industry, and transport.

IV. CONCLUSION

The quest for achieving sustainable growth is emerging gradually on top of the priority list of the countries' goals across the world. However, achieving that sustainable growth in reality is still quite far, seems only over ambitious goal. Achieving sustainability needs a lot of transformations across the systems along with a revolutionary change in mindset of millions of people living on this planet. The net of concrete with least trees is quite evident – one of the many examples portraying the indifference of the public as well as the authorities. Also, the innovations and increasing applications of technology is an inevitable dimension of today's growth prospects. Digital technologies, such as IoT, AI, and big data, have rapidly improved, equipped with cheaper digital memories and higher computer speed (also the possibilities of quantum

computers). New business models induced by these technologies and behavior change have been evolving rapidly, as can be seen with the growth in popularity of the sharing economy and circular economy. There is considerable room to reduce energy consumption in end-use sectors relative to the energy supply and energy-intensive sectors. Deep emission reductions at affordable costs will be a key for achieving multiple SDGs, and IT, AI, and other related digital technologies will contribute to this achievement. Without a transition to this sustainable inclusive innovation agenda, the development targets set out in the SDGs cannot be achieved in any meaningful way. An important consequence of this perspective on innovation and sustainable development pathways is that inclusivity cannot be achieved through increasing employment alone. This requisites for inclusion are the inclusion of the marginalised in production, the supply of products that meet the needs of the many and the disadvantaged rather than the few, and the inclusion of the marginalised in the innovative process itself.

The gains from sustained economic growth have been unevenly spread, and many countries are confronted by substantial and growing levels of social and economic exclusion, accompanied by a degrading environment. Digital technology can help address some of the root causes of conflict, such as social exclusion, discrimination, and injustice by enabling different sections listed on common platform. The remote access and real time communications help to spread desired information globally. Today, big data processing and management is empowering the stakeholders with deep insights to make quick decisions and resolving social, political and economic issues.

Using digital technologies, applying these in daily life, policy making and reducing digital divides, may help nation to move a step forward towards sustainability. These technologies are helping the businesses – small or big, local or global, to transform business processes in more sustainable manner. Undoubtedly, the government and the responsible authorities must have strict check upon the environmental harms associated with these technologies being used by the businesses. Achieving inclusive and sustainable growth is no simple task. It requires a comprehensive, integrated approach that takes into account the geo-political, economic, social, and environmental dimensions of development, as well as a complex interaction of multiple factors like governance, institutions, policies, markets, technologies, culture, and behavior. It is also required to make sure that growth does not deplete or degrade the natural capital that supports human well-being; managing trade-offs and synergies between growth and other objectives such as equity, efficiency, innovation, and security; and mobilizing the necessary resources, capacities, and partnerships to implement and monitor policies that support inclusive and sustainable growth.

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