ISSN: 2584-1033

SAMRIDDHI

Journal of Dr. MCR HRD IT

July, 2024
Volume 1, Number 3

Dr. Marri Channa Reddy
Human Resource Development
Institute of Telangana
NABET Accredited Excellent (उत्कृष्ट) Institute

SAMRIDDHI

Journal of MCR HRD IT

July, 2024

Volume 1, Number 3

Dr. Marri Channa Reddy
Human Resource Development
Institute of Telangana

Published by: Dr MCR HRD Institute of Telangana, Road No. 25, Jubilee Hills, Hyderabad – 500 033 Phone: +91 40 23548487, Fax: +91 40 23543459 Email: info@mcrhrdi.gov.in https://www.mcrhrdi.gov.in

Dr. Shashank Goel, IAS
Director General, Dr. MCR HRD Institute
& E.O. Spl. Chief Secretary to Government

From the Director General's Desk …

It is with immense pride that I extend a warm welcome to you once again to the release of the third volume of our esteemed journal, *SAMRIDDHI*. The success and positive reception of the first two volumes have been remarkable, thanks to the valuable contributions and overwhelming support from our community of Administrators, Academicians and Researchers.

I take this opportunity to commend every contributor and reader who has been part of the *SAMRIDDHI* journey. Your support and active participation are the bedrock of our journal's overwhelming success. Together, we can continue to strengthen this vibrant platform for the exchange of groundbreaking ideas and advancement of knowledge and contribute to improvement of administrative practices and governance.

I once again extend an invitation to all administrators, academicians and researchers to contribute your opinions and innovative ideas to the journal. Your diverse perspectives and rigorous research will ensure that *SAMRIDDHI* remains at the forefront of scholarly discourse and a beacon of knowledge in the realm of public service.

I look forward to many more volumes filled with insightful contributions and the continued growth and impact of *SAMRIDDHI*.

Dr. Shashank Goel, IAS

SAMRIDDHI

Volume 1 July, 2024 Number 3

CONTENTS

Genome Valley: The Biotech hub of India

B.P. Acharya, IAS (Retd.)
Formerly Director General, Dr. MCR HRD Institute of Telangana

Sculpture at the entrance of Genome Valley

At a time when the whole world was anxiously waiting for the Covid 19 vaccine, inevitably the attention went to Genome Valley that is a world class life science cluster in the outskirts of Hyderabad, where two homegrown vaccines were developed. Genome valley has about a third of world's vaccine manufacturing capacity and played a major role to control the pandemic.

For those of us who were involved in facilitating this cluster, it is indeed a matter of pride when we look back at its genesis:

The story of the Genome Valley begins two decades ago in a sleepy village of Shameerpet mandal called Turkapally, about 30 kms from Hyderabad (though it appeared farther away due to the Reserve Forest area in between). An intrepid NRI scientist Dr Krishna Ella decides to return to India and sets up his biotech industry (Bharat Biotech) in 1996 in this God-forsaken village.

Little did he realise then that his would be the anchor industry in the global biotech hub, though he always nursed such a dream. By then Hyderabad well was on its way to be an IT, software hub, beginning to compete with Bangalore (as it was called then) and as the then Chief Minister used to often say, "IT and BT (biotech) should be the thrust areas for the State."

It was at this momentous cusp of time, I made a fortuitous entry into the scene, as I was asked in March, 2000 to take over as Secretary, Industries and Commerce (replacing Dr Sheela

Bhide, almost 10 years senior to me). She literally put the biotech (and genome valley) baby on my hands and said, "take care of the baby." I was tentatively diffident to begin with, but, as is my wont, wanted to give it my best shot. Meanwhile, the ICICI Knowledge Park, the first R&D park of the country, had come up in May 2000, near Bharat Biotech and about 150 acres of Government land was earmarked next to it to develop as Biotech park on the new-fangled Public- Private partnership mode. Draft biotech policy of the State was ready with Ernst & Young chosen as Consultants to guide the State in this sector. A biotech advisory committee headed by eminent scientist Dr D Balasubramanian (former Director, CCMB) was also set up to ensure industry- academia- Government interface.

With all these carefully chosen elements in place, Genome Valley was literally like a big jigsaw puzzle waiting to be solved! A daunting task in the Government, no doubt, but not impossible. That was when we decided to take up the gauntlet, goaded by good friends Utkarsh Palnitkar and Vishal Goel of E&Y, and ably guided by Dr D. Balasubramanian, Chairman of the Advisory committee and Late Dr BS Bajaj of the Biotech association. For the next 4-5 years, the Team Genome Valley, literally worked as men (and women) possessed to build up the cluster bit by bit, brick by brick, as it were!

The first task was to get the Biotech policy of the State finalised. Utkarsh and Vishal of E&Y helped immensely to finalise the document called "Beyond Tomorrow" (BT) that provided the basis to attract investments to the State in this sector, thereby sowing the seeds of the Genome valley. Hyderabad had stiff competition from Karnataka with a very proactive Vision group led by Dr Kiran Mazumdar-Shaw and had to aggressively market Genome Valley in India and abroad, especially in events such as, the annual meet of BIO.

2001 was my first BIO in San Diego, where I presented on the Genome Valley in the curtain raiser Bio parks event, encouraged by friends like Dr Clause Plate of Germany, who later became a supporter of Genome Valley, along with Dr Robert Naismith of USA, who visited and invested in Hyderabad.

We were quick to realise that promotion without actual development on ground will not take us far and hence, painstakingly tried to gather each of the elements to make the cluster viable. The first step was to finalise the developer of the Biotech park under the PPP mode in Genome Valley. Shapoorji Pallonji (SP) then headed by Mr Cyrus Mistry (later CEO, Tata Group) had to be convinced in their historic Colaba Office, that it was a risk worth taking, as Cyrus's grandfather took up the gambit by making the "*Mughal e Azam*" film in 1960. Of

course, developing infrastructure is not as exciting as filmmaking or producing, but found SP professionally equal to the task to build, operate and market what was known then as SP biotech park over 150 acres allotted to them adjacent to the ICICI Knowledge Park (now called IKP).

As this was the first of its kind Biotech cluster in India, we were eager to benchmark it against the best in the world and took a high level delegation led by the then CM to visit Research Triangle Park in North Carolina in 2002, after the World Economic Forum held that year in New York (not Davos), as a mark of solidarity after the 9/11 incident. By 2002, the first of the allottees in Biotech Park started their manufacturing units and Dr Ella's Bharat Biotech had company in what was to become a vibrant Life Sciences cluster in a few years. But there were issues like water supply, pollution control, fire station, cafeteria, housing etc, that had to be addressed and the whole area was declared as pollution free zone to make it suitable for Life science sector.

Fortunately, my brief stint as MD, HMWS&SB in 2004-05 (immediately after my tenure as Secretary, Industry in charge of Biotechnology), helped to complete the project to draw water from a distance of about 20 kms (Alwal reservoir of Water Board) and a felt need of the cluster was met, paving the way for its growth and expansion in the years to come. Meanwhile, we felt the need to hold a regular event to show case Genome Valley and that's how Bio Asia (which had grown to be one the major global shows over the years) and FABA (Federation of Asian Biotech Associations, with Dr B.S.Bajaj as the Secretary-General) were born. Soon the area allotted for biotech park was fully occupied and there was a need to plan for its expansion.

When I came back to Industry sector again in 2005, this time as MD, APIIC (till 2010), we could earmark 100 acres of land next to ICICI KP in Lalgadi Malakpet, as Biotech Park Phase 2 (partly notified as SEZ) and later 150 acres in the nearby village of Karkapatla for Phase 3, which was fully occupied and search was on for identifying land for the next phase.

In Phase 2, a major vaccine manufacturing facility was set up by Biological E, which collaborated with Johnson & Johnson for their Covid vaccine. In Phase 3, Indian Immunologicals had also set up a major vaccine manufacturing unit and was also involved with another Covid vaccine candidate. In Phase 2,100 acres was allotted by State government to ICMR for setting up the National Animal Research Facility (NARF), the largest of its kind in India, that will be a big boon for the Biopharma industry for pre clinical trials etc.

Thus, over the last two decades, the Genome Valley has emerged as a truly global life sciences hub, the only one its kind in India and today hosts over 300 companies, including major international players, thereby providing employment to over 30,000 persons, either directly or indirectly. After the formation of Telangana, it has gathered further momentum, as a preferred place for investment.

For those of us, who were involved, since its very inception, it is indeed a proud moment to see it in the forefront of the battle against the pandemic. The story of the Genome Valley is also an example of building a viable ecosystem for a successful industrial cluster by carefully planning and implementing each of the elements essential for its growth and carefully placing bits and pieces of this big jigsaw puzzle together.

Dare to be Different: Practical Management Insights

Narendar V. Rao, Ph.D., CFM, CMA, CBM
Professor of Finance, Department of Accounting, Business Law, and Finance,
College of Business & Technology, Northeastern Illinois University,
Chicago, USA and

D. Vasudeva Rao
Managing Director (Retd.), Ennore Foundries Ltd., Chennai

There has been tremendous progress in science and technology advancements in the past few decades, particularly in the last thirty-five years. What was a fantasy at one time is now a reality. Due to humans' significant progress, distances have shrunk, communication over great distances has become easy and fast, collection of vast data and compressing them in tiny spaces and gadgets are now possible. Besides, artificial intelligence is aiding and replacing human effort in many areas. These have become the order of the day. These technological breakthroughs have made life comfortable and opened new opportunities and markets.

Intellectually, humankind has made significant progress. However, competition has also become sharper, and the pace of product and skills obsolescence has become much faster. The knowledge and skill required to succeed in this rapidly changing environment differ from prior periods. Education in more than one discipline may be required. It must be an amalgam of various fields of knowledge, mainly digital technology, its tools, and applications. Innovation and creative approaches are necessary for all areas. Today's businesses must operate, survive, and grow in this challenging environment.

Smartly harnessing a person's intelligence, strength, innovative thinking, and skills is essential for overall peace and progress. It is of paramount importance to acquire new knowledge and skills and their application to the changing environment. If due recognition of this aspect is considered and action is initiated for course correction, it will positively affect the individual and the organization to which they belong.

Coping with Trends

One of the most significant developments in the past couple of decades has been the growth of globalization. However, "anti globalization" sentiments are growing at the same time. The Brexit process saw the exit of the United Kingdom from the European Union.

The strained relationship between the United States and China and Russia's invasion of Ukraine has caused global supply chain disruptions of an unprecedented scale. The spectre of inflation has gripped the United States forcing the U.S. Federal Reserve Bank to take aggressive steps to control it.

On the other hand, several major economies, including China, face the threat of recession. The headwinds of inflation and recession make the global economic scenario highly uncertain and rapidly evolving. Companies must operate and succeed in this complex and extremely challenging global business environment.

About fifteen to twenty years ago, the term "BRIC" was used to refer to Brazil, Russia, India, and China. Since then, Brazil and Russia have faltered. Due to the severe sanctions imposed by Western nations on Russia following the Ukraine invasion, its economy will likely face unprecedented economic pain for the foreseeable future.

Even though the high oil prices have provided a short-term boost to the Russian economy, its long-term outlook is dismal. Russia finds itself increasingly isolated in the community of nations. China is also facing many challenges. The group that holds the highest potential for sustained economic growth is ICASA (India, China, Africa, and Southeast Asia).

However, each of these countries faces challenges. If these markets overcome their internal problems, they hold the potential for rapid and continued progress and expansion. Within ICASA, Africa has the highest potential. But it also has the most significant challenges. China's success on the global stage has shown that economic power creates geopolitical power.

However, China faces a demographic disadvantage. The impact of its aging population and its disastrous one-child policy, which has severely skewed the sex ratio, are now being felt. Even though the one-child policy has now been abandoned, it will take at least a generation for the sex ratio to get rebalanced.

In addition, the COVID pandemic has had a severe deleterious impact on the Chinese economy. Therefore, its status as the flagship of the global economy is a moot point in the near future. One of the bright spots on the global stage is India. It has a large pool of skilled English-speaking workforce and enjoys the "demographic dividend." More than 50 percent of its population of 1.3 billion is under twenty-five. This fact will likely result in significant and sustained domestic demand for the foreseeable future. Its prowess in information technology and start-up culture, which has firmly established itself, portends a bright economic future for the country.

This trend is facilitated by a business-friendly government that has launched many innovative programs to encourage entrepreneurship and economic growth. The government of India has also removed many colonial/socialist era laws and regulations that had shackled private-sector businesses and stymied economic growth. Given these favorable trends, India will likely replace China as the engine of global economic growth, at least for the near future.

However, India does face some unique challenges, such as communal strife and tensions on its borders with China and Pakistan. If it can overcome these daunting challenges, it can take its rightful place as an important player in the global arena. One of the critical challenges of the future will be reducing resource consumption. Companies must adapt to operating in a resource-constrained environment. Advances in analytics, automation, and innovations in materials science, workspace designs, digital technology, Internet connectivity, and renewable energy sources enable resource consumption reduction. Technology is also having a significant impact on resource production, as well as reducing resource intensity. As technology progresses, revealing efficiency and opportunities across industries, companies should exert more influence on their cost structure. Given these developments, companies should be alert to resource-related business opportunities. For instance, composite materials, 3-D printing, and similar technologies have already transformed industries such as automobiles, aviation, electronics, and medicine. Therefore, companies should quickly seize opportunities that emerge or risk being pushed aside by their more agile competitors.

The pace of Industry disruption due to technological changes is accelerating. This disruption is causing the vital foundations of industry structure to change. Although this is widely viewed as an opposing force, it may also contain opportunities.

Technology is spurring competition that impinges on revenue and profit growth. But it is also creating new opportunities to improve corporate performance. Aligning a company's digital game plan with its corporate strategy has become a strategic imperative and a critical factor in differentiating between winners and losers.

Corporate leaders with vision, sagacity, and foresight who can build an agile organization and keep up with the pace of change will have exceptional opportunities. Even before the onset of the COVID-19 pandemic, the global business environment was very challenging. In such a situation, it is erroneous for a CEO to believe that a company's or industry's status quo will remain. The fundamental assumptions underlying the status quo must be identified and challenged. Besides, a concerted effort must be made to explore the possibility

of turning an organization's limitations into strengths. When a company faces a challenge, it should carefully examine the experience of other companies facing similar problems and successfully resolve them.

If a company wants to disrupt an existing industry, it must, at the outset, identify the assumptions implicit in current strategies. Elon Musk cofounded PayPal. PayPal was a game-changer in the payments industry. In 2002, eBay acquired PayPal. This transaction resulted in a USD 175 million windfall for Musk. He has since parlayed this money into a diversified group of companies, including electric car company Tesla, space exploration company SpaceX, brain implant start-up Neuralink, tunnel construction company the Boring Company, a solar energy firm Solar City, and the messaging platform Twitter, now renamed X. These companies have attempted to disrupt their respective industries and have been quite successful.

Another example is that of Netflix, which transformed the video rental business by challenging the underlying assumptions. Blockbuster, which had a commanding market share in this industry once, did not challenge that business's assumptions. Consequently, it went out of business.

After identifying the assumptions, a company that wants to disrupt the industry must try to invalidate one or more of them. This strategy will enable the company to formulate a radically different business model that differentiates it from its competitors. Uber disrupted the cab industry with a fundamentally different ride-sharing model.

Companies can also succeed by combining products or services, or trends traditionally viewed separately. Many years ago, the founder of Sony, Mr. Akio Morita, noticed that young people were becoming increasingly mobile and loved music. Combining these two trends, he created one of the most successful electronic products ever—the Sony Walkman.

CEOs who wish to disrupt the industries they operate in should form groups with diverse expertise and experience. These groups should be mandated to explore new combinations of products and services.

Furthermore, forming alliances with providers of complementary products must be examined as they are likely mutually beneficial. The COVID-19 pandemic forced companies to operate in a resource-constrained environment. However, working in such a situation can also trigger creative strategies. Therefore, the CEO should actively encourage employees at all levels of the organization to develop innovative approaches.

Constraints can also be self-imposed and used as a tool to spur innovation. India's successful Mars Mission is an excellent example of frugal engineering caused by being forced to operate in a resource-constrained environment. Despite its meagre budget, India's Mars Mission was a success on the very first attempt, a feat that no other country has been able to achieve to date. Another successful mission by the Indian Space Research Organization (ISRO) was the soft landing, for the very first time, of a spacecraft near the south pole of the Moon in August 2023. The total budget for this mission was less than the budget for many Hollywood movies!

Instead of lamenting about the lack of funds, India's space scientists were able to successfully complete the missions through innovative strategies and resource optimization. Their success in this regard can provide valuable insights for companies.

Dare to be Different

An aggressive attitudinal change and innovation in all aspects of managerial approach and action are required to be daringly different. Finding ways to do things better, break the monotony, and enhance curiosity while at work, with the enormous amount of knowledge, wisdom, and tools available now, will enable employees to gain new experiences. It is essential that learning must be integrated into all aspects of the business organization. Employees must feel comfortable making suggestions, taking risks, experimenting with new ideas, and giving and receiving free and frank feedback.

Teamwork and a collaborative approach must be encouraged to produce better results. The pooling of cross-disciplinary expertise, wisdom, and skills is required. It must be developed for effective teamwork if people still need them. The chief executive must ultimately handle all feedback information—customer complaints, employees' grievances or aspirations, suggestions, and safety.

An important issue in this context is how an organization can elevate itself to the next level. The areas that need particular focus for improving performance, value creation, and meeting the challenges of the competition are:

- Enhancing customer experience
- Digitization
- Mergers and Acquisitions and Corporate Restructuring
- Emotionally connecting with people

- Making an action plan and implementing it
- Pursuing a well-thought-out, carefully calibrated inorganic growth strategy. Organic growth is usually too slow in today's hyper-competitive business environment. Hence, an acquisition-driven growth strategy becomes the preferred growth option and an essential tool for value creation.
- Reallocating and deploying resources to those business units that are performing well and reduce allocation to underperforming divisions.
- Judiciously investing in capital expenditure. Companies should seize the opportunity to buy mission-critical equipment at bargain prices during a business downturn. By doing this, they will be well-positioned to scale up operations when business picks up.
- Improving productivity. This task can be accomplished by restructuring business units, rationalizing locations, investing in automation, right-sizing the workforce, and terminating unprofitable business units. A company's goal should be to aspire to be at the top of its industry regarding productivity.
- Focusing on product differentiation. Customers are bewildered by a dizzying array of choices regarding products in today's business world. Therefore, differentiating its products from competitors becomes a strategic imperative for any company that dares to be different.

Like a game of cards, CEOs must play with the hand they are dealt with. However, the strategic choices made by a CEO early in their tenure will overcome the disadvantages of being granted a weak hand. Specifically, the CEO should leverage the benefits of artificial intelligence, digitization, cloud computing, and other emerging technologies to obtain a competitive advantage. In developing countries, there is tremendous pressure on land, resulting in high rental costs.

Therefore, companies should explore creative ways of letting their employees work remotely. In addition, the CEO should ensure that the organizational units in the company do not operate in silos. There should be a seamless exchange of information between organizational units. This strategy will foster innovation and create value.

Multi-Dimensional Poverty Indices in India: Evolution, Framework and Applicability

Amitabh Kundu
Formerly Professor and Dean of the School of Social Sciences, Jawaharlal Nehru University

A Glance through the History of Poverty Measurement in Independent India

Attempts to operationalize the concept of poverty in Independent India can be traced back to the nineteen sixties when the poverty indices figured in the corridors of decision making. India's concern to eliminate poverty and hunger, with the spectre of famines haunting the policy makers, led them to measure poverty through uni-dimensional indices that were fully or largely anchored on calorie deprivation. Planning Commission had set up a Committee in the early sixties under the guidance of Dandekar which worked out normative expenditures of Rs 20 in rural and Rs 25 in urban areas, per capita per month, loosely based on ICMR nutrition norms. as the cutoff point (poverty line) below which people were termed as poor.[1]

Understandably, the issues relating to the norms under different environmental and working conditions, appropriate consumption basket for households around poverty line, price indices for rural and urban areas in different states etc. have been revisited time and again since then by individual researchers as also by Committees, Task Forces and Working Groups set up by government. The dominant view emerging over time has been to anchor poverty line at certain nutritional standards, adding a reasonable' amount of non food expenditure and determining the number of poor at the state level, taking into consideration variations in prices in their rural and urban areas. Construction of such unidimensional poverty index, thus, involves complex calculations to identify a poverty basket of consumption, working out price indices to update the poverty line, and then applying these to the incomes or consumption of households to determine their poverty status.

There were dissenting voices like that of Sukhatme who argued that meeting the nutritional norms does not guarantee good health as the latter depends on several environmental parameters, i.e. quality of water, sanitation, living and working environment. Minhas demonstrated empirically that nutritional norms are often socially and culturally determined. Given such perspectives, Tendulkar Committee (2010) had proposed formal delinking of

[1] See Dandekar and Rath (1971)

poverty line from nutritional norms and set the poverty line well above that obtained from the set procedures, since the latter was clearly seen as inadequate given the increased out of pocket expenditure on health, education and basic amenities, particularly in rural areas. Studies showed no correlation between nutritional adequacy and outcome indicators of health, morbidity or mortality.

Understandably, there was strong criticism for not accounting for essential non-food items like clothing, housing and other assets *explicitly* in the computation. More importantly, casualness in treating aspects of education, health and other basic amenities like water, sanitation, electricity etc. came under serious attack, particularly as there was systematic withdrawal of public agencies in provisioning these. Despite attempts made to bring private expenditure on these into the poverty line, concern for malnourishment made several poverty experts, largely economists, choose calories as a convenient key for anchoring poverty until recent years, prompting scholars like Angus Deaton to dub them as calorie fundamentalists. The approach faced problems also due to judgmental factors involved in determining the poverty basket of goods and services for the poor, given the diverse food habits in the country, choosing their appropriate prices, updating the poverty line and mismatch between consumer expenditure data from NSS and national income accounts. Understandably, there was a chorus from the other branches of social sciences, administrators, and more specifically the grassroots level activists, admonishing the experts for not recognizing the multi-dimensional aspect of poverty in their methodology.

The MPI Methodology

In constructing an MPI, a researcher would have to select a set of indicators, choose their sources and design the weightages to obtain a composite index which is temporally and cross sectionally comparable. An important initiative in this direction is that of UNDP-OPHI, as a part of Human Development Report, as discussed above. It has provided a list of the indicators and their weights but these have not been adopted universally in different subcontinents, countries and regions. All of them, however, have selected indicators under three dimensions - *health, education and living standards* - assigning them equal weights. Individual indicators have, however, been constructed differently so much so that the figures in the regional and national reports cannot strictly be compared with those in the Global Report. Although some guidance is available regarding the broad framework of analysis from OPHI, the exact selection

of indicators depends on the regional/national study team. A review of the MPI prepared across the world reveals that the list of indicators and their weights have varied significantly across regions and countries due to the local consultative processes and the sociopolitical priorities of the government. However, attempts are made to create institutional mechanisms to withstand political pressures, representing short term interests.

It is important to point out that NITI in its Baseline Report had recast the indicators of the global Report in Indian context, using NFHS data for 2015-16. It had employed 12 indicators against 10 in the global report and made some departures from it in the recent report for 2019-21. It has added maternal health under *Health* and banking facilities under *Living Standards* as additional indicators but adjusted the weighting system to ensure that each dimension has equal weight.[1] Furthermore, the exact specification of the indicators and their deprivation thresholds in the report are mostly different from those in the Global MPI. The robustness and acceptability of the results in any report will inevitably depend on the scientific basis of the consultative process for developing the indicators. While inclusion of FGM as an indicator of poverty was contested by several members in Arab League, as noted in Footnote 1, inclusion of the indicator of bank accounts at par with that of drinking water or sanitation in promoting *Living Standards* is unlikely to go unchallenged in India.

The Recent Trend

The percentage of people multidimensionally poor in India has gone down from 25 per cent in 2015-16 to 15 per cent in 2019-21, says the 'National Multidimensional Poverty Index: A Progress Review 2023' released by Niti Aayog in July 2023. This has resulted in 135 million poor crossing over the poverty line. This good news, however, is somewhat belated because the Oxford Poverty and Human Development Initiative and United Nations Development Programme (OPHI-UNDP) Report had indicated a similar decline in poverty for India in its Global Report, released in October 2022, based on the same dataset with similar indicators and methodology. It had noted that about 139 million people got out of poverty and the rate of reduction in poverty during the period was higher than that during the preceding decade.

[1] Arab Multi Dimensional Poverty Report, brought out by UNESCWA, with which the present author was associated as research advisor, is based on the same three dimensions. This, too, has two additional indicators: early pregnancy or female genital mutilation (FGM) under *Heath* and congestion under *Living Standards*. This was based on extensive consultations with the Arab states and other stakeholders.

Multidimensional Poverty Index (MPI) is not a headcount ratio of the multidimensionally poor. It multiplies the latter by the depth of deprivation, computed by averaging the deprivation of all individuals over all indicators which adds to its robustness. This adjusted headcount is the MPI and any temporal or cross-sectional comparison must be made based on this index. The value of the index has come down from 0.117 to 0.066 during the five-year period as per the national report, the corresponding figures in the Global report being 0.122 and 0.069. Given the controversy on the poverty figures computed based on consumption expenditure and non-availability of this data from National Sample Survey (NSS) for any recent year, the sharp reduction in MPI is likely to be a significant evidence of performance of the present government.

One point regarding 135 million people exiting poverty during the period under consideration needs to be clarified. Suggestions have been made to apply the poverty ratios for different years to the estimated population for the corresponding years to compute the correct number of persons moving out of poverty. By doing so, it is noticed that actual poverty reduction has been less than 135 million.[1] This approach assumes that the number of poor, as estimated in the base year, would not change during the intervening period, despite population growth and business as usual scenario. This is unlikely to be the ground situation. It would, therefore, be appropriate to compute the figure by applying the two poverty ratios to the terminal year population. This assumes that people have been lifted out of poverty from among those who were in poverty in 2015-16 as also those who fell into poverty in the subsequent five-year period. Importantly, the Global report computes the number of people lifted out of poverty by this method and places absolute poverty reduction in India as 139 million, as mentioned above.

Inadequacies in the Evolving Methodology for Articulation of Poverty

Importantly, India in recent times witnessed situations that can generally be considered as manifestations of poverty, although the factors behind these do not find place in the measurement framework discussed above. Thousands of migrants walked hundreds of kilometres from cities to their homes during the pandemic. Millions got infected due to their congested living conditions and many died on the streets and around the hospitals due to lack

[1] Malhotra, S (2023)

of beds and oxygen. Experts, however, would attribute these to management and governance failures and not necessarily to poverty. Researchers with national and international organisations have shown poverty level as not going up or even declining during the Pandemic. The National Family Health Survey (NFHS) has recorded that anaemia among children aged 6 to 59 months, pregnant women and adult males has gone up between its two rounds covering 2015-16 and 2019-21. Based on the unidimensional poverty measures noted above, one can still hold poverty to have gone down, explaining the above in terms of intra-household distribution of food, poor dietary habits, improper water/sanitation facilities etc.

Understandably, achieving certain outcome indicators of health such as life expectancy, morbidity and mortality were not built into the basic framework in the poverty computations. There are other operational issues in estimating poverty by this framework surfacing in recent years. After the rejection of the NSS consumption expenditure data for 2017-18 by the government, no regular survey on this has unfortunately been conducted. The Periodic Labour Force Surveys since 2017-18 are collecting data on usual monthly consumption expenditure but with limited canvass, making it difficult to build a temporally comparable series on poverty. Given this limitation, Bhalla, Bhasin and Virmani have in their IMF Working Paper developed a method for extrapolation of the consumption expenditure data of the NSS for 2011-12 to build a series up to 2019-20. They use the growth rate of the private final consumption expenditure (PFCE) to scale up the figures and bring in the distributional changes by allowing the household's consumption to grow at the rate of the nominal per capita income of its state. Rural urban price differences are introduced through separate poverty lines for them. The underlying assumption that the distribution has remained unchanged, both within the rural and urban segments in each state over the period 2012-20 is questionable.

Extrapolating household expenditure by the growth in PFCE, as attempted in the study, furthermore, brings in upward bias since the latter is estimated as a residual in national income accounts and, therefore, includes many other components such as expenditure of unincorporated enterprises etc., as argued by Minhas. One wonders if there could be other multipliers for updating the figures, free from these problems. It would have been more appropriate to upscale the consumption of each household by the growth rate of income in the economic activity to which the household belongs. Furthermore, the growth rates of different commodities in the PFCE are significantly different and hence adjustments could have been done commodity wise, to bring focus on the items of consumption by the poor, across the states.

One significant contribution of the study, however, is that it includes the provisioning of extra food grains by the government into the real expenditure of the poor, while noting that the off-take of the poor from the public distribution system (PDS) has doubled after implementation of the National Food Security Act, 2014. This, however, opens up the possibility of bringing in the changes in the level of state engagement in provisioning of essentials, including free gas cylinders, electricity etc. within the framework of calculations. However, this must be supplemented by an assessment of the disengagement of the state in crucial social sectors such as education and health. Incremental private expenditure of the poor on health and education in recent years, as estimated through NSS data, would have to be considered by revising up the poverty line

The paper by Sutirtha Sinha Roy and Roy van der Weide for the World Bank explores the possibility of using Centre for Monitoring Indian Economy (CMIE) data in poverty calculations, after correcting for the unrepresentative character of this panel data, by modifying the weightages of households for aggregation. Indeed, the asset position and level of basic amenities are generally higher in the CMIE sample than in more robust national sources, basically due to the former's sampling procedure. Many people find this study more acceptable not because of the methodology but the magnitude of poverty 'appears more reasonable' than that of the IMF Working Paper.

Understandably, there has been uproar about both the studies published in 2022 that report low or no poverty for India in the years of the pandemic or before that. These, furthermore, raise a basic question: whether poverty estimates must only be based on input indicators like consumption expenditure, income etc. or should include direct indicators of well being like life expectancy, health, education and access to basic amenities.

It is important that several scholars recently have chosen to shift the poverty debate from the earlier computation, discussed above, to multi dimensional poverty, measured through physical deprivation indicators from NFHS.[1] There is an urgent need to address the criticism that poverty is getting delinked from deprivations in health, education and access to basic amenities and this would minimise the importance, the poverty numbers enjoy in policy debates, if not in policy making.

[1] The alacrity with which Bhalla and Bhasin (2022) have shifted from their earlier computations, based on a simulated distribution of consumption expenditure for recent years (obtained through a system of multipliers for rural and urban households at state level, applied on the past NSS data), to physical deprivation indicators from NFHS, needs to be appreciated.

Critics and Sceptics of the Usability of MPI and Addressing their Concerns

The scepticism of the economists regarding the usages of multidimensional indices in development planning can be traced back to the Impossibility Theorem of Kenneth J. Arrow which stipulates that ranking of alternatives - economic or geographic states - reflecting the collective preference of any group, based on the rankings of the individual members of the group, would inevitably violate basic principles of rationality or axioms. By this logic, ranking of countries, states, districts or political regimes, employing a number of indicators, would be theoretically untenable. This academic purity of social scientists - forcing them to be non judgmental in many situations demanding immediate intervention - has, happily, been questioned by Amartya Sen and Mahboob ul Haque as they have ventured into ranking countries based on their levels of human development. One can see a number of national and global organisations now coming out with multi-dimensional indices, following the UNDP-OPHI initiative. Several regional authorities and national governments have gone ahead and constructed MPI at national, state and sub-state level, with some modifications of the global methodology, India being no exception.

With the process for measuring poverty covering select dimensions now getting institutionalized, there has been no enthusiastic support among the academics and planners in India, while many, including officials of NITI Aayog, have been critical of this approach, debunking its usability in policy making (Virmani) Apprehensions have been voiced that construction of MPI is a part of the design to dump the good old methodology of estimating poverty based on consumption expenditure or income. Scholars like Pranob Sen[1] and Prabhat Patnaik[2] would like to understand MPI as an articulation of modernisation or deprivation and not poverty.

Delinking denial of access to modern amenities and vulnerability or deprivation and from poverty would be dangerous. Any measure of poverty which does not capture deprivation is an empty statistical box. It had started by focusing on nutritional deprivation and expanded to cover other dimensions that is desirable, as discussed above. No one can question the relevance of consumption-based poverty or other deprivation indicators in policy domain.[3] Any

[1] See Mondal (2023)
[2] Patnaik (2023)
[3] Rangarajan and Mahendra Dev (2023)

deliberate attempt not to conduct the Consumption Expenditure Survey or postpone it must, therefore, be strongly resisted.

One would also note that there have been serious questions raised regarding income/consumption-based poverty measures relating to choice of prices, basket of goods and services, discrepancies in the data on consumption expenditure from NSS and National Income Accounts etc. More importantly, these measures have been criticised for not considering health, education and physical assets. Also, in the absence of consumption expenditure data for recent years, researchers and administrators have been using other data sets with questionable validity or have extrapolated HH expenditure using simplistic assumptions, as discussed above. Understandably, use of demographic data that are considered more robust, for assessing people's vulnerabilities. emerges as the second best solution. It is in this limited context that the usage of MPI as an instrument of intervention gains importance.

Methodological and Operational Issues to be Addressed

The discussion on contextualisation of the indicators or making them more policy-linked, would be endless and may come in the way of MPI becoming a tool, along with consumption expenditure-based poverty measures, for policy intervention or resource allocation. This, in fact, can lead to throwing the baby away with the bath water. Given the fact that the MPI indicators cover all the three dimensions of human development and the information base used globally has generally been considered robust, it makes sense to plead for its greater usage in policy domain.

It is a matter of some satisfaction that, despite the criticism of this institutional data base from the highest level in recent months, NITI has chosen to use the NFHS data to compute the MPI. It, however, does not mean that MPI represents the ultimate depiction of deprivation. The figures must be compared and cross checked with a host of other socio-economic indicators and one must be conscious of their different implications in different regions and for different strategic interventions. Hopefully, researchers within and outside the government will analyse the trends and pattern of MPI emerging from the report in some detail, focusing on their usability in policy domain. This indeed can be a useful tool to analyse the pattern of backwardness and deprivation at district level, considering it alongside other indicators, including those of income/consumption poverty.

A few methodological issues are, however, important at this point for consideration of policy makers at global and national level. It is surprising that the methodology section in the NITI report does not mention with sufficient clarity that although the NFHS data for many dimensions are at individual level, it is the household which gets identified as multi-dimensionally poor. Non-attendance of a child in schools does not simply imply deprivation for the child but is emblematic of greater "deprivation being experienced by the household that acts as an impediment to the education of the child. Furthermore, because the child is not attending school, the household members will be deprived of the positive externalities that arise from having a formally educated" (NITI 2023). Similarly, death of a child, women not having antenatal care for delivery, or their being malnourished are proxy indicators for the health of the entire HH. The question is how we should determine the deprivation score for a household when such proxies are not available. Should we, for example, assume that in a family, which has clear manifestation of all around deprivation based on available information but had no child born in the last five years, the mother would have received desired antenatal care, if a child was born? Many of the indicators, particularly covering the aspects of health and education of women and children, would be applicable to only a segment of the total household. Would it then be right to assume that a HH is non-deprived in an indicator when it is non-applicable or information on this is not available? Would it not be more appropriate to assign the average derivation score of the HH, computed using information on available indicators, to the rest of the indicators. Interestingly, both the global and national reports consider the HHs to be non-deprived in such cases, thereby underestimating poverty.

Importantly, a household is considered multi-dimensionally poor only if its deprivation score is more than a third of the *total possible score*. The weights assigned to the 10 indicators, covering the dimensions of health, education and physical well-being in the global report (12, in case of the National Report), are such that these add up to 1. The maximum score possible when a HH is deprived in all dimensions should then be 1, obtained through weighted aggregation of its deprivation scores. Is that really the case at ground level? Many of the indicators, such as those related to children and women, in specific age groups, would not be applicable to HHs that do not have them. Migrant HHs that do not have cooking arrangements would not use primary sources of fuel.

The elaboration of the methodology in the national report unfortunately creates confusion which is avoidable. It is important to state that the unit of measurement adopted for

computation is HH, although person specific information of NFHS is used for this purpose in many cases, as stated in Section 2.8 of the NITI report of 2023. Section 2.4, however, gives a different impression while discussing identification of poor at individual level and aggregating their deprivation scores, as reflected in the following paragraph.

> *"Each individual (and in extension everyone in the same household), is first marked as deprived (denoted by 1) or not deprived (denoted by 0) in each of the indicators based on their achievement (or lack thereof) in the respective first order cutoffs for each indicator."*

Section 2.4 elaborates this further by giving an example of two individuals, A and B. A is an 18-year-old individual who has 3 years of schooling and hence does not meet the first order cutoff (6 years of schooling). "Therefore, A is considered deprived in the indicator for years of schooling and assigned a score of 1…Conversely, individual B has 7 years of schooling and is 12 years old, therefore, B is assigned a score of 0 for the indicator on years of schooling".

Unfortunately, the methodology section fails to mention that this classification would not be valid, if both belong to the same household, since in that case, even A, the deprived child, would be considered non-deprived. The global methodology states it clearly that all individuals within a HH get the same score on every indicator, which is what has been adopted in the NITI report. One can, therefore, define poverty headcount as the proportion of the population that live in the poor households to the total population in a country or region.

The most important issue is the selection of indicators by the NITI Ayog. As may be noted that India report has two additional indicators and the high scores in these two due to current policy thrust on them reduces overall poverty in the country. The argument has been that these additional indicators are not at par with other indicators in the context of physical wellbeing of the poor. The indicators pertain to Maternal Health and Bank Account, the number of HHs reporting deprivation in maternal health is not very large since the HHs that had a child birth in the last 5 years would be small. The other HHs would automatically be considered non-deprived. The HHs with bank accounts is also an indicator where the deprivation would be much less. The holding of a bank account is not necessarily an indicator correlated with economic well-being, particularly when a large number of these are non operational. It would be important to have some discussion on whether these two can be considered at par with other indicators of physical well-being in MPI.

Conceptual Difficulties and An Impossibility Result

Measuring poverty implies that individuals, placed sequentially in a continuous scale, being partitioned into two categories based on a cut off point obtained through a normative judgment. This would imply, two persons having very small difference in the economic wellbeing, both around the poverty line, can belong to different categories and be treated as poor and non poor while persons with similar or even higher differences would be placed in the same category. This defies the logic of continuity and can be shown to violate an axiom emanating from the logic of classification.

Sen's axiom of Redistributive monotonicity, for example stipulates that any order preserving redistribution in favour of a poor from anyone better than her/him must reduce poverty. This axiom, and several others, are satisfied by Sen's poverty index, as long as the giver does not fall below poverty line, as a result of this redistribution (Kundu and Smith 1983). In the context of multi dimensional poverty, one can propose three axioms as being desirable. These are:

(a) Reduction in the poverty deprivation of any individual in any dimension or indicator must reduce the poverty index at the macro level.

(b) Reduction in poverty deprivation of a more deprived person/region must result in higher reduction in the poverty index than a similar reduction for a person/region with lesser deprivation.

(c) Any increase in deprivation levels for certain groups like children or women, must increase the poverty index.

It is easy to show that MPI violates each of the three axioms. Improvement in school attendance or nutrition of any child in a household does not make the latter non poor until all the children record that improvement. Since MPI is measured at household level, it would remain unchanged as long as the household is not lifted out of poverty.

Secondly, if deprivation in any of the indicators in a highly deprived district is reduced by certain amount through provisioning of an amenity, its impact in poverty reduction at macro level would not be larger than if this is done in a less deprived district. MPI, thus, does not show greater sensitivity to poverty reduction at higher levels of deprivation. Reduction in poverty deprivation of a given magnitude in any indicator in Bhubaneswar and Kalahandi - two districts at two extremes in the scale of development in most indicators- will have the same impact of MPI, despite the high gap in their deprivation levels.

Thirdly, increase in child mortality or child dropout rate from school and women, not getting pre natal checkups etc, may not increase MPI if the number of children or that of childbirth has gone down. The reduction in MPI due to decline in the number of households reporting no children or no childbirth may be higher than the opposite effect due to the increase in deprivation in the rest of the households.

The Way Forward

Questions have been raised about the MPI in the context of the subjectivities involved in selection of indicators, their scaling and assignment of weights by members of NITI Aayog[1]. It is extremely easy to find faults with every artifact that supports the MPI. Almost all the indicators identified for the national MPI can be criticised as inadequate or inappropriate with certain empirical evidence. The suitability of the indicators in the Global Report in Indian conditions, even after the modifications as proposed in the NITI Aayog (2023) report, has been contentious. Various alternatives in the numerator and denominator have been proposed for them. Achieving consensus on these issues is a humongous challenge. Indeed, different countries have modified the framework and methodology differently by suitably altering the indicators, their weights and by including new indicators, as noted above. Also, for several indicators, there are multiple sources and any choice will be fraught with subjectivity. A researcher can come up with an alternate framework and composition system and there is no way to establish the superiority of the global methodology or that adopted by NITI Aayog over the others. Two points may, however, be made. The identified indicators, both in the global and national reports, are built round health, education and basic assets or material well-being that are the pillars in UNDP's Human Development Report, having large acceptability. No wonder that the trends and pattern emerging from these reports are similar. Availability of the MPI values and their changes from the global report at regular intervals to benchmark the national or sub-national pattern is an additional advantage.

One serious point, however, is regarding not covering the total population under 70 years of age in the nutrition indicator by the NITI, making a departure from the global report. This can be explained in terms of NFHS not covering the children in the age group of 6 to 14 years and men and women above 55 and 50 years respectively, due to its thrust on reproductive

[1] See Varma (2023)

health. It would be important to bring people in these excluded age groups within the framework of MPI.

Furthermore, Oxford-OPHI methodology involves "censoring of the data on poverty" by stipulating that a household would not be considered multidimensionally poor if it has deficits in one or a few of the ten proposed indicators since these can be compensated by 'no deficit' in a good number of other indicators, so much so that the household escapes getting classified as multidimensionally poor. Questions have been raised regarding such censoring as scholars[1] have argued that censoring - excluding the people with a deprivation score of less than 33 percent of the maximum possible value in any indicator- results in under-estimation of poverty. It is argued that the deficit in certain critical indicators *can not* be compensated through others, dismissing the need to reduce the number of deprived people through censoring. The implicit argument is that a HH, deprived in any single indicator, must be considered poor. In accepting either position, one would be exposed to criticisms, unless one takes the decision of censoring by the nature of each indicator.

It is possible to argue that a certain specific indicator is critical for decent human living and any deficit in that cannot be compensated by others. This criticality can, however, be easily built into MPI so that those deprived in this are counted as poor, even if their deprivation scores are much below the threshold level in other indicators. The emphasis on nutritional deficiency in both the national and global reports suggests that this could be a possible indicator. This would then partly address the criticism that MPI does not exhibit short-term variations in well-being unlike consumption poverty.

Greater use of MPI in policy domain and a shift from income poverty to multidimensional poverty for certain strategic interventions and resource allocation at state and district level appears to be desirable. A strong political consensus is required for this purpose. There would, however, be several operational issues regarding change of indicators, their data sources, scaling and weightages, cropping up from time to time. These would have to be addressed through a consultative process. The success will depend on keeping this above the short-term politics in a regime.

[1] Dreze (2022)

References

Bhalla, S and Bhasin, K (2022) 'Poverty is Down, Period', Indian Express, November 4

Bhalla, S., Bhasin, K. and Virmani, A (2022) Pandemic, Poverty, and Inequality: Evidence from India, IMF Working Paper No. 2022/069

Dandekar V.M. and N. Rath (1971), 'Poverty in India', Economic and Political Weekly, Vol. 6, Nos. 1 & 2, January 9.

Malhotra, S (2023) "How are we Defining and Measuring Poverty in India", Deccan Herald, August 13

Mondal, D, (2023) "Niti Aayog's multidimensional index useless for measuring poverty: ex-chief statistician" The New Indian Express August 5

NITI Aayog (2023) National Multidimensional Poverty Index: A Progress Review 2023, July

Patnaik, P. (2023) "The Poverty of UN Poverty Estimates", Peoples Democracy, July 30

Planning Commission (2009) Report of the Expert Group to Review the Methodology for Estimation of Poverty, Government of India, New Delhi

Priyansh Verma (2023) :Income best measure of poverty, MDI "confusing": Virmani" Financial Express, September 22

Rangarajan, C and Mahendra Dev (2023), "Consumption-based poverty estimates have relevance", The Hindu, August 16

Sutirtha Sinha Roy and Roy van der Weide (2022) Poverty in India has Declined over the Last Decade but not as Much as Previously Thought, Policy Research Working Papers, Report no WPS9994, World Bank, Washington

UNDP-OPHI (2022) Global Multi Dimensional Poverty Index (MPI): Unpacking deprivation bundles to reduce multidimensional poverty, New York.

Governance to Good Governance - A Roadmap for Sustainable Development

Dr. Suresh Kumar K.
Faculty, Centre for Law & Public Administration, Dr. MCR HRD Institute of Telangana

Governance serves as the backbone of any society, shaping its trajectory and determining its success or failure. However, not all governance systems are created equal. (Fukuyama, 2013) The transition from conventional governance to good governance marks a significant leap forward, particularly in the context of sustainable development. Good governance encompasses transparency, accountability, rule of law, participation, and inclusiveness, all of which are indispensable for achieving sustainable development goals. (United Nations, 2015).

This article explores the journey from conventional governance to good governance and elucidate its crucial role in paving the way for sustainable development. This article further explores the transformative journey from conventional governance practices to the paradigm of good governance for achieving sustainable development goals. In recent decades, the concept of governance has evolved beyond mere administrative processes to encompass broader notions of accountability, transparency, participation, and responsiveness to the needs of all stakeholders. (World Bank Group, 2017). The article finally contends that good governance is not merely a theoretical concept but a pragmatic approach to advancing sustainable development objectives. By adopting the principles outlined in this roadmap, policymakers, practitioners, and stakeholders can chart a course towards a more equitable, resilient, and prosperous future for all. (Commission on Global Governance, 1995)

Key words: *Good Governance, e-Governance, Sustainable Development, Artificial Intelligence*

The term "governance" has its roots in both Latin and ancient Greek, initially signifying control, and guidance. (Fukuyama, 2013). Originally, governance closely intertwined with the concept of government, encompassing administrative and political endeavours associated with national public affairs.

The notion of "governance" is an age-old concept that has existed throughout the course of human civilization. In its essence, "governance" can be succinctly defined as the intricate

interplay of decision-making processes and the subsequent implementation or non-implementation of those decisions.

Governance encompasses a spectrum of institutions and actors, extending beyond the confines of the traditional government structure. (World Development Report 2017, World Bank Group) It questions the conventional authority vested solely in the State or Government, asserting that there are alternative power centers within a state. (Commission on Global Governance, 1995) The premise is that any entity, whether public or private, can become a significant power hub at a specific level as long as its exertion of power is acknowledged and accepted by the public.

Governance underscores the significance of self-sustaining networks of independent actors. (Asian Development Bank, 2005) Within such networks, the authority extends to issuing directives within a defined domain, collaborating with the Government in that specific sphere, and jointly shouldering responsibilities for public administration.

Understanding Governance:

Governance is a multifaceted concept that involves the process of decision-making and the implementation of policies and laws by various institutions and actors within a society. It encompasses the structures, processes, and mechanisms through which authority is exercised and decisions are made. Historically, governance systems have evolved alongside the development of civilizations, ranging from tribal councils to modern democracies and authoritarian regimes.

However, conventional governance systems often face challenges such as corruption, lack of transparency, inadequate accountability mechanisms, and exclusion of marginalized groups. (Transparency International, 2020) These shortcomings hinder the effective functioning of institutions and impede socio-economic progress.

The Concept of Good Governance:

Good governance goes beyond the mere exercise of authority; it embodies principles such as transparency, accountability, rule of law, participation, and inclusiveness. (Commission on Global Governance, 1995). Good governance ensures that decisions are made in the public interest, with consideration for the needs and aspirations of all segments of society. It fosters

trust between government institutions and citizens, promotes social cohesion, and enhances the effectiveness of public policies and programs. (Saunders & Le Roy, 2003)

Importantly, good governance is intricately linked to sustainable development. By promoting transparency and accountability, good governance helps to combat corruption, promote economic growth, and protect the environment. It also ensures that development efforts are inclusive and equitable, leaving no one behind.

Roadmap to Good Governance:

Achieving good governance requires a concerted effort to address the underlying causes of governance deficits and to implement reforms that strengthen democratic institutions and processes. (Asian Development Bank, Good governance acts as a dynamic catalyst for positive outcomes, 2005) The following are key components of a roadmap to good governance:

Institutional Reforms:

Strengthening state institutions is essential for ensuring effective governance. This includes enhancing the capacity of government agencies, improving public service delivery, and promoting merit-based recruitment and promotion processes.

Legal Framework:

Enforcing the rule of law and ensuring access to justice are fundamental aspects of good governance. This involves reforming legal institutions, enhancing judicial independence, and combating impunity for corruption and human rights abuses.

Transparency and Accountability Mechanisms:

Transparency and accountability are essential for building trust between government institutions and citizens. This includes measures such as open government initiatives, public disclosure of information, and independent oversight bodies.

Participatory Governance:

Engaging citizens in decision-making processes is crucial for promoting accountability and inclusiveness. This can be achieved through mechanisms such as participatory budgeting, citizen consultations, and community-driven development programs.

Empowering Marginalized and Vulnerable Groups:

Good governance requires special attention to the needs and rights of marginalized and vulnerable groups, including women, children, ethnic minorities, and persons with disabilities.

This involves ensuring their meaningful participation in decision-making processes and addressing the structural barriers that perpetuate their marginalization.

Combating Corruption:

Corruption weakens the foundations of good governance and hinders sustainable development. A zero-tolerance approach to corruption is essential, including measures such as anti-corruption laws, enforcement mechanisms, and public awareness campaigns.

***Harnessing Technology for Efficient Governance*:**

Technology can play a transformative role in enhancing governance processes and improving service delivery. This includes e-governance initiatives, digital platforms for citizen engagement, and data-driven decision-making tools.

Responsiveness:

Government's ability to address the needs and priorities of citizens in a timely and effective manner.

***Equity and Inclusiveness*:** Ensuring fair and equitable distribution of resources and opportunities, and addressing the needs of marginalized groups.

Good governance is indispensable for achieving sustainable development. It fosters trust in institutions, promotes social cohesion, and enhances economic growth and stability. Transparent and accountable governance systems attract investment, stimulate innovation, and ensure the efficient allocation of resources. Moreover, good governance is essential for reducing corruption, promoting social justice, and advancing human rights.

Challenges and Barriers to Achieving Good Governance:

Despite the progress made in many countries, achieving good governance remains a formidable challenge. Some of the key challenges and barriers include:

***Political Will and Leadership*:** Good governance requires strong political will and leadership to implement reforms and overcome entrenched interests.

***Deep-Seated Corruption and Nepotism*:** Corruption and nepotism remain pervasive in many societies, undermining the effectiveness of governance institutions and eroding public trust.

***Weak Institutional Capacity*:** Many countries suffer from weak governance institutions, including ineffective public administration, inadequate legal frameworks, and limited human and financial resources.

***Socio-Cultural Factors and Traditional Practices*:** Socio-cultural factors and traditional practices can pose barriers to good governance, including gender inequality, ethnic divisions, and cultural norms that prioritize loyalty over merit.

***External Interference and Geopolitical Dynamics*:** External interference and geopolitical dynamics can undermine efforts to achieve good governance, including foreign aid conditional ties, geopolitical rivalries, and interference in domestic affairs.

While the principles of good governance are universally recognized, implementing them effectively poses challenges in practice. Political, institutional, and cultural barriers may hinder progress towards good governance, requiring sustained efforts and commitment from all stakeholders. Moreover, globalization, technological advancements, and environmental pressures present new challenges and opportunities for governance systems to adapt and evolve.

Given that governance encompasses both the decision-making process and the subsequent implementation of decisions, a comprehensive examination of governance entails a scrutiny of the formal and informal entities engaged in decision-making and executing those decisions. This analysis extends to the formal and informal frameworks that have been established to facilitate the formulation and implementation of decisions.

In the realm of good governance, the active involvement of both men and women stands as a fundamental principle. Participation may manifest itself through direct engagement or be channelled through legitimate intermediary institutions or representatives. It is crucial to note that merely having a representative democracy automatically ensures the incorporation of the concerns of the most vulnerable segments of society in decision-making. Effective participation requires both information and organization, encompassing the freedom of association and expression, coupled with a well-structured civil society.

At its core, good governance implies that processes and institutions yield outcomes that effectively address the societal needs, while optimizing the utilization of available resources. In the realm of good governance, efficiency extends beyond mere productivity; it encompasses the sustainable utilization of natural resources and the safeguarding of the environment.

To uphold good governance, it necessitates the presence of equitable legal frameworks that are applied without bias. Additionally, the complete safeguarding of human rights, especially those belonging to minority groups, is imperative. The impartial enforcement of laws relies on the existence of an independent judiciary and an unbiased, incorruptible police force.

Good governance necessitates that institutions and processes strive to cater to the needs of all stakeholders within a reasonable timeframe. This implies a commitment to inclusivity and efficiency in addressing the concerns of various parties involved.

Transparency, in essence, entails the adherence to established rules and regulations in the formulation and implementation of decisions. It signifies not only the unrestricted availability of information but also direct accessibility for those impacted by such decisions and their enforcement. Furthermore, transparency implies the provision of ample information in easily comprehensible formats and various media to ensure clarity and understanding.

Good governance necessitates the skilful mediation of diverse societal interests to forge a comprehensive consensus on what serves the collective well-being of the entire community and the strategies to attain it. Additionally, it demands a wide-ranging and forward-looking outlook on the requisites for sustainable human development and the methodologies to realize these developmental objectives. Achieving this requires a profound comprehension of the historical, cultural, and social intricacies inherent in a particular society or community.

The prosperity of a society hinges on fostering a sense of belonging among all its members, ensuring that none feels marginalized or excluded from the societal mainstream. This necessitates providing opportunities for all groups, with a particular emphasis on the most vulnerable, to enhance or preserve their well-being.

Accountability stands as a fundamental imperative for good governance. This obligation extends not only to governmental bodies but also encompasses the private sector and civil society organizations, demanding accountability to the public and their respective institutional stakeholders. The dynamics of accountability depend on whether decisions or actions are internal or external to an organization or institution. In essence, an organization or institution is answerable to those impacted by its decisions or actions. The enforcement of accountability is contingent upon the principles of transparency and the adherence to the rule of law.

The intricate interconnection among technology, policy, and governance underscores several profound relationships. For these elements to operate dynamically, there is a requisite for policies centered around the well-being of citizens and technologies characterized by openness. This synergy ultimately paves the way for effective and accountable governance.

The Role of International Organizations and Partnerships:

International organizations and partnerships play a crucial role in promoting good governance and sustainable development. For example:

- The United Nations has adopted the Sustainable Development Goals (SDGs), which include targets related to good governance, rule of law, and accountable institutions.
- The World Bank and International Monetary Fund (IMF) often condition financial assistance on governance reforms, including measures to combat corruption, strengthen public financial management, and improve regulatory frameworks.
- Bilateral and multilateral partnerships provide valuable support for capacity building and institutional strengthening in areas such as public administration, judiciary, and anti-corruption efforts.
- Civil society organizations and non-governmental organizations (NGOs) play an important role in promoting good governance through advocacy, monitoring, and capacity building activities.

In an increasingly interconnected world, the adoption of information and communication technologies (ICTs) has revolutionized governance, giving rise to the concept of e-governance. E-governance represents a paradigm shift in the way governments interact with citizens, businesses, and other stakeholders. By leveraging digital platforms and online technologies, e-governance aims to enhance the efficiency, transparency, and accessibility of government services and processes. In this comprehensive exploration, we delve into the intricacies of e-governance, examining its evolution, key components, benefits, challenges, and future prospects.

Evolution of E-Governance:

The roots of e-governance can be traced back to the emergence of computerization in the public sector during the latter half of the 20th century. Early initiatives focused primarily on automating routine administrative tasks and improving internal government operations. However, with the advent of the internet and advancements in ICTs, e-governance evolved into a more comprehensive and citizen-centric approach to governance.

The 1990s witnessed the proliferation of government websites and online portals, marking the beginning of electronic service delivery. Governments around the world started to digitize public services, allowing citizens to access information, complete transactions, and

interact with government agencies online. This phase of e-governance, often referred to as e-government, laid the groundwork for subsequent advancements in digital governance.

As technology continued to advance, e-governance expanded beyond transactional services to encompass a broader range of activities, including citizen engagement, participatory decision-making, and open government initiatives. The emergence of social media platforms and mobile applications further transformed the landscape of e-governance, enabling real-time communication, feedback, and collaboration between governments and citizens.

Key Components of E-Governance:

E-governance encompasses a wide array of components and initiatives aimed at leveraging ICTs to enhance governance processes and outcomes. Some of the key components of e-governance include:

***Online Service Delivery*:** E-governance enables citizens to access government services and information through digital channels, such as websites, portals, and mobile applications. From applying for permits and licenses to paying taxes and accessing public records, online service delivery streamlines transactions, reduces bureaucratic hurdles, and enhances convenience for citizens and businesses.

Digital Identity and Authentication: Digital identity systems play a crucial role in e-governance by providing secure and reliable means of identifying individuals online. Biometric authentication, digital signatures, and block chain-based technologies are increasingly being used to verify identities and ensure the integrity and authenticity of digital transactions.

***Open Data and Transparency*:** E-governance promotes transparency and accountability through the proactive release of government data and information to the public. Open data initiatives make government datasets accessible and usable by citizens, researchers, and businesses, fostering innovation, accountability, and informed decision-making.

***Citizen Engagement and Participation*:** E-governance facilitates meaningful engagement and participation of citizens in the governance process. Online platforms, social media channels, and participatory decision-making tools enable citizens to provide feedback, voice concerns, and contribute to policy development and implementation.

***Digital Infrastructure and Connectivity*:** E-governance relies on robust digital infrastructure and connectivity to ensure widespread access to digital services and information. Investments

in broadband networks, mobile connectivity, and ICT infrastructure are essential for bridging the digital divide and reaching underserved populations.

***Benefits of e-Governance*:** The adoption of e-governance offers a wide range of benefits for governments, citizens, businesses, and society as a whole. Some of the key benefits include:

***Enhanced Efficiency and Productivity*:** E-governance streamlines government processes, reduces administrative overhead, and enhances the efficiency of service delivery. Automation of routine tasks, digitization of records, and online transactions save time and resources for both government agencies and citizens.

***Improved Service Delivery*:** E-governance improves the accessibility and quality of government services, making them available anytime, anywhere, and on any device. Citizens can access information, complete transactions, and interact with government agencies conveniently, without the need for physical visits or paperwork.

***Increased Transparency and Accountability*:** E-governance promotes transparency and accountability by making government processes, decisions, and data open and accessible to the public. Open data initiatives, online portals, and digital platforms enable citizens to monitor government activities, hold officials accountable, and participate in the governance process.

***Empowered Citizens*:** E-governance empowers citizens by providing them with greater access to information, resources, and opportunities for participation. Digital platforms enable citizens to voice their opinions, contribute to policy discussions, and collaborate with government agencies and other stakeholders to address societal challenges.

Economic Growth and Innovation: E-governance stimulates economic growth and innovation by creating an enabling environment for entrepreneurship, investment, and technological advancement. Digital start-ups', e-commerce platforms, and innovation hubs thrive in environments with supportive e-governance policies and infrastructure.

Challenges and Barriers to E-Governance:

Despite its numerous benefits, e-governance faces several challenges and barriers that must be addressed to realize its full potential. Some of the key challenges include:

***Digital Divide*:** The digital divide refers to the gap between those who have access to ICTs and those who do not, often along socio-economic, geographic, and demographic lines. Bridging the digital divide requires investments in digital infrastructure, connectivity, and digital literacy programs to ensure that all citizens can participate in e-governance initiatives.

***Cybersecurity and Data Privacy*:** E-governance raises concern about cybersecurity and data privacy, as governments collect and store large amounts of sensitive information about citizens. Ensuring the security and integrity of government systems, protecting personal data, and mitigating cyber threats are critical challenges for e-governance implementation.

***Capacity Building and Institutional Reform*:** E-governance requires building the capacity of government agencies to adopt and utilize ICTs effectively. This may involve training government employees, reforming bureaucratic structures, and fostering a culture of innovation and digital transformation within government organizations.

***Legal and Regulatory Frameworks*:** E-governance operates within legal and regulatory frameworks that may be outdated or inadequate to address emerging digital challenges. Updating laws and regulations to accommodate new technologies, protect digital rights, and ensure accountability is essential for effective e-governance implementation.

Resistance to Change: Resistance to change within government agencies and among stakeholders can pose significant barriers to e-governance adoption. Overcoming resistance requires effective change management strategies, stakeholder engagement, and communication to build trust and buy-in for e-governance initiatives.

Future Prospects of E-Governance:

Looking ahead, the future of e-governance holds immense potential for further innovation, transformation, and impact. Several trends are shaping the future of e-governance, including:

Artificial Intelligence and Machine Learning: AI and machine learning technologies have the potential to revolutionize e-governance by automating routine tasks, analysing large datasets, and enhancing decision-making processes. AI-powered Chabot's, virtual assistants, and predictive analytics can improve service delivery, personalize citizen interactions, and optimize government operations.

***Block chain Technology*:** Block chain technology offers opportunities to enhance the security, transparency, and efficiency of e-governance processes, such as identity management, supply chain management, and voting systems. Block chain-based solutions can provide tamper-proof records, streamline transactions, and reduce the risk of fraud and corruption.

***Internet of Things (IoT*):** The Internet of Things (IoT) enables the integration of physical devices.

***Examples of e-Governance*:**

1. ***DigiLocker*** is a cloud-based platform that allows citizens to store and access their important documents and certificates digitally.
2. ***MyGov*** is a citizen engagement to promote the active participation of Indian citizens in their country's governance and development. It is aimed at creating a common platform for Indian citizens to "crowd source governance ideas from citizens"
3. ***Digital Payments*****:** Governments are promoting digital payments and financial inclusion through e-Governance.
    a. ***BHIM (Bharat Interface for Money) and UPI (Unified Payments Interface*****)** like applications promote digital payments and financial inclusion. Citizens can use BHIM or UPI apps to make cashless transactions, pay bills, and transfer money.

A Case Study of Kerala's e-District Project:

This case study delves into the successful implementation of the e-District project in Kerala, India, showcasing its innovative approach to e-Governance. Through a citizen-centric strategy and leveraging robust IT infrastructure, the e-District project has revolutionized service delivery, promoting transparency, efficiency, and citizen empowerment. The study highlights key strategies, challenges overcome, and the impactful outcomes achieved, supported by references from the text.

Kerala, renowned for its high literacy rates and progressive governance, embarked on the e-District project in 2012 to streamline service delivery and enhance citizen engagement through digital platforms. This case study examines the implementation process, challenges faced, and the transformative impact of the e-District project, drawing references from relevant literature.

Project Overview: The e-District project in Kerala aimed to provide citizens with easy access to government services through digital channels, thereby reducing bureaucratic hurdles and enhancing transparency. (Sharma, R. K., & Krishnamurthy, P. (2018)). E-Governance in India Key services such as issuance of certificates, licenses, and permits were digitized under this initiative, with a focus on improving efficiency and accountability.

Key Strategies and Implementation:

Citizen-Centric Approach**:** The e-District project adopted a citizen-centric approach, prioritizing user convenience and accessibility. Service delivery centers were established at the

grassroots level to facilitate easy access for citizens, ensuring inclusivity and responsiveness to their needs.

***Robust IT Infrastructure*:** Kerala invested in developing a robust IT infrastructure to support online service delivery, including web portals, secure payment gateways, and backend systems for data processing.

***Capacity Building*:** Extensive training programs were conducted for government officials and service center staff to enhance their digital literacy and ensure efficient operation of the e-District project.

***Public Awareness Campaigns*:** Public awareness campaigns were launched to educate citizens about the benefits of e-Governance and encourage them to avail online services.

Challenges Overcome: The implementation of the e-District project encountered challenges such as resistance from traditional bureaucratic structures, technical infrastructure limitations, and concerns regarding data security and privacy. However, proactive measures such as stakeholder engagement, capacity building, and continuous monitoring helped overcome these challenges. (Thomas, R., & Thomas, A. (2017).

***Impact and Outcomes*:** The e-District project in Kerala has led to significant outcomes, including improved service delivery, enhanced transparency, and citizen empowerment. Citizens can now avail government services conveniently and efficiently, reducing the need for physical visits to government offices. Digitalization of services has increased transparency and accountability, reducing opportunities for corruption. (Vijayakumar, S., & Jayasree, L. (2018)). Moreover, the project has empowered citizens by giving them greater control over their interactions with the government and access to information.

***Future Outlook*:** Kerala's e-District project serves as a model for other states in India to emulate. With technology evolving rapidly, there is immense potential to further enhance e-Governance initiatives, ensuring inclusivity and efficiency in public service delivery.

The e-District project in Kerala exemplifies the transformative impact of e-Governance in improving service delivery, enhancing transparency, and empowering citizens. Through effective strategies and leveraging technology, Kerala has set a precedent for digital governance in India, paving the way for a more inclusive and efficient governance framework.

Further, Governments are increasingly prioritizing the advanced utilization of Artificial Intelligence (AI). Integrating AI into governance and public policy presents a prime avenue for enhancing citizen engagement, ensuring accountability, and fostering interoperability.

Moreover, it offers governments the chance to bolster efficiency in governance operations. In light of the post-pandemic era, there is a pressing need to fortify resilience towards liveability, sustainability, and inclusivity. Artificial Intelligence and Machine Learning present promising avenues to achieve this goal, with practical applications already evident in banking, cybersecurity, online customer support, and virtual assistance across various industries.

Examples of AI in governance:

1. ***AI Virtual Assistant of IRCTC*: I**ndian Railway Catering and Tourism Corporation Ltd. **(**IRCTC), an extended arm of the Indian Railways, announces a new conversational and convenient feature to book railway tickets using their chatbot AskDISHA 2.0
2. ***Aadhaar Enabled Payment System*:** Developed by the National Payments Corporation of India (NCPI), AEPS is a payment service based on an individual's Aadhaar card (one can use an Aadhar card instead of debit or credit cards), which enables the owner of the card to make financial transactions such as transfer funds, make payments, deposit cash, make withdrawals, etc.
3. ***Bhashini*** National Language Technology Mission (NLTM) was launched in July 2022 to provide language technology solutions as digital public goods through the BHASHINI platform
4. ***DigiYatra:*** Spearheaded by the Ministry of Civil Aviation, it marks a revolutionary step towards leveraging artificial intelligence (AI) to enhance the air travel experience for citizens. It is a biometric based boarding system for Indian airports.

Ultimately, the emergence of good governance stands as an inexorable outcome of the ongoing process of democratization. In the contemporary political landscape, democratization is not only a prevalent feature but also an undeniable historical trajectory. A pivotal aspect of this phenomenon lies in the shift of political influence from centralized states back to civil societies. The reduction of government authority and the diminishing scope of state functions and powers should not be misconstrued as the obliteration of social and public authority. Instead, it signifies a transformation wherein public authority increasingly relies on collaborative efforts between the State and its citizens.

Therefore, good governance serves as the dynamic catalyst for yielding positive outcomes in the administration of any system. It initiates a transformative phase in political

and social development, marked by accountability across all levels, transparency surpassing conventional expectations, effectiveness in governance, and an efficient operational status. A governance framework characterized by freedom from corrupt practices and the establishment of robust mechanisms, coupled with a commitment to the rule of law, has the potential to elevate the governing system. This, in turn, establishes a closer and more integrated link between society and government, fostering a sense of integrity within the overall structure.

Conclusion:

In summary, the term "governance" transcends traditional structures, emphasizing collaborative, self-sustaining networks. Effective governance is marked by participation, consensus, accountability, transparency, and responsiveness, minimizing corruption and addressing societal needs. Inclusivity, equity, and efficiency are crucial, with a focus on gender involvement. Transparency, mediated interests, and a forward-looking approach define good governance. E-governance and technology underscore transformative potential.

The transition from governance to good governance represents a paradigm shift towards more inclusive, equitable, and sustainable societies. By adhering to principles such as transparency, accountability, and participation, governments can enhance their legitimacy, effectiveness, and impact. (Transparency International, 2020) Good governance is not merely a lofty ideal but a practical imperative for addressing the complex challenges of the 21st century and realizing the aspirations of present and future generations.

AI is transforming governance in India, aiding data-driven decisions in key sectors. While improving service delivery, concerns like privacy and bias require collaboration for an ethical framework, fostering inclusive governance. (India AI, 2024) Globalization necessitates good governance beyond traditional state functions, emphasizing collaboration in the ongoing democratization process. Good governance acts as a dynamic catalyst for positive outcomes, fostering an integrated link between society and government, and promoting integrity within the overall structure. (Gaudin, 1999)

In conclusion, the journey from governance to good governance is a complex and dynamic process that requires sustained commitment and effort from all stakeholders. (Asian Development Bank, 2005) While progress has been made in many countries, significant challenges remain. Learning from success stories and failures, continuing to monitor and evaluate governance processes, embracing innovation and technology, fostering a culture of

transparency and integrity, and building resilient institutions capable of responding to crises and challenges are essential for advancing the agenda of good governance and sustainable development. (Kaufmann et al., 2010)

References:

1. Commission on Global Governance (ed.). 1995. Our global neighbourhood, 2–3. Oxford: Oxford University Press.
2. Gaudin, Jean-Pierre. 1999. Modern governance, yesterday and today: Some clarifications to be gained from French government policies. International Social Science Journal 50: 47–56. (Chinese edition)
3. Saunders, C., & Le Roy, K. (Eds.). (2003). The rule of law. Federation Press.
4. Druckman,D. (1992). assessing progress toward democracy and good governance: Summary of a workshop. National Academies.
5. Ma. Oliva Z. Domingo, Third Sector Governance: Meanings, Issues, and Challenges in the Philippines, National College of Public Administration and Governance, University of the Philippines.
6. Asian Development Bank (2005), Country Governance Assessment.
7. World Bank Group. (2017). World Development Report 2017: Governance and the Law. Washington, DC: World Bank.
8. United Nations. (2015). Transforming our World: The 2030 Agenda for Sustainable Development. New York: United Nations.
9. Transparency International. (2020). Corruption Perceptions Index 2020. Berlin: Transparency International.
10. Kaufmann, D., Kraay, A., & Mastruzzi, M. (2010). The Worldwide Governance Indicators: Methodology and Analytical Issues. World Bank Policy Research Working Paper, (5430).
11. 11.Fukuyama, F. (2013). What is Governance? Governance:
12. Sharma, R. K., & Krishnamurthy, P. (2018). E-Governance in India: A Comprehensive Overview. PHI Learning Pvt. Ltd.
13. Government of Kerala. (2012). Kerala IT Policy 2012. Department of Information Technology, Government of Kerala.
14. Mohan, N., & Menon, S. (2013). E-Governance Initiatives in Kerala. In E-Governance: Concepts and Cases (pp. 117-128). PHI Learning Pvt. Ltd.
15. Mathew, D., & Pillai, M. (2015). E-Governance in Kerala: A Study on the Impact of Digitalization of Services. International Journal of Advanced Research in Management and Social Sciences, 4(5), 39-51.
16. Sudhakaran, K. (2014). Capacity Building for E-Governance: A Study of Kerala. IOSR Journal of Business and Management, 16(2), 66-72.
17. Rajan, R. G., & Lal, J. K. (2012). Digital India: A Case Study of Kerala. International Journal of Advanced Research in Computer Science and Software Engineering, 2(10), 156-162.
18. Sankar, D., & Radhakrishnan, M. (2016). Challenges in Implementing E-Governance Projects: A Case Study of Kerala. International Journal of Engineering Research and Applications, 6(5), 42-46.
19. Thomas, R., & Thomas, A. (2017). Impact of E-Governance Initiatives in Kerala: A Study Based on Key Performance Indicators. International Journal of Computer Science and Information Security, 15(5), 68-75.

20. Rajan, R. G., & Menon, S. (2019). Assessing the Effectiveness of E-Governance Initiatives in Kerala. Journal of Information Technology Management, 10(2), 1-14.
21. Vijayakumar, S., & Jayasree, L. (2018). E-Governance and Corruption: A Study of Kerala. International Journal of Advanced Research in Management and Social Sciences, 7(8), 71-78.
22. Chandran, A., & Nair, S. (2020). Citizen Empowerment through E-Governance: A Study of Kerala. International Journal of Public Administration and Management Research, 7(2), 12-22.

Websites:

1. https://indiaai.gov.in/article/six-ways-government-of-india-uses-ai-for-governance
2. https://ciiblog.in/artificial-intelligence-in-governance

Quality of School Education in Telangana

Venkatanarayana Motkuri
Associate Professor and Coordinator, Research Cell on Education (RSEPPG),
Centre for Economic and Social Studies (CESS), Hyderabad
Email: venkatanarayan@gmail.com

I Introduction

Education is a human right especially of the children across the globe and critical for human development and it is instrumental in economic growth. Growing evidence has been indicating that it is not only the attendance rates of children and number of years of schooling but also learning outcome which are critical for the practical use of the education for an individual and the society/economy (see World Bank, 2018). Thus, the normative perspective of the global community and international organisations like UNESCO and UNICEF is that it is equal access to quality education. Three crucial aspects are important especially with respect to school education. One, it is the school attendance rate among children of 6-17 years-age. The global norm is that all the children below 18 years of age should be attending schools. Second, they must complete two levels of school education: elementary (incl. primary and middle) and secondary (incl. higher secondary; up to 12th class/grade) before they leave this school-age cohort. It is possible with their attendance in age-appropriate classes and minimising under-age and over-aged children in each class/grade or level. Third, it is the class/grade or level appropriate learning level, achievement and/or outcomes. First two aspects represent the quantitative achievement while the latter one indicates quality of education. In fact, beyond schooling, all the above aspects especially quality related issue is applicable to higher education as well.

The quality of education represented by learning levels, achievements and outcomes is cause of concern in developing countries and in India, also across states within the country. The progress in quantitative expansion of school education in India is remarkable during the past three decades. It is now on the verge of universalising elementary and secondary education. But the quality of school education in the country and across states is below global average (see World Bank, 2018). Telangana is one among the Indian states that witnessed a remarkable progress in participation/attendance rates but the quality manifested in learning levels is not better than national average.

In this backdrop, the present paper examines the status of school education focussing on quality of education in Telangana state. It presents analysis of status of school education in quantitative perspective in terms of participation rates and equity and then proceed to examine the quality of school education in terms of learning achievement or outcomes. The school participation or attendance rates used here are estimates based on the second Periodic Labour Force Survey (PLFS-2) of 2018-19. The learning levels/achievement/outcomes analysed in this note are based on ASER survey estimates of Pratham and NCERT's recent National Achievement Survey (NAS) in 2017.

II Performance in Access to School Education: Participation Rates

It is the constitutional mandate in India that all the children of 6-14 years age in the country should be attending schools and achieving the goal of universalising primary and elementary schooling. Initiatives like OBB, DPEP and SSA following the NEP-1986 and PoA-1992 are instrumental in an effort to achieving such mandate and the goal. Further, while rolling out the *Rashtriya Madhyamik Shiksha Abhiyan* (RMSA) in 2008, the Government of India aimed at universalising the secondary education (including higher secondary) as well. Educational progress in British India was very slow despite the fact that foundations for modern and mass education laid during the colonial regime, (of East India Company and British Crown) since mid-19th century for educational development in India. Certain progress was made during the 1920s when education was transferred to Provincial Government under Diarchy following the Government of India Act 1919. Subsequently the progress was affected by global factors such economic depression of 1930s and subsequent climate of world war. As result, less than one-fifth were enrolled among the children of 6-11 years prior to independence and the literacy rate in the population (5 years and above age) was less than 18.3% in 1951. Literacy rate in fact reflects the status of primary education at times. Although policy and efforts were made for expanding the primary education immediately after the independence, they were not sufficient to realise the promises such as universalising elementary education even after five decades. But a remarkable progress during the last couple of decades with augmented policy efforts made and interventions (DPEP and SSA) since 1990s is closing the gaps in access and equity.

In the context of Telangana, it was part of the erstwhile Hyderabad state before it was integrated with Indian union and then as a region of united Andhra Pradesh before it was bifurcated to form as separate state in 2014. Although there were some efforts since mid-19th

century in Hyderabad state for its educational development, the progress of the state in this respect was relatively slow when compared to rest of the India including Provinces and other Princely states (Motkuri, 2013). The literacy rate of Hyderabad state in 1951 was 9 per cent which was far below many of the then states of India: Travancore-Cochin (46.4%), Bombay (22%), Mysore (20.5%) and Madras (19.0%). Post-integration, primary education was expanded in Hyderabad state but that could not compensate historical slow progress. Again, post-reorganisation, priorities of state government in the united Andhra Pradesh (AP) were different from educational development. Till 1990s the relative performance of united AP among Indian states was in fact lagging (Motkuri, 2016). Education had a prioritised policy attention only since mid-1990s while implementing intervention programmes such as OBB, DPEP and SSA. Thenceforth, in fact the progress in expansion of school education thereby the current enrolment/attendance rate in the state (united AP) was remarkable during the last two decades and it continued in Telangana state after bifurcation.

The performance of different birth-cohorts (5-year cohort) of Telangana state in terms of their educational attainment or completion rate, indicate that the birth-cohort of 1980s in the state have witnessed a dramatic change and shift in educational attainment[1] (completion rate) in the state vis-à-vis national average. Remarkable performance of these birth-cohorts has raised state average above that of the national average across different levels of education (Figure 1). This birth-cohort of Telangana state has outperformed their counterparts (same cohort) in rest of the country. Figures 1a to 1e are based on estimates of the survey (PLFS-2). Figure-1f is linear estimates for the state of Telangana, based on estimates of the survey. The figure-1f clearly displays the shift in completion rates across levels of education for the birth-cohort of 1980s in Telangana.

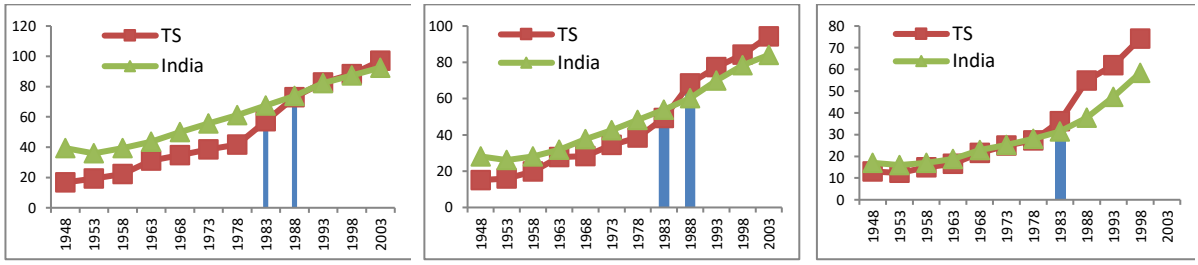
Telangana is almost close to goal of the universal school attendance which is a constitutional mandate among the school-age population especially those in 6-14 years age (Table-1). An estimate based on PLFS-2 (2018-19) indicates that nearly 98.8 per cent of children in the state in this age-group are attending schools; performance of Telangana in this

[1] The above analysis is based on the unit record data of national level first Periodic Labour Force Survey (PLFS-1) of India in 2017-18. Based on the present age of the population covered in the survey their birth cohort (synthetic cohort) is derived. As the survey captured the educational level of each member of the households that were covered in the survey, estimates of school completion rates of birth-cohorts are derived accordingly. The years specified in Figure-1 indicate that the children born during the five-year interval period ending that year.

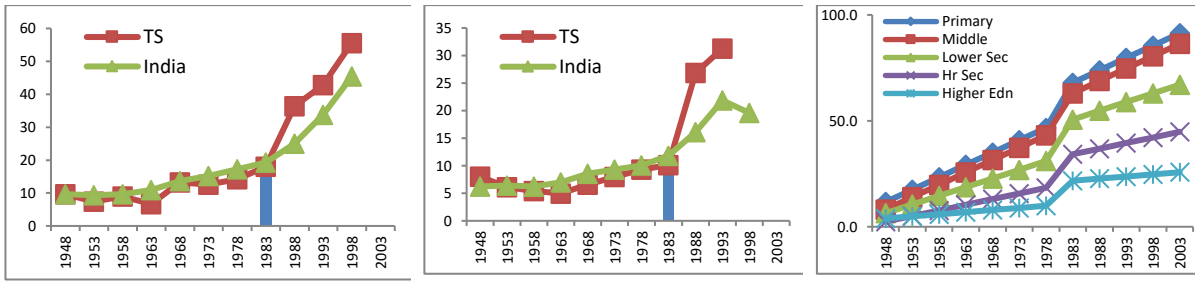
regard is better than national average and it is fifth best among major states in India (Table-1 and Figure-2a). Among the 15-17 years-age-group children, the attendance rate at 88.3% in

Figure-1: Completion Rates by Level of Education across different Birth-Cohorts in India and Telangana State

a) Primary ***b) Middle*** ***c) Lower Secondary***



d) Higher Secondary ***e) Higher Education*** ***f) Estimated for TS***



***Notes**: Year is to indicate the children born during five year interval period ending the year.*
***Source**: Authors' Calculation based on PLFS-1 (2017-18) unit record data.*

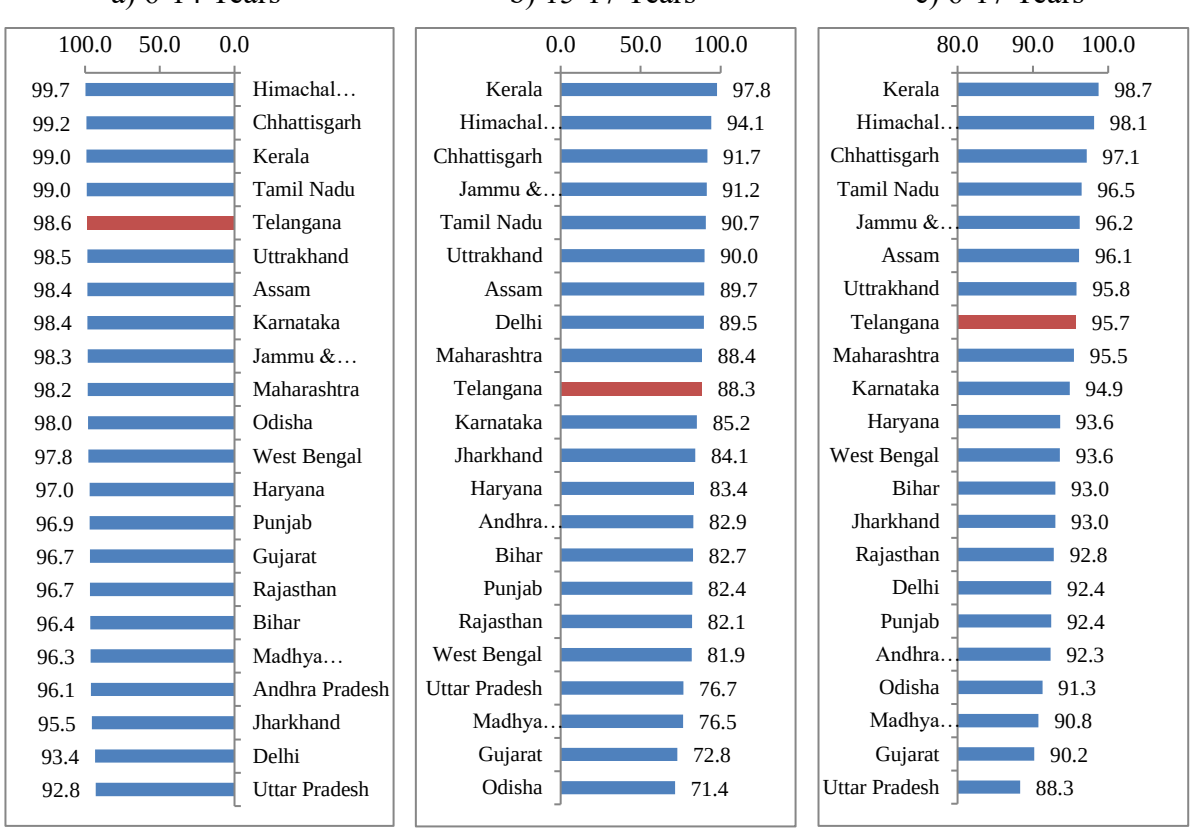
Table-1: Current Participation/Attendance Rates (%) of School-age Population (6-17 years age) in Telangana by Location, Gender and Socio-Religious Groups, PLFS-2 (2018-19)

Characteristics of Child Population		6-14 Years		15-17 Years		6-17 Years	
		Telangana	India	Telangana	India	Telangana	India
1		***2***	***3***	***4***	***5***	***6***	***7***
Overall		98.6	96.5	88.3	82.5	95.7	92.7
Location	Rural	98.5	96.5	87.3	80.9	95.4	92.3
	Urban	98.7	96.4	89.7	86.2	96.2	93.6
Gender	Male	98.8	96.9	85.4	84.0	95.1	93.3
	Female	98.3	96.0	91.5	80.6	96.4	91.9
Social Group	ST	99.8	95.6	61.9	75.5	83.1	90.7
	SC	99.6	95.5	93.5	78.2	98.1	90.8
	OBC	98.1	96.4	92.3	82.9	96.5	92.7
	Others	98.8	97.8	87.1	87.6	95.6	95.0
Religious Group	Hindu	98.6	96.9	88.3	83.9	95.7	93.4
	Islam	98.1	93.8	87.8	72.8	95.2	88.4
	Other Religions	100.0	97.5	100.0	87.6	100.0	94.6

***Notes**: Percentage of children currently attending school in specified age-group.*
***Source**: Authors' estimation based on PLFS-2 (2018-19) unit record data.*

Telangana is 12 percentage points shorter than the desired level (i.e. 100%); although the state performance is better than national average, it stands 10th position among the major states in India (Table-1 and Figure-2b). In the whole span of school-age covering 6-17 years of age, the attendance rates among these children in Telangana is 95.7 per cent which is also higher than national average and state stand 8th position (Table-1 and Figure-2c).

Figure-2: Participation/Attendance Rate (%) among School-Age Population (6-17 Years) across Major States in India, PLFS-2 (2018-19)



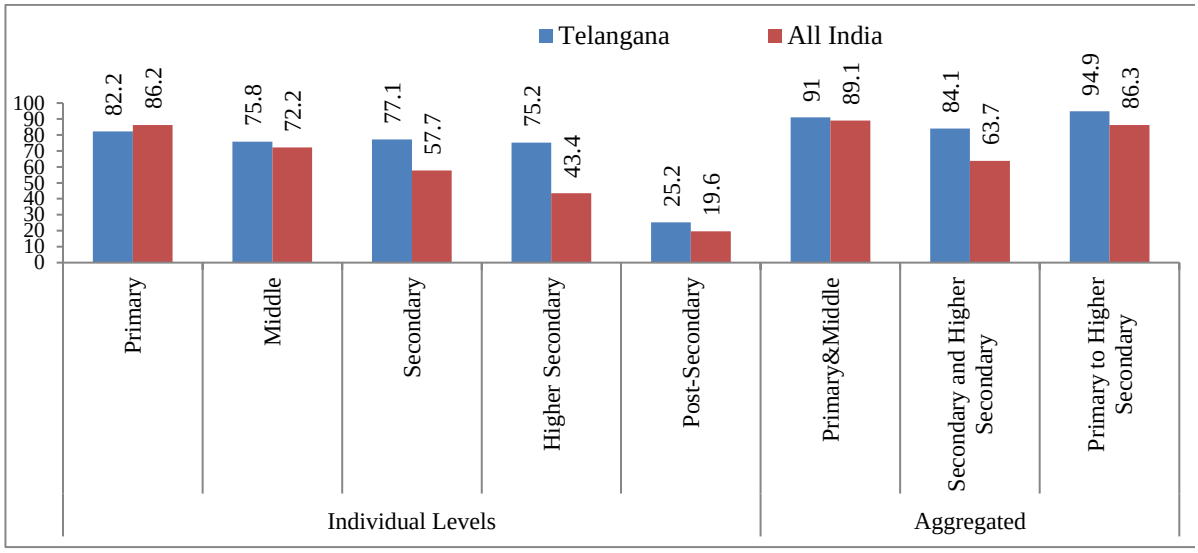
***Notes**: Overall attendance rate combining rural-urban and male-female.*
***Source**: Authors' estimation based on PLFS-2 (2018-19) unit record data.*

In the equity point of view, attendance rate is almost similar across all these population groups (gender, rural-urban, socio-religious groups) in Telangana. Disparities in the dimensions of gender, rural-urban, socio-religious groups are observed to be almost eliminated except the case of children belonging to ST community that in the higher-school-age-cohort i.e. 15-17 year age (Table-1). The performance of the state is better than national average across all these sub-population groups.

However, despite the fact that state performance in respect of attendance rates of school-age children appears to be close to universalization and much better among Indian

states, its performance with respect to net enrolment ratio (NER) appears to be far short of universalisation (Figure-3). One must not be distracted by noticing a seemingly contradictory performance of the state in respect of net enrolment rate (NER) by level of school education that shows a considerable gap. Herein it is to be noted that, it is due to over-age and under-age children in different levels of education, as mentioned in the beginning. In fact, it is reflected: NER by individual level is low but aggregated NER of two consecutive levels and/or all the levels of school education (primary to higher secondary) is observed to much better. It indicates that although most of the school-age children in the state are attending schools, they are not in the age-appropriate class/grade and/or level of school education hence the low NER by levels of education. In this regard, appropriate strategic action plan is required to streamlining the enrolment and attendance into age-appropriate class/grade and/or level of school education.

Figure-3: Net Enrolment Ratio (NER) by Level of Education in Telangana and India, 2017-18



***Source**: NSS Report No.585: Household Social Consumption on Education in India*

The performance in current enrolment and attendance rate depends on the supply factors of school infrastructure. In this regard, Telangana state has a network of 42355 schools (primary to higher secondary: public and private) with around 2.6 lakh teachers and holding 65.6 lakh enrolment in 2018-19, providing educational services to eligible age-group population in the state. It includes nearly around 2500 higher secondary institutions (Junior Colleges) in the state. Also included are a total of 1849 state-run residential schools (known as Gurkulums) specially focused on serving children belonging to various marginalised sections and backward classes

in the state. There are 475 Kasturiba Gandhi Balika Vidyalayas (KGBVs) for girl children, about 248 institutions[1] for scheduled castes' children, 146 institutions[2] for tribal children (Non-Ashram), 259 institutions[3] for backward classes' children and 204 institutions[4] for minorities' children along with 176 model schools in educationally backward blocks / mandals in the state. Of the total institutions of school education 5% of schools in the state are residential type and 10% of total enrolment is in these residential schools (Table-2). Private sector, by management type, holds major share in the enrolment. Of the total institutions of school education and enrolments, 27.5% of schools and 55% of enrolment in the state is under private management (Table-2).

Table-2: Number of School by Type and Management in Telangana, 2018-19

Management and Residential Type			Number			Percentage		
			Schools	Enrolment	Teachers	Schools	Enrolment	Teachers
1			***2***	***3***	***4***	***5***	***6***	***7***
Non-Residential	1	Local Body (NR)	24299	1800107	103887	57.4	27.5	40.4
	2	State Govt. (NR)	3576	440521	16760	8.4	6.7	6.5
	3	Central Govt. (NR)	84	35962	681	0.2	0.5	0.3
	4	Aided (NR)	698	104575	3177	1.6	1.6	1.2
	5	Private Unaided (NR)	11353	3518302	108705	26.8	53.7	42.2
	6	Others (NR)	178	11951	455	0.4	0.2	0.2
	Total (non-Residential)		***40188***	***5911418***	***233665***	***94.9***	***90.2***	***90.8***
Residential	7	Non-ashram (R)-Govt	831	264635	8415	2.0	4.0	3.3
	8	KGBV(R)	475	87106	4999	1.1	1.3	1.9
	9	Model (R)	176	113054	3151	0.4	1.7	1.2
	10	Private (R)	277	98006	3628	0.7	1.5	1.4
	11	Others (R)	408	82482	3509	1.0	1.3	1.4

[1] Under the Telangana Social Welfare Residential Educational Institutions Society (TSWREIS) providing quality education in English medium up to graduation for the children belonging to Scheduled Castes (SCs).

[2] Functioning under the Telangana Tribal Welfare Residential Educational Institutions Society (TTWREIS which is known as Gurukulum) providing education to tribal children in the state.

[3] Functioning under Mahatma Jyotiba Phule Telangana Backward Classes Welfare Residential Educational Institutions Society (MJPTBCWREIS) which was established in 2012-13 meant for the children of other backward classes (OBCs) in the state.

[4] Residential schools and colleges functioning under the Telangana Minorities Residential Educational Institutions Society (TMREIS)It was established in 2014-15 for minority children in the state.

	Total (Residential)	***2167***	***645283***	***23702***	***5.1***	***9.8***	***9.2***
Grand Total		**42355**	**6556701**	**257367**	**100**	**100**	**100**

Notes*: 1. NR – Non-Residential; R – Residential; 2. Most of the Non-Ashram Residential school except 10 are under the State government management including the various* ***welfare residential*** *institutions; 3. Most of the* ***Others Residential*** *schools are Ashram type (377) managed by Tribal Welfare Department; 4. KGBV – Kasturiba Gandhi Balika Vidyalayas.*

Source*: Authors' compilation using U-DISE, 2018-19*

Overall, the quantitative expansion of school education in Telangana state in terms of access (availability of school) and thereby the current enrolment and/or attendance rates along with equity are close to desirable level. But schooling (current attendance or number of years of attendance and transition from one class/level to next) is necessary but not sufficient for education development wherein quality of education representing learning levels/achievement and outcomes are critical. The following section examines performance of Telangana state in this regard.

III State Performance on Different Domains of School Education

NITI Ayog and Ministry of Education of Govt. of India has been assessing and bringing out status and performance based indices for states in the country in different domains of education. There are three such key reports of NITI Ayog and MOE in this regard: School Education Quality Index (SEQI), Performance Grade Index (PGI) and SDG. These assessment studies and reports have largely focussed on outcomes and governance aspects of the education systems across states. SEQI is a composite index based on a set of indicators (30) in outcome (16) and governance (14) domains of school education that measured the overall effectiveness, quality and efficiency of the Indian school education system and performance of the states. The outcome domain consists of sub-domain level outcomes of learning achievement (indicators - 3), access (3), infrastructure (3) and equity (7).

Table-8: Telangana Score and Ranking on School Education Quality Index (SEQI) of NITI Ayog for the years 2015-16 and 2016-17

		Telangana Score		Telangana Rank	
	Domain	2015-16	2016-17	2015-16	2016-17
1	***2***	***3***	***4***	***5***	***6***
A	***Outcomes***	***55.9***	***43.9***	***19***	***28***
1	*Learning Outcomes*	*0.0*	*49.8*	*-*	*17*
2	*Access Outcomes*	*65.2*	*61.0*	*15*	*20*
3	*Infrastructure Outcomes*	*17.5*	*20.5*	*29*	*26*
4	*Equity Outcomes*	*56.4*	*30.0*	*24*	*34*
	Governance Process Aiding				
B	***Outcomes***	***19.2***	***35.4***	***30***	***30***
	Overall	**34.7**	**39.0**	**27**	**30**

Notes*: Telangana Rank is with reference to scores of all the states and UTs in India; "-"Not available because no values for the year 2015-16.*
Source*: SEQI, NITI Ayog, Govt. of India.*

Similarly, the PGI is also based on the assessment in the two categorical domains of outcomes and governance of school education systems across states. The outcome domain consists of learning outcomes and quality, access, infrastructure and facilities, equity. It based on a total of 70 indicators in these two domains. The performance of Telangana state in this regard is far below the best performing state in India as the rank of the state in overall score of PGI is 22 for year 2019-20. Except in the domain of learning outcomes and quality, the state performance in all other domain is far away from the best performing state. Telangana standing among states in India is 20 or above position in all the other four domains.

While aligning the educational development of the country and across states with the SDG framework of *global agenda 2030*, NITI Ayog has developed a national indicator framework (NIF) for assessment of the baseline and progress thenceforth since 2018 for all the SDGs. There are three annual reports with such state-level assessments since 2018. The performance of Telangana on SDG India Index with respect to SDG-4 concerned with quality education is also moderate (Table-10). Although Telangana was among the league of states categorised as *frontrunner* in the base line, the assessment in two subsequent years shows that the state slipped down to the category of *performer*. The index score of Telangana is

considerably higher than national average. The score of the state is also found to be declining but its ranking among Indian states improved in the third year of assessment.

Table-9: Telangana Score and Ranking on Performance Grade Index (PGI) of NITI Ayog for the years 2017-18, 2018-19 and 2019-20

Domain	Maximum Attainable Score	Actual Score of the Telangana State			% of State Score in Maximum Score			Telangana Rank among the Indian States/UTs		
		2017-18	2018-19	2019-20	2017-18	2018-19	2019-20	2017-18	2018-19	2019-20
1	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***10***	***11***
Category 1 - Outcomes										
D1 – Learning Outcomes and Quality	180	142	142	142	78.9	78.9	78.9	12	12	12
D2 – Access	80	66	66	69	82.5	82.5	86.3	20	20	19
D3 – Infrastructure and Facilities	150	96	92	113	64.0	61.3	75.3	20	30	21
D4 – Equity	230	205	204	210	89.1	88.7	91.3	21	15	25
Category 2 - Governance										
D5 – Governance Process	360	167	253	238	46.4	70.3	66.1	23	9	25
Overall	***1000***	***676***	***757***	***772***	***67.6***	***75.7***	***77.2***	***23***	***16***	***22***

***Notes**: Telangana Rank is with reference to score of all the States and UTs in India.*
***Source**: PGI, Min of Education, Govt. of India.*

Table-10: SDG-4 Score and Ranking for Telangana in SDG India Index of NITI Ayog

Year	All India Average Score	Telangana		Grading Category	Remarks: States Standing above Telangana
		Score	Rank		
1		***2***	***3***	***4***	***5***
2018-19	58	66	11	Frontrunner	Kerala, HP, AP, Karnataka, TN, Maharashtra, Rajasthan, Goa, Uttarakhand, Gujarat (10).
2019-20	58	64	11	Performer	HP, Kerala, Goa, Manipur, TN, Haryana, Karnataka, Punjab, Uttarakhand, Maharashtra (All Frontrunners)
2020-21	57	63	10	Performer	Frontrunner States: Kerala, HP, Goa, Uttarakhand, TN; Performers: Haryana, Karnataka, Maharashtra, Manipur.

Notes*: Telangana Rank is among the states in India including smaller and north-east states (excluding UTs); Grading Category is as follows: Achievers, Frontrunner, Performers, and Aspirants.*

Source*: SDG India Index, NITI Ayog, Govt. of India.*

Overall, the performance of the state is better in SDG-4 score index whereas its performance is lagging in SEQI and PGI. The SDG index consists of the few parameters and they are largely representing quantitative dimension of enrolment ratio and gender parity along with teachers' availability. The SEQI and PGI are based on broad dimensions of education system including infrastructure, quality and governance along with equity. The number of indicators engaged in SDG-4 index are less than 15 whereas SEQI consists of 30 and PGI has 70 indicators in all the five domains together (NITI Ayog, 2020; 2019; MoE, 2021; Mehta, 2021). They also include the indicators related to learning levels representing quality of education along with covering a dimension of school education that is related to its governance and management. It is very clear that although the quantitative expansion along with access and equity in school education are much better in Telangana state, the other dimensions which affect the learning process and the quality of education there is considerable gap to improve.

IV Quality of School Education

The trade-off between quantity and quality appears to be ubiquitous in education as well especially in the developing country context. Developed countries witnessed a quantitative progress in school education along with their industrial development during the second half 19th century and first-half of 20th century and thereafter they focussed on quality. Most of the developing countries have a colonial history and slow progress in education during the period. Post-independence most of these countries have been committed to improving child schooling and educational development but while striving for the quantitative expansion, many of these countries have compromised on quality. Progress in quantitative expansion in these countries is remarkable especially during the last three decades. There is a growing policy concern and hence it required policy attention and initiatives in these countries towards improving the quality of education. As mentioned above, growing evidence of research studies has shown that the instrumental role of education for economic growth and individual well-being in the human perspective is realised with learning levels (quality of education) not alone with number of years of schooling (World Bank, 2018).

In India, the discussions on quantity and quality of education and policy measures reflecting on this came up in the colonial regime as early as at the turn of 20th Century in education policy of Lord Curzon, the then Governor General of India. Again, it was discussed in the ***Hartog Committee*** report in 1929 on educational progress under Diarchy since 1919 and it recommended consolidation for quality of school education. Also, Hyderabad state had such policy of consolidation in 1920s for improving quality that closed down some unrecognised private schools. The ***Radhakrishnan Commission*** immediately after independence, ***Modaliar Committee*** in the early-1950s and then the ***Kothari Commission*** in mid-1960s had laid their emphasis on quality of education along with quantitative expansion. The strained policy efforts however largely focussed on expansionary measures and compromised on the quality. Certain expansionary policy measures such as ***no-detention*** and ***automatic-promotion*** to contain wastage by reducing the dropout and stagnation might have been necessary but without any compensatory ***remediation*** measures had deleterious effect on quality of education. ***Resource constraints*** including both the *financial* and *human* resources (teachers) have had adverse impact on the expansion of school education as well as quality of it.

The ***foundational literacy and numeracy*** at primary level has become a very precarious. Pre-primary education critical for the cognitive, psychomotor and social

development of children during their early childhood stage is neglected for a long time. When the ICDS implemented through Anganwadi centres focussed its service delivery more on nutritional aspects of children, not much attention is given to pre-primary education. Single classroom and multi-grade teaching schools is a common scene in Indian primary education system. The cumulative impact of the learning deficits in early childhood stage and primary levels along with the each of next level-specific learning deficit are having adverse impact on human capital base (knowledge, skills and competence embodied in an individual) of the economy. In fact, recent report of the World Bank's Human Capital Project indicates that India is one among the countries with low score in human capital index (World Bank, 2020). Given such concerns of quality of school education, an amendment in 2017 to Right to Education (RTE) Act of 2009 especially the Rule 23(2) of it, made all the state governments to codify compulsorily the expected levels of learning in each subject for students of elementary levels i.e. Class/grade 1 to 8. It is to develop an assessment framework to assess the actual learning against the expected level.

In this context, if one examines the learning levels, achievement or outcomes of the children in school education in Telangana state, learning deficits appears to be very extensive. There are two major national learning achievement assessment surveys: ASER facilitated by *Pratham* and NAS organised by NCERT. ASER is a household-based large scale national assessment survey covering 3-16 years age children in rural India. Along with schooling status of rural children ASER assesses ability of school-going children in reading the simple text and doing basic arithmetic. In other words, the survey tests the rural children in elementary classes (Class 3 to 8) of their foundational literacy and numeracy skills. For a decade since inception in 2005 ASER has conducted annual assessment of status of schooling and basic learning of school-going children (till 2014) but since 2015 this subject of inquiry has been changed to alternate years.

As the latest ASER survey estimates for the year 2018 indicates that only one-fifth of the rural children in class 3 are able to read the text of Standard II level (Table-3). One would expect as it is a desired outcome that majority of the children in any grade or class should be able to perform certain extent (if not perfectly) the knowledge, skills and competence attained in the previous class. Gap in such foundational literacy is also extensive among the children in other elementary classes; percentage of children who could read standard II level text is 34.2% among children in Class 4, 43.7% in Class 5, 50.9% in Class 5, 64.4% in Class 7 and 69% in

Class 8. There is an improvement in foundational literacy (i.e. reading standard II level text) in each higher class/grade within the elementary level. But it is alarming that more number years of schooling is required to pick up such a foundational literacy. Still after 7 years of schooling 30 per cent of children in Class 8 could not be able to pick up such foundational literacy.

Table-3: Foundational Literacy (Reading) and Numeracy (Arithmetic) – Percentage of Children in Class 3 to 8 who could Read the Text of Standard II and perform Arithmetic: ASER 2018

State	Class / Grade					
	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8
1	***2***	***3***	***4***	***5***	***6***	***7***
Percentage of Children who could Read the Text of Standard II						
Telangana	18.0	34.2	43.7	50.9	64.4	69.0
All India	27.2	40.7	50.3	59.8	67.7	72.8
Percentage of Children who could perform simple arithmetic: At least Subtraction						
Telangana	34.4	53.0	65.9	67.2	76.0	81.7
All India	28.1	42.2	52.3	58.7	63.0	66.0
Percentage of Children who could perform simple arithmetic: Division						
Telangana	3.2	16.8	27.1	34.6	42.6	48.3
All India	8.5	17.6	27.8	34.7	39.0	43.9

Notes: *At least Subtraction includes Division.*
Source*: ASER 2018*

In respect of foundational numeracy, performing simple arithmetic – at least subtraction - is one measure of learning level. In this respect, one can observe from ASER estimates for the year 2018 that only one-third of children in Class 3 in Telangana could perform at least basic arithmetic skill i.e. subtraction (Table-3). Percentage of children in Class 3 performing division is very low. As is the case of performance in reading, the percentage of children performing the arithmetic has increased in each of the subsequent classes/grades. But, as mentioned above it indicates *number years of schooling required to pick up such foundational skill of numeracy* for a majority of children is a cause of concern. Still after 7 years of schooling 18 per cent of children in Class 8 in Telangana could not pick up such basic arithmetic of subtraction, more than 50 per cent of them could not pick up arithmetic operation division. Telangana performance is however, better than national average in this regard.

Among the Indian states, the performance of the Telangana state in learning achievement is observed to be very low in terms of reading level. Telangana state ranking is 20 or above in this regard (Table-4). In cases of learning achievement in foundational numeracy indicated by percentage of children performed simple arithmetic (subtraction or division), Telangana stands among the middle performing states, and its ranking lies between 12 and 14.

Table-4: Telangana State Ranking in Indian States for ASER's Rural Children Learning Achievement Survey, 2018

Indicator	State Ranking	Remarks
1	***2***	***3***
Percentage of Children who could Read the Text of Standard II		
Class 3	29	***Two States* below Telangana**: MP and TN.
Class 5	20	***Eight States* below Telangana**: J&K, Sikkim, MP, Bihar, TN, Assam, Arunachal Pradesh, Jharkhand
Class 8	22	***Six States* below Telangana**: Tripura, Jharkhand, J&K, MP, WB, Assam
Percentage of Children who could perform simple arithmetic		
Class 3	13	***Twelve States* above Telangana**: Mizoram, Manipur, Haryana, HP, Punjab, Kerala, Sikkim, AP, Nagaland, J&K, Tripura
Class 5	14	***Thirteen States* above Telangana*:*** HP, Punjab, Haryana, Manipur, Kerala, Mizoram, AP, Uttarakhand, Maharashtra, Bihar, WB, UP, Arunachal Pradesh
Class 8	12	***Eleven States* above Telangana*:*** Manipur, Mizoram, Haryana, Punjab, HP, Bihar, Kerala, Nagaland, TN, Arunachal Pradesh, Uttarakhand

Notes*: 1. Ranking out of 29 states; 2. Simple arithmetic is subtraction for Class 3 and Division for Class 5 and 8.*
Source*: Authors' compilation based on ASER 2018.*

A cause of further concern is that percentage of the children who could perform on such foundational literacy and numeracy is declining over the period as indicated by estimates from same source, ASER survey of *Pratham* (Table-5). Such observation of declining trend is

explicit in higher classes (Class 8) of elementary schooling; it is so in the Telangana state and all over India.

Table-5: Foundational Literacy and Numeracy among Children in Class 3, 5 and 8 in Telangana and India: ASER

	% could Read Standard II level					
	Text			% Performed Arithmetic		
Year	Class 3	Class 5	Class 8	Class 3	Class 5	Class 8
1	***2***	***3***	***4***	***5***	***6***	***7***
Telangana						
2010	19.9	59.0	85.0	36.2	35.3	66.8
2012	21.6	53.3	85.6	44.6	34.7	61.6
2014	19.9	53.7	75.9	34.7	33.7	44.3
2016	18.6	40.0	76.1	42.2	30.4	54.9
2018	18.1	41.3	69.5	34.5	27.3	48.7
All India						
2010	19.6	53.7	87.5	36.3	36.2	68.4
2012	21.5	46.9	76.5	26.4	24.9	48.1
2014	23.6	48.0	74.7	25.4	26.1	44.2
2016	25.2	47.9	73.1	27.7	26.0	43.3
2018	27.3	50.5	73.0	28.2	27.9	44.1

***Notes**: 1. % of Children in Class 3, 5 and 8 who could read the Standard II level text; 2. % performed Arithmetic is children in Class 3 who could do subtraction and children in Class 5 and 8 who could do division.*

***Source**: ASER.*

While ASER focussed on foundation literacy and numeracy (reading and basic arithmetic), NAS has been focussing on the class/grade-level learning levels. The following analysis is based on the learning achievements of students assessed in the National Assessment Survey (NAS) conducted by the NCERT. As part of SSA initiatives of quality elementary education, NAS was initiated in 2001 and it was conducted between 2001-16 in four cycles for three different classes/grades of elementary education (class 3, 5 and 8). Each year one of three classes/grades is focussed, it means three-year interval period for each cycle of a class/grade being assessed. Besides, two cycles of assessment were conducted for secondary level (Class 10) as well in 2015 and 2018. Unlike the ASER, NAS is school-based assessment of students

and is based on *item-response theory* (IRT). The key objective of the NAS is to study the achievement level of students in different subjects at different grade levels (NCERT, 2017). The latest NAS 2017 covering Class/grade 3, 5 and 8 is although on the line of previous class-specific assessment for every three years in four cycles, it has certain differences. Unlike the previous scheme (four cycles of NAS till 2016), all the sample children for all the three classes (3, 5, 8) covered and tested on single day (13th November 2017). Second most fundamental difference is that the *parameters of student testing* in NAS 2017 is based on the *subject-and class-specific expected learning levels or outcomes* as developed by NCERT in 2017. Such an exercise of NCERT developing expected level of learning is in the lines of an amendment made to RTE Act and its Rule 23(2). Previous cycles assessments were made based on the state level core-curriculum. Third, the NAS 2017 has district level sample while previous cycles were having state level sample. Changes in NAS 2017 methodology are applied to NAS-Cycle-2 of Class 10 in 2018.

The class-subject-specific indicators value/score represent *percentage of correct answers* to total questions taking the responses of the sample children in each class and subject. It is different from the ASER indicator value that is about *percentage of children who could perform* the basic skills – foundational literacy and numeracy (reading and arithmetic). Further, in ASER assessment is performing skill in two dimension of learning – reading and arithmetic, NAS assessment is subject-specific and answering multiple questions in each subject. Unlike ASER, the *coverage of NAS* is schools in both the *rural and urban* areas but limited to *government and aided schools*. This is to indicate that one needs to keep in mind comparing the NAS 2017 with its own previous cycles and/or NAS with ASER learning indicators.

One can observe from the Table-6 which present learning outcomes of children in class 3, 5, 8 and 10, is that there are learning gaps in children in these classes. Learning levels in lower classes are relatively better and hence the low learning gaps. The learning levels in each successive higher class is declining; in other words, increasing the learning gaps (Table-6). Such a learning gap in higher classes (Class 10) is very high as two-thirds of children could achieve basic learning outcomes. The indicator value presented in the Table-6 is average percent of correct answers by students in each class in each subject they are tested/assessed. For instance, the average percent of correct answers in mathematics of all the respondent children of class 3 in Telangana state was 64% in 2017 while the national average is 69%. The learning achievement in mathematics of children in Class 5 is that their average correct answer

is 56% while the national average is 53%. For Class 8 children in the state their learning level in mathematics is 37%, national average is 42%.

Table-6: Learning Outcomes of Students in Telangana, NAS 2017/2018

Class and Subject	Overall		Telangana - by Location, Gender and Social Group							
	All India	Telangana	Rural	Urban	Male	Female	SC	ST	OBC	General
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*
Class 10 (2018)										
Mathematics	34	34	33	37	34	39	31	31	34	41
Science	34	37	36	39	34	38	35	35	37	41
Social Science	39	39	38	40	37	38	37	36	39	42
English	36	38	35	45	37	48	35	32	38	50
MIL	49	47	46	49	39	46	46	43	48	51
Class 8										
Mathematics	42	37	37	37	37	37	36	35	39	39
Science	44	38	38	37	38	37	36	35	39	38
Social Science	44	40	40	40	40	40	39	38	41	40
Language	57	53	52	54	52	53	52	48	54	54
Class 5										
Mathematics	53	56	57	56	57	56	55	51	59	56
EVS	57	54	54	56	54	54	52	49	57	58
Language	58	57	57	58	56	57	55	50	59	60
Class 3										
Mathematics	69	64	69	69	69	69	70	64	69	69
EVS	67	67	66	68	66	67	68	61	68	68
Language	68	68	68	68	67	68	69	63	68	70

***Notes**: Average percent (%) of answers correct; MIL – Modern Indian Language*
***Source**: NAS-NCERT 2017 a d 2018*

Talbe-7: Telangana State Ranking in Indian States for NAS, 2017/2018

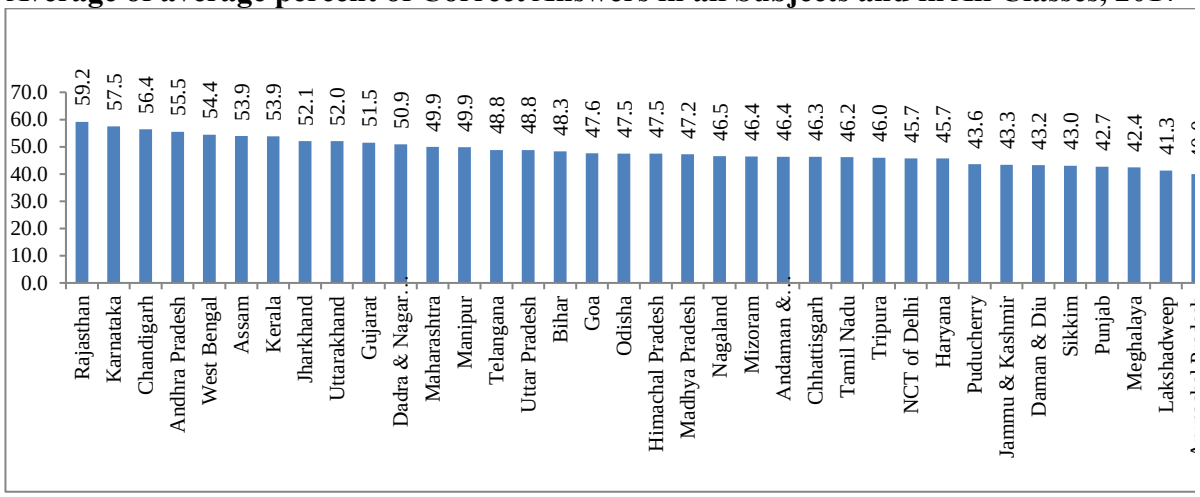
Class/Subject	*State Ranking*	*Remarks: States standing above/below Telangana*
1	*2*	*3*
Class 10 (2018)		
Mathematics	8	States above TS (7): AP, Assam, Odisha, Rajasthan, Bihar, Delhi, Karnataka,
MIL	19	States above TS (18): Mizoram, Delhi, Rajasthan, Chandigarh, Karnataka, Kerala, Uttarakhand, Assam, HP, Chhattisgarh, Odisha, Haryana, Punjab, Maharashtra, MP, Gujarat, Goa, TN
Class 8		
Mathematics	16	States above TS (15): Rajasthan, Karnataka, Jharkhand, Kerala, AP, Assam, Gujarat, Bihar, Odisha, Manipur, MP, Maharashtra, Uttarakhand, UP, Tripura
Language	19	States above TS (18): Rajasthan, Gujarat, Kerala, Karnataka, Maharashtra, Jharkhand, Goa, HP, Uttarakhand, AP, Bihar, Haryana, TN, Chhattisgarh, MP, Assam, Tripura, Punjab.
Class 5		
Mathematics	8	States above TS (7): Karnataka, Rajasthan, AP, Kerala, Assam, Uttarakhand, Gujarat.
Language	13	States above TS (14): Karnataka, Kerala, Rajasthan, AP, Uttarakhand, Maharashtra, HP, Jharkhand, Assam, Gujarat, Manipur, TN.
Class 3		
Mathematics	6	States above TS (5): Karnataka, AP, Kerala, Rajasthan, Assam.
Language	14	States above TS (13): AP, Karnataka, Rajasthan, Kerala, Uttarakhand, Assam, Manipur, Gujarat, Odisha, Maharashtra, Jharkhand, HP, Mizoram.

***Notes**: Average percent of answers correct; MIL – Modern Indian Language*
***Source**: NAS-NCERT 2017 and 2018*

The performance of Telangana state among the Indian states is observed to be moderate (Table-7). Its standing is 8th position or below among top 10 states in respect of learning outcomes in mathematics while its ranking ranges between 13 and 19 for learning outcomes in language by

class/grade. It indicates that although state performance is better in respect of learning outcomes in mathematics, it is lagging in language. The overall learning levels indicated by a simple average of scores in all subjects and in all classes, shows that Telangana stands at 14th position among states and UTs in India.

Figure-5: Overall Learning Levels in School Education Across States in India: Simple Average of average percent of Correct Answers in all Subjects and in All Classes, 2017



***Note**: Figures represent a simple average of average percent of correct answers in all subjects and in all classes in each state.*
***Source**: Calculated based on NAS 2017/2018*

On the whole, Telangana state's relative performance among Indian states in respect of learning achievement is moderate. But there are high levels of learning gaps when compared reference levels (a minimum to be achieved) especially in the higher classes persists in Telangana as well as in rest of the states in the country. Having better relative performance is necessary but not sufficient wherein it is necessary to achieve learning levels or outcomes that meet absolute reference levels. Herein the state education policy interventions must now focus on the quality of school education. Enhancing learning levels requires reforming the learning process in the state education system.

The World Bank's World Development Report 2018 has brought forth *key factors* in the *learning crisis* all across the globe and that pertinent in India (World Bank, 2018). First, *children's unpreparedness* i.e. children come to school unprepared to learn. Second contributing factor to learning crisis is frontline service delivery agents of school education i.e. *teachers*, they very often lack skills or motivation to teach effectively. Third is *classroom and learning material* wherein required inputs often fail to reach classrooms or to affect learning.

Fourth, it is *management and governance*, i.e. poor management and governance often undermine schooling quality. In this the WDR recommended continuous assessment of learning levels of children and acting upon evidence of poor learning levels that makes the schools work for learner (World Bank, 2018). It also requires aligning all the actors and stakeholder to make system work better for learning effectively.

V Concluding Remarks

The present paper has made analysis of status of school education in quantitative perspective in terms of participation rates and equity and then examined the quality of school education in terms of learning achievement or outcomes. It is observed that although the state of Telangana is performing better in terms of participation/access and equity, its performance in terms of quality of school education is deficient. As ASER estimates have shown the performance in *foundational literacy and numeracy* is very low in lower classes/grades the number of years of schooling required to achieve that is more. Further, NAS estimates also such learning crisis in higher classes as well. It indicated that learning outcomes deteriorating when moving toward higher classes. As the World Bank (2018) report indicated *children's unpreparedness* is one of the reasons but the functioning of schools in delivering the quality education along with the system of education ensuring the same is main reason for such learning crisis. *Teachers* and their motivation, *classroom* transaction in learning and required inputs or learning material along with *management and governance* of schools have key role to play. The state policy needs its attention and required intervention streamlining school education system delivering the quality education with better learning outcomes.

References

Mehta, Arun C. (8 July 2021). Sustainable Development Goal 4: Quality Education, *Education for All*, Accessed at: https://educationforallinindia.com/wp-content/uploads/2021/06/Sustainable-Development-Goal-2020-21-Observations-by-ArunCMehta.pdf

Motkuri, Venkatanarayana (2013). H*istorical Factors in the Process of Educational Deprivation of Children: The Case of Telangana Region of Nizam's Hyderabad State, MPRA Paper No. 48508, Accessed on 12/3/2021 at* https://mpra.ub.uni-muenchen.de/48508/1/MPRA_paper_48508.pdf

Motkuri, Venkatanarayana (2016). *Socio-Economic Transformation and Educational Deprivation of Children in Andhra Pradesh, Unpublished Ph.D Thesis*, Centre for Development Studies, Trivandrum.

NITI Ayog (2018, 2019, 2020). *SDG India Index: Dashboard*, NITI Ayong, Govt of India, New Delhi.

NITI Ayog (2019). *The Success of Our Schools: School Education Quality Index (SEQI*), NITI Ayog, Govt. of India, New Delhi (See at http://niti.gov.in/reports-sdg).

MoE (2019, 2020, 2021). *Performance Grade Index of Schools: for the years 2017-18, 2018-19, and 2019-20*, Department of School Education and Literacy, Ministry of Education, Govt. of India, New Delhi (See at https://pgi.udiseplus.gov.in/#/home).

Reddy, D. N. (2020). *Learning Crisis in School Education in India and Telangana: A Brief Analysis*, Presidential Address, Fourteenth Annual Conference (15-16 February), Telangana Economic Association (TEA), Hyderabad.

World Bank (2018). *World Development Report: Learning to Realise Education's Promise*, The World Bank, Washington D.C.

World Bank (2019). *Ending Learning Poverty: What will it take*, The World Bank, Washington D.C.

World Bank (2020). *The Human Capital Index Update*, The World Bank, Washington D.C.

Maximising the Social Security Measures and Values in Real Estate Sector for Inclusive Growth

Manoj Kumar Chaudhary
Doctoral Fellow, Mahatma Gandhi Central University
Email: manoj904423@gmail.com

Social inclusion makes the necessary opportunities and resources needed by the citizens in the society affordable for their participation in economic, cultural and social life. Real estate workers too have their dignity of the life. Social security is a human right. The paper outlines the workforce in real estate sector for the inclusive and sustainable growth. It also outlines the migrant workers coming from different parts of the country in search of their employment and survival needs to be taken care of by the policy makers. Social inclusion makes the necessary opportunities and resources needed by the citizens in the society affordable for their participation in economic, cultural and social life. There should be proper employment based schemes for their survival and the betterment of life. Basically, the roots of the real estate workers are in the villages, as they are surviving through the various government schemes. Real estate workers are often discriminated against the schemes and there should be proper welfare schemes which government policies need to be taken care of. Real estate workers are the future of the construction sectors. The different government schemes provide safety guard to the real estate workers. Therefore, grassroot studies have been done in order to examine the working conditions and policy making in real estate sector.

Introduction:

Resilience is a word most prominent and reliable for the sustainable growth of real estate workers. Resilient individuals have been described through four pillars i.e., social competence, problem solving, autonomy and positive expectations for the future. The self reliability through globalization has been increased during pandemic. The paper outlines the attitude towards real estate workers related to migrant individuals. Migration is a process in which an individual or a group moves their residence from one place to another in search of fulfilling the basic amenities. The problems of real estate workers in relation to their social inclusion are identified for social work. Real estate workers are considered to be the skilled, semi-skilled and unskilled workers. They too have dignity of life. Social inclusion makes the necessary opportunities and

resources that are needed by the citizens in the society. It is the basic affordable need for the participation in socio-economic and cultural life. The social inclusion includes the employment, education, housing, disability and the rights of citizenship. The real estates' participation and social inclusion is a crucial factor for evoking a feeling of connectedness, bonding and helping each other during the pandemic.

Social Inclusion: The Human Right of Real Estate workers

Social inclusion is the process by which efforts are made to ensure equal opportunities that

everyone, regardless of their background, can achieve their full potential in life. Such efforts include policies and actions that promote equal access to (public) services as well as enable citizen's participation in the decision making processes that affect their lives. The world is undergoing important social transformations driven by the impact of globalization, global environmental change and economic and financial crises, resulting in growing inequalities, extreme poverty, exclusion and the denial of basic human rights. These transformations demonstrate the urge for innovative solutions conducive to universal values of peace, human dignity, gender equality and non-violence and non-discrimination. Young women and men, who are the most affected by these changes, are hence the principal key-actors of social transformations. The promotion of social inclusion and equity is moreover at the heart of the process of development of the UN post 2015 agenda, which makes a strong call for inclusive

social development and inclusive economic development. In this regard, social inclusion, as a key dimension of social development, socio- cultural and economic conditions of real estate workers.

Objectives of the Study

1.To study the socio-economic condition of real estate workers.

2.To analyse the schemes for workers whether they are people centric or not.

3.To study the role of government in providing welfare schemes.

Relevance of the Study

Real estate sector is one of the leading sectors in the after agriculture. It is formal sector that provides maximum employment to the workers. Out of the total estimated 15.2 million short duration out-migrants, more than 36.2% are employed in the construction industry alone. According to 64th NSSO round [NSSO, 2016], there were 58.6 million casual workers in the non-agriculture sector of which construction industry alone employed around 58% of the casual workers, (i.e., 32 million). With rising numbers, the risks and uncertainties have also grown considerably. To address this, the Government of India has initiated relevant policies and programmes for the migrant workers in the real estate sector.

The success or failure of these policies can therefore provide a litmus test with regard to globalisation, on the one hand, and the redistributive capabilities of the state, on the other. To understand the genesis of the existing national welfare policies launched within the sector, it is imperative to go back to the Inter-State Migrant Workmen Act. 1979. This legal arrangement got its initial motivation from the vulnerability of a particular group of labour called Dadan from Orissa, mainly working in the construction industry and facing exploitation by their contractors commonly referred to as Sardars or Khatadars. Non-payment of promised piece-meal wages, poor working conditions, lack of basic facilities at the worksite, long uninterrupted working hours were observed as some common modes of exploitation.

Social Security Schemes for the Real Estate Workers

In view of these exploitative practices, the Government of India in consultation with many State governments, introduced the Inter-State Migrant Workmen (Regulation of Employment and Conditions of Service) bill in 1979 which was enacted in June 1979. The Registration of

organisations employing inter-state migrant labour was made mandatory and the contractors were made to procure a license from the government for hiring labour. They were also legally bound to perform certain duties, such as providing details of the workers hired, their identities and the wage payments made to them. The biggest benefit that the law brought to workers was to create uniform applicability of labour laws across India which provided for equivalent benefits for inter-state migrant and labour in the organised sector. The contractors were also directed to pay displacement and journey allowances and to take care of basic facilities like shelter, safety kits and medical assistance in case of injury during accidents. While putting the onus on the contractor and the employer, the law was more regulatory than welfare-centric in its outlook as it did not provide any tangible welfare benefits by the state to migrant labour. The Building and Other Construction Workers Act, 1996 provided for constitution of Welfare boards and Workers' Welfare Fund by the state governments.

Social Security providing Institutions

	State	Market	Member-based Organisation	Private Households
Instruments	Social insurance, social assistance, transfers, provident funds	Insurance policy or contract	Mutual arrangements, voluntary work	Gift exchange, state contingent loans, remittances, transfers
Mode of operation	Top-down	Individualistic	Mainly bottom-up	Bottom-up
Incentives	Rule of law, regulations	Maximisation of profit and/or utility, price signals and quantity adjustment	Balanced reciprocity, self-interest, voluntarism, solidarity	social norms and values, altruistic behaviour, charity, self-interest
Sanctions	Exclusion of people from programmes; withdrawal of programmes	Level of premium, limit supply of insurance	Social pressure, exclusion from the organisation	Social pressure, inherent family contract
Classification	Central; local	Profit oriented firms; private contractors	NPOs; cooperatives; mutuals; religious groups	Family; kinship; neighbourhood

- Child Benefit Scheme
- Maternity Benefit Scheme
- Residential School Plan
- Daughter Marriage Grant Scheme
- Construction Workers Food Assistance Scheme
- Job Card
- Health insurance
- Safety equipments, Disability schemes, etc.

Participatory Approaches to Social Inclusion and Public Policy Perspective:

The Government of Thailand has pledged to promote the peoples' well-being, which includes the inclusion of all disadvantaged groups in Thai society. Narrowing inequality gaps and ensuring accessibility to public services are priorities of national policies. The Thai government aims specifically to ensure universal access to health care services for all and upgrade the quality of all social services. To inform the development of those policies, the Office of the National Economic and Social Development Board has systematically collected data on various aspects of social development in Thailand and analysed this to create the suitable plan and program targeted for each group.

The data shows that there are a number of equality gaps, for example an income gap and an education gap. The policy responses are specially designed to reduce these gaps and improve quality of lives. To achieve this agencies aim to provide universal coverage, so that everyone in Thailand, including disadvantaged groups

has access to education, healthcare, social protection and social security. The data collection and analysis help the concerned agencies to accurately address the problems as was used for activities to raise public awareness on inequality and its impacts. During the cycle of implementation of programs and activities, they will be monitored and data sources up-dated to reflected.

Inclusive Growth and Policy tools to Balanced Growth in G20 Economics:

The distress of migrant workers under globalisation is more specifically understood in the framework of precarity by Standing [2001]. Precariat, in a globalised economy, is identified as a new class with some special features. They are seen to lead a life of instability and uncertainty within a lack of political organisation or a concerted voice. In fact, they lack revolutionary fervour as found in the traditionally organised labour class. In Standing's seven-fold categorisation of class within the global labour market, precariat assumes the third place from the bottom. This indicates the level of vulnerability of the class. There is, however, a lack of definitional clarity on whom this class refers to. It is observed that is no uniformity in terms of what it constitutes. For instance, in Germany it may refer to temporary workers or the jobless, whereas in Japan it is the working poor. Standing also refers to seven forms of insecurities that the precariat faces.

Migrant denizens have also been categorized as precariat. It is, however, implausible to consider that the migrant workers face all the insecurities as enlisted by Standing. The Indian case is a testimony to this claim. In a democracy like India, it is not easy to let go a large mass of people who are potential voters in their constituencies. This political logic still compels the government to introduce welfare policies for them while largely keeping their concerns and issues at bay. Standing's analysis is confined to migrant labourers in the Western world. The causes and consequences of migration may be very different from those in a developing economy like India. Here, inter-state migration may have multiple causes and impacts depending on the regional dynamics.

Conclusion

Urban centers, especially mid-sized cities, are experiencing some of the fastest rates of growth in human history. All indicators point to this: according to UN-Habitat, by mid-century seven of every ten people will live in a city. This can bring great economic and cultural opportunity, but research increasingly is confirming that the stress on urban infrastructure, transportation networks, schools and hospitals and other critical assets will outpace benefits. There is always a social threat to the real estate workers. They feel unsafe and unprotected at the workplace. The skilled and unskilled labour force are very much unprotected during the lockdown.

The majority of migrants work in informal sectors due to their low levels of education and limited skills. They form a vulnerable community who are exploited, rejected and excluded from the mainstream. Major challenges include restrictions of basic needs such as identity documentation, social inclusion, social entitlements, housing and financial services. Their contribution to the economic growth is immensely high but is hardly recognised. They are working for the beneficial of the surviving and making the economy strong. They are not trusted or easily invited into the society and hence suffer from insecurity and social discrimination.

Government, NGOs and social workers jointly have to work for their upliftment and through inclusion make them a prime element in the society. It is important for social workers to develop integrated intervention programmes for migrants at the grassroots level. To promote social inclusion, case work is important. This can help in building migrants' capacity and confidence at the individual level and educate them about the new culture, social norms, ethnicity and values of the host State. Grassroots realities of real estate workers are quite

different to the schemes provided on the paper. The benefits of these schemes are rarely feasible to them.

Government should provide proper welfare schemes to the real estate workers so that they should be properly benefitted for inclusive and sustainable growth.

References

1) Adams, Richard H, Jr. 1996. "The role of state in welfare of rural migrants labour". Economic working papers wp97-104, school of Economics, University of Wollongong, NSW, Australia.
2) Mukherji Shekhar, 2001, "Low Quality Migration in India: The Phenomena of distressed migration and acute urban decay, wp 1-24, International Institute of Population studies, Bombay, India.
3) Piketty Thomas, 2014, Capital in the Twenty- first Century P 104-108 Howard University Press.
4) Bhagwati, Jagdish, 2010; In Defense of Globalisation, New Delhi: Oxford University Press.
5) D. Narayana and CS Venkiteswaran Domestic Migrant Labour in Kerala Thiruvanthpuram Gulati Institute of Fixation and Taxation (GIFT), 2013. [PDF] at http://www.IC.Kerala.gov.in/images/current / ismstudy.pdf
6) Ernst and Young, (2008); "Risk Management in India".
7) KPMG, (2007); "KPMG India Real Estate Conference".
8) J.Chadchan, R.Shankar, (2012); ―An analysis of urban growth trends in the post – economic reforms period in India".
9) Cushman and Wakefield, (2014); ―Challenges and opportunities for Housing Sector in Urban India".

SDG 4 Performance, Current Status and Improvement Strategies: A Study on Indian Education Sector

Srinija Nellutla
Intern, Centre for Law & Public Administration, MCR HRD Institute of Telangana
Email: nellutla.srinija@gmail.com

Key words: SDGs, Quality Education, National Education Policy 2020, Implementation, Improvement Strategies

Puratchi Thalaivar MGR Nutritious Meal Programme, initiated in 1982, stands as a testament to a lineage of progressive initiatives taken by the Tamil Nadu government dating back to 1925. It aimed at tackling hunger while catalysing literacy rates. Despite its early suppression by the British administration, the concept was resurrected in 1956 evolving into a pivotal pillar of educational policy. It was further expanded by the subsequent government in 1982 to encompass nutritious meals for children aged 2-15, and today the mid-day meal[1] program offers diverse meals and heightened nutritional standards not just in Tamil Nadu but across the Indian States and Union Territories. This journey underscores the critical importance of assessing the efficacy of educational initiatives, facilitating informed planning and the seamless execution of impactful solutions.

In this context, the 2030 Agenda for Sustainable Development embraced by United Nation member states in 2015 outlines 17 Sustainable Development Goals (SDGs) as a collective strategy for global peace and prosperity. These goals urge nations to combat poverty, enhance health and education, diminish inequality, stimulate economic growth, address climate change and conserve natural resources. These SDGs are measured through variety of indicators and metrics that track progress towards each target. In this article, we will discuss about the SDG 4 which focuses on ensuring inclusive and equitable quality education and to promote lifelong learning opportunities for all.

[1] In September 2021, the Mid-Day Meal Scheme was renamed as 'PM POSHAN' or Pradhan Mantri Poshan Shakti Nirman.

How to measure SDG 4 goals?

To measure the performance of a country's education sector under SDG 4, some of the factors include:

- Literacy rate[1]
- Equitable access to
  - Early childhood development, pre-primary and primary[2]
  - Secondary education[3]
- Affordability and quality of technical, vocational, tertiary education[4]
- Availability of skilled youth[5]
- Gender parity in education[6]
- Presence of qualified teachers. [7]

These metrics collectively gauge the progress towards ensuring that SDG 4 goals are achieved.

Understanding the Current Status in Achieving SDG 4 Goals

To begin with, the launch of Samagra Siksha Scheme 2.0 reflects proactive strides towards SDG 4 and the new National Education Policy (NEP) 2020. According to the Ministry of Education UDISE+[8] 2021-22 report, primary and secondary school Gross Enrolment Rates (GER) have improved significantly. Primary GER rose from 101.3% in 2018-19 to 104.8% in

[1] Target 4.6 By 2030, ensure that all youth and a substantial proportion of adults, both men and women, achieve literacy and numeracy

[2] Target 4.2 By 2030, ensure that all girls and boys have access to quality early childhood development, care and pre-primary education so that they are ready for primary education

[3] Target 4.1 By 2030, ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes

[4] Target 4.3 By 2030, ensure equal access for all women and men to affordable and quality technical, vocational and tertiary education, including university

[5] Target 4.4 By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship

[6] Target 4.5 By 2030, eliminate gender disparities in education and ensure equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples and children in vulnerable situations

[7] Target 4.c By 2030, substantially increase the supply of qualified teachers, including through international cooperation for teacher training in developing countries, especially least developed countries and small island developing States

[8] Unified District Information System for Education Plus (UDISE+) 2021-22, this system of online data collection from the schools was developed by Department of School Education & Literacy in the year 2018-19 *to overcome the issues related to erstwhile practice of manual data filling in paper format*

2021-22, while the Secondary GER rose from 76.9% to 79.6%. Additionally, the Higher Secondary GER surged from 50.14% to 57.6% over the same period.

In Financial Year (FY) 2021-22, the Government of India restructured the Integrated Child Development Services (ICDS) and POSHAN (Prime Minister's Overarching Scheme for Holistic Nourishment) Abhiyaan into Saksham Anganwadi and POSHAN 2.0, representing a holistic approach to educational development integrating child nutritional support and early childhood care through 13.96 lakh Anganwadi centres.

Additionally, there is a pressing need for affordable and high-quality technical, vocational, and tertiary education to address the skill gap among youth and adults. Presently, over 1.5 million students are enrolled in vocational education programs under Samagra Siksha as part of their secondary and senior secondary curriculum. However, the International Labour Organization (ILO) Report[1] has forecasted a 29 million skill deficit in India by 2030. Moreover, India's literacy rate stands out at 74.04%, with 82.14% for males and 65.46% for females, as per 2011 Census.

Furthermore, there is gender parity in education at all levels as per the Gender Parity Index (GPI)[2] 2018-19 of GER indicates that the participation of females in school education aligns with the proportion of girls in the corresponding age group population. The GPI value at all levels of school education is one or more implying more participation of girls in the school education.

- Primary Education: 1.03
- Upper Primary Education: 1.12
- Secondary Education: 1.04
- Higher Secondary Education: 1.04

Particularly, addressing the supply of qualified teachers is imperative under the Right to Education Act, 2009 guidelines. The pupil-teacher ratio should ideally be 30:1 in classes1-5 and 35:1 in higher grades. As per recent data there has been some improvement, but the challenges persist as highlighted by UNESCO (2021)[3] as there are 1.2 lakh single teacher schools still existing in India.

[1] India Employment Report 2024
[2]GPI is released by the United Nations Educational, Scientific and Cultural Organization (UNESCO) as a part of its Global Education Monitoring Report
[3] 2021 State of Education Report for India

Recent Government Initiatives to Improve the Education Sector:

1. ***Understanding Lifelong Learning for All in Society (ULLAS)*** initiative aims to provide comprehensive education, covering foundational literacy, numeracy, critical life skills, vocational training, and continuing education, for all citizens. It emphasizes holistic development, including financial and digital literacy, healthcare awareness, and vocational skills, ensuring preparedness for the demands of the 21st century

Volunteer teacher conducting a workshop at village level

2. ***National Initiative for Proficiency in Reading with Understanding and Numeracy (NIPUN) Bharat*** ensures that every child achieves foundational and numeracy by grade 3 by 2026-27. Focused on early education access and teacher training, it aims to enhance basic skills crucial for academic success and lifelong learning.
3. ***The National Initiative for School Heads' and Teachers' Holistic Advancement (*NISHTHA*)*** enhances the quality of elementary education through comprehensive teacher training. It aims to empower educators with the skills to foster critical thinking and competence among students, ultimately improving the overall educational landscape.
4. ***PM e-VIDYA*** integrated digital education efforts for widespread access. Utilizing platforms like DIKSHA, Swayam and Radio broadcasts, it provides a unified approach to online learning, ensuring educational continuity and inclusivity across the nation.
5. ***The Strengthening Teaching-Learning and Results for States (STARS) Program*** is collaboration between the Indian government and the World Bank, aims to enhance the

quality and governance of education in six states[1]. Through targeted interventions and improved monitoring, it seeks to evaluate educational outcomes and practices in selected regions

Challenges and Key considerations

1. ***Insufficient Education Spending:***

   India's education spending stagnated at 2.61% of GDP, far below the 6% recommended by the *Education 2030 Framework for Action*. Lack of adequate budget hampers growth.

2. ***High Dropout Rate:***

   Primary and secondary levels witness significant dropout rates, wasting resources. According to the National Family Health Survey-5 (2019-21), lack of interest in studies drives 21.4% of girls and 35.7% of boys of ages 6-17 for dropping out of school before the 2019-20 school years.

3. ***Inadequate Infrastructure in Schools*:**

   According to UDISE 2019-20 Report, only 12% of schools have the Internet, and 30% possess computers. Meanwhile, 42% of these schools lacked furniture, 23% lacked electricity, 22% lacked ramps for the differently abled, and 15% lack WASH[2] facilities, including water, toilets, and hand wash basins.

4. ***Lack of Quality Education:***

   The Annual Status of Education Report (ASER) 2023[3] reveals the stagnant learning levels in rural areas. Basic reading abilities of Class 3 children have plateaued at 42.3% since 2018, while 37.9% of Class 5 students struggle with fundamental mathematics concepts such as division.

5. ***Commercialisation of Education*:**

   Commercialisation of education focuses on marketing schools to students and parents, leading to increased spending for better facilities. Further, it poses a significant challenge to fundamental right (Article 21A[4]) to education. Increasing demands for

[1] Himachal Pradesh, Kerala, Madhya Pradesh, Maharashtra, Odisha, and Rajasthan
[2] Water, Sanitation and Hygiene
[3] Released by NGO Pratham
[4] Article 21A declares that the State shall provide free and compulsory education to all children of the age of six to fourteen years, in such a manner as the State may determine

quality education, opportunities abroad, and government limitations have led to widespread privatization of educational institutions which led to industrialization of education.

Strategies to Improve the SDG 4 Performance

1. ***Capacity building of Anganwadi teachers for effective Early Childhood Care Education (ECCE):*** Over 85% of a child's cumulative brain growth takes place in the first six years.[1] This emphasises the need for quality early childhood care and education. Therefore, Anganwadi Centres which act as basic unit of childcare at the village level need Anganwadi teachers who underwent quality training. In this regard, Tamil Nadu state has a unique decentralized system extending from block level to the grassroots. Each block has a trainer, forming a Block Training Team (BTT) with an ICDS Trainer (Group I Supervisor) and a Child Health Nurse from the Health and Family Welfare Department. These trainers effectively conduct training, ensuring Anganwadi workers and Anganwadi Helpers remain motivated and stress-free throughout the process.
2. ***Allocation of Funds*:**

   The government should allocate more funds to education, moving towards the recommended 6% of GDP, as outlined in the National Education Policy (NEP) 2020 to improve physical and digital infrastructure. An International Monetary Fund report[2] suggests that demographic dividend[3] could add up to 2% points to per capita GDP growth per annum, by implementing forward-thinking policies and programs that empower the youth in education and skill development.
3. ***Establishing Monitoring and Evaluation Mechanisms*:**

   To evaluate the effectiveness of the students, teachers, educational polices and interventions, it is essential to establish a standardized mechanism for monitoring. For instance, Phoenix, an innovative project by Samagra Shiksha in Chandigarh, aims to ensure students minimum learning levels by continuously monitoring their progress from class 1

[1] According to National Education Policy Framework, 2020

[2] Shekhar Aiyar and Ashoka Mody, *The Demographic Dividend: Evidence from the Indian States*, IMF Working Paper: 2011.

[3] As defined by the United Nations Population Fund (UNFPA), demographic dividend is "the economic growth potential that can result from shifts in a population's age structure, mainly when the share of the working-age population (15 to 64) is larger than the non-working-age share of the population (14 and younger, and 65 and older)".

to 8. It uses a mobile app to track student and teacher performance across subjects. This aids in identifying and bridging learning gaps by passing monthly student reports to the higher class teachers. This encourages educators to improve teaching methods and assist all students effectively.

Monitoring and taking corrective steps in education through Phoenix App

4. ***Teacher Recruitment, Training and Incentivisation*:**

Effective teacher recruitment, training and incentivisation are essential to reduce the high student-teacher ratio, and fostering the adoption of child-centered teaching methods. These strategies promote assessment techniques that encourage critical thinking and problem-solving skills among students. For example, an innovative initiative *Shiksha Sarathi Yojana* in Singrauli district, Madhya Pradesh incentivizes teachers through increased stipends, weekly payments, and transportation support to ensure the fulfilment of quality teachers in rural schools. This resulted in improved student-teacher ratios, increased student enrolment and attendance.

College teachers teaching as part of Shiksha Sarathi Yojana

5. ***Collaboration among Various Stakeholders*:**

Need for collaboration among government, private sector, and community level organisations in infrastructure development. It significantly impacts student success, fostering academic achievement, cognitive development and well-being**.** For example, the newly formed Telangana government has established "*Amma Adarsha Patashala* Committees" in all government schools. This initiative leverages the potential of Self-Help Group Communities, which are aggregated as village organisations in rural areas and area-level federations in urban areas. Their role is to execute, monitor, strengthen, and maintain basic infrastructure related works in schools, deliver entitlements of students such as school uniforms and mid-day meals, and undertake sanitation works.

On-going infrastructure repair works

6. ***Leverage Emerging Technologies*:**

There is a need for leveraging emerging technologies to implement the provision of NEP 2020 i.e. integration of Artificial Intelligence (AI) in education to promote quality and skill-based education to meet the demands of Industry 4.0. It also has the potential to revolutionise education by innovating teaching methods, enhancing learning experiences and driving progress towards SDG 4. For example, Andhra Pradesh government in 2015 collaborated with Microsoft to combat rising school dropout rates using Artificial Intelligence technology. Microsoft Azure machine learning platform developed an application analysing enrolment, performance, demographics, infrastructure, and teacher skills data to predict potential dropouts. Over 60 patterns were identified, aiding in dropout prevention efforts.

7. *Curriculum Development*:

Curriculum development ensures educational relevance, consistency, and quality, fostering holistic student growth. It adapts to societal changes, promotes inclusivity, guides teachers, and engages students. Additionally, it prepares students for future careers, and establishes robust education system. For instance, the Kerala government has introduced Artificial Intelligence (AI) learning module into class 7 Information & Communication Technology (ICT) textbooks, introducing over 4 lakh students to AI from 2024-25 academic year. And over 80,000 secondary school teachers are undergoing AI training. Similarly, curricular and pedagogical initiatives[1] like introduction of contemporary subjects as Design Thinking, Holistic Health, Organic Living, Global Citizenship Education etc. at relevant stages is the need of the hour to build foundation for the 21st century employability skills.

In conclusion, delivering quality education alongside employability skills, such as critical and analytical thinking and problem-solving, is imperative. The Performance and Assessment, Review and Analysis of Knowledge for Holistic Development (PARAKH), introduced in the NEP 2020 framework promote Competency-based assessment (CBA) through performance tasks, projects, portfolios and traditional tests. This initiative represents a significant step towards achieving Sustainable Development Goal 4. However, the critical challenge lies in the implementation strategy.

Focusing on innovative implementation methods, rather than relying on conventional approaches, is crucial for the success of these reforms. Effective implementation can drive further innovation, exemplified by the Mid-Day Meal Scheme, which has evolved to include morning breakfast programs in the states such as Tamil Nadu and Telangana. Such progressive initiatives are essential for ensuring the long-term sustainability and efficacy of government schemes. The commencement of these programs demonstrates the importance of continuously adapting defining educational strategies to meet evolving needs.

[1] Mentioned in the National Educational Policy, 2020

References:

1. Padmini Swaminathan, J. Jeyaranjan, R. Sreenivasan and K. Jayashree (2004): "Tamil Nadu's Midday Meal Scheme: Where Assumed Benefits Score over Hard Data", *Economic and Political Weekly*, Oct. 30 - Nov. 5, 2004
2. Dr. Neeru Rathee, Suman Thakran (Sep 2015): "Commercialization of Education in India", *International Journal of Multidisciplinary Research and Development*, Volume: 2, Issue: 9.

Websites

1. https://sdgs.un.org/goals/goal4
2. https://apa.sdg4education2030.org/sites/apa.sdg4education2030.org/files/2021-07/module-1.pdf
3. http://udiseplus.gov.in/
4. https://www.education.gov.in/sites/upload_files/mhrd/files/NEP_Final_English_0.pdf
5. https://main.mohfw.gov.in/sites/default/files/NFHS-5_Phase-II_0.pdf
6. https://www.niti.gov.in/sites/default/files/2023-05/Best-Practices.pdf
7. https://asercentre.org/wp-content/uploads/2022/12/ASER-2023-Report-1.pdf
8. https://www.allsubjectjournal.com/assets/archives/2015/vol2issue9/2-8-122.pdf
9. https://article-14.com/post/the-learning-trap-how-byju-s-took-indian-edtech-for-a-ride-by-pradip-k-saha--65af555339d05
10. https://indiaai.gov.in/article/five-ways-ai-is-transforming-education-in-india
11. https://www.nipccd.nic.in/file/reports/bestprac.pdf
12. https://kite.kerala.gov.in/KITE/index.php

Relevance of Social Sciences to Societal Wellbeing in the Era of Digitalisation

Dr. Kongala Sukumar
Associate Professor of Public Administration & Faculty
Dr. MCRHRD Institute of Telangana
Email: kongalasukumar@gmail.com

The advent of digitalization has transformed nearly every aspect of human life, profoundly altering the ways in which individuals interact, work, and perceive the world around them. Amidst this rapid technological advancement, the relevance of social sciences to societal wellbeing has become increasingly evident. This paper explores the multifaceted role of social sciences in navigating the complexities of the digital era and promoting societal wellbeing. Firstly, social sciences provide critical insights into the socio-cultural implications of digitalization. By examining patterns of human behaviour, attitudes, and interactions in digital spaces, disciplines such as sociology, anthropology, and psychology shed light on the dynamics of online communities, digital identities, and virtual relationships. Understanding these phenomena is essential for mitigating the risks of cyberbullying, misinformation, and social isolation, thereby fostering a healthier digital environment.

Secondly, social sciences offer valuable perspectives on the ethical and moral dilemmas posed by digital technologies. From privacy concerns to algorithmic biases, issues of digital ethics intersect with broader questions of justice, equality, and human rights. Disciplines like public administration, ethics, political science, and law contribute to the development of regulatory frameworks and ethical guidelines that safeguard individual liberties and promote responsible technological innovation. Furthermore, social sciences play a pivotal role in addressing the socio-economic disparities exacerbated by digitalization. As automation and artificial intelligence reshape labour markets, disciplines such as economics, geography, and public policy analyse the distributional impacts of technological change and advocate for inclusive policies that mitigate inequalities.

The intersections of technology, economy, and society, social sciences inform evidence-based policymaking aimed at promoting equitable access to digital resources and opportunities. Moreover, social sciences facilitate interdisciplinary collaborations that integrate technological advancements with human-centred approaches. By fostering dialogue

between technologists, policymakers, and social scientists, interdisciplinary research endeavours seek to develop inclusive and sustainable solutions to complex societal challenges and offer invaluable insights that are essential for promoting a more equitable, inclusive, and sustainable digital society.

Keywords: *Digitalization, Social sciences, Societal wellbeing, Technology, Digital ethics, Socio-cultural implications, Inclusive policies, Economic disparities, Interdisciplinary collaboration, Technological innovation.*

Introduction:

In the contemporary era of rapid digitalization, the role of social sciences in promoting societal wellbeing has gained paramount importance. As technological advancements permeate nearly every aspect of human life, from communication and commerce to governance and healthcare, understanding the socio-cultural, ethical, and economic implications of digitalization is crucial for navigating its complexities. This introduction provides an overview of the relevance of social sciences to societal wellbeing in the context of digitalization, drawing on a range of scholarly literature. The advent of digital technologies has revolutionized the way individuals interact, access information, and participate in socio-political processes. With the proliferation of social media platforms, online communities, and digital communication tools, the boundaries between physical and virtual spaces have become increasingly blurred (Castells, 2010).

In this context, social sciences offer valuable insights into the dynamics of digital environments, examining how individuals navigate online interactions, construct digital identities, and form virtual communities (Boyd & Ellison, 2008). Furthermore, the ethical implications of digitalization are a pressing concern in contemporary society. From issues of privacy and data protection to algorithmic biases and digital surveillance, questions of digital ethics intersect with broader debates about justice, equality, and human rights (Floridi, 2017). Social sciences provide a critical lens through which to analyse these ethical dilemmas, drawing on principles of ethics, political philosophy, and law to develop regulatory frameworks and ethical guidelines that safeguard individual liberties and promote responsible technological innovation. Moreover, digitalization has profound implications for socio-economic dynamics, shaping labour markets, economic opportunities, and patterns of social inequality. As automation and artificial intelligence disrupt traditional employment sectors and reshape the

nature of work, social sciences such as economics, sociology, and public policy play a key role in analysing the distributional impacts of technological change and advocating for inclusive policies that mitigate disparities (Acemoglu & Restrepo, 2019).

In addition to addressing socio-cultural, ethical, and economic dimensions of digitalization, social sciences facilitate interdisciplinary collaborations that integrate technological advancements with human-cantered approaches. By fostering dialogue between technologists, policymakers, and social scientists, interdisciplinary research endeavours seek to develop inclusive and sustainable solutions to complex societal challenges (DiMaggio et al., 2001). In summary, the relevance of social sciences to societal wellbeing in the era of digitalization is multifaceted and indispensable. By elucidating the social, ethical, and economic dimensions of technological change, social sciences offer invaluable insights that are essential for promoting a more equitable, inclusive, and sustainable digital society.

Socio-cultural Implications:

Social sciences, including sociology, anthropology, and psychology, provide critical insights into the ways digitalization influences human behaviour, relationships, and identity formation. Studies in this area explore phenomena such as online communities, digital communication patterns, and the impact of social media on mental health and well-being (Boyd & Ellison, 2008). Understanding these dynamics is essential for addressing issues like cyberbullying, digital addiction, and social isolation, thereby fostering healthier digital environments.

Ethical Considerations:

The ethical dimensions of digitalization, including privacy concerns, data protection, and algorithmic biases, are central to ensuring the ethical development and deployment of digital technologies. Social sciences, particularly ethics, political philosophy, and law, contribute to the discourse by examining the ethical implications of emerging technologies and advocating for ethical guidelines and regulatory frameworks (Floridi, 2017). By addressing these ethical challenges, social sciences help safeguard individual rights and promote trust in digital systems.

Economic Impacts:

Digitalization has significant implications for labour markets, economic opportunities, and socio-economic inequalities. Social sciences, such as economics, geography, and public policy, analyse the effects of digital technologies and advocate for inclusive policies that mitigate disparities (Acemoglu & Restrepo, 2019). Understanding the economic implications of digitalization is crucial for designing policies that promote equitable access to digital resources and opportunities, thereby enhancing societal wellbeing.

Interdisciplinary Collaboration:

Social sciences facilitate interdisciplinary collaboration by bringing together researchers from diverse fields, including technology, policy, and the humanities. Interdisciplinary research endeavours aim to develop holistic approaches to addressing complex societal challenges posed by digitalization (DiMaggio et al., 2001). By fostering collaboration between technologists, policymakers, and social scientists, interdisciplinary initiatives promote the development of inclusive and sustainable solutions that prioritize societal wellbeing.

Thus, the relevance of social sciences to societal wellbeing in the digital era is multifaceted and indispensable. By providing insights into socio-cultural dynamics, addressing ethical concerns, analysing economic impacts, and fostering interdisciplinary collaboration, social sciences play a crucial role in shaping a more equitable, inclusive, and sustainable digital society.

The Impact of Digitalisation on Society

The impact of digitalization on society is vast and multifaceted, touching nearly every aspect of human life. Here is an elaboration on some key areas of impact:

Communication and Relationships:

Digitalization has revolutionized communication, enabling instantaneous global connectivity through social media, messaging apps, and online platforms. While this facilitates the exchange of ideas and information, it also alters the nature of interpersonal relationships, leading to concerns about the quality of social interactions and the prevalence of digital addiction (Turkle, 2011).

Access to Information:

The internet has democratized access to information, empowering individuals with unprecedented knowledge and opportunities for self-education. However, the abundance of information also raises challenges related to information overload, filter bubbles, and the spread of misinformation, which can undermine public discourse and decision-making processes (Floridi, 2014).

Economic Transformations:

Digitalization has reshaped industries and labour markets, leading to the automation of routine tasks, the emergence of new job roles, and the gig economy. While digital technologies create economic opportunities, they also exacerbate income inequality and disrupt traditional employment sectors, raising concerns about job displacement and precarious work (Brynjolfsson & McAfee, 2014).

Health and Wellbeing:

The proliferation of digital devices and online platforms has transformed healthcare delivery, enabling telemedicine, remote monitoring, and personalized health interventions. However, excessive screen time and digital distractions contribute to sedentary lifestyles, sleep disturbances, and mental health issues, particularly among young people (Twenge, 2017).

Privacy and Surveillance:

Digitalization has heightened concerns about privacy and surveillance, as individuals' personal data is collected, analysed, and monetized by governments and corporations. The proliferation of surveillance technologies, including facial recognition and biometric identification, raises questions about the erosion of privacy rights and civil liberties (Lyon, 2018).

Civic Engagement and Politics:

Digitalization has transformed political participation and activism, enabling online mobilization, digital advocacy, and citizen journalism. However, the spread of misinformation, echo chambers, and algorithmic manipulation pose challenges to democratic processes and political discourse, undermining trust in institutions and the media (Sunstein, 2018).

Education and Lifelong Learning:

Digitalization has revolutionized education, expanding access to online learning platforms, educational resources, and interactive tools. However, the digital divide exacerbates inequalities in access to quality education, limiting opportunities for marginalized communities and perpetuating disparities in academic achievement (Warschauer, 2004).

Environmental Impact:

The proliferation of digital devices and data centres have significant environmental implications, contributing to energy consumption, electronic waste, and carbon emissions. Efforts to mitigate the environmental impact of digitalization include initiatives for energy efficiency, e-waste recycling, and sustainable design practices (Belkhir & Elmeligi, 2018). So, digitalization has profound and far-reaching effects on society, shaping the ways in which we communicate, work, learn, and interact with one another. While digital technologies offer immense potential for progress and innovation, their impact on societal wellbeing depends on how they are developed, deployed, and regulated.

Merits of Digitalisation on Society

The merits and demerits of digitalization on society are multifaceted, encompassing various aspects of human life. Here is an elaboration on both aspects, supported by references: Digitalization has democratized access to information, allowing individuals to acquire knowledge, skills, and resources that were previously inaccessible. Online libraries, educational platforms, and open-access journals enable lifelong learning and empower marginalized communities with educational opportunities (Warschauer, 2004). Digital technologies facilitate instantaneous communication and global connectivity, fostering collaboration, and community-building across geographical boundaries. Social media platforms, messaging apps, and video conferencing tools facilitate interpersonal relationships, cultural exchange, and civic engagement (Boyd & Ellison, 2008).

Economic Opportunities

Digitalization creates new economic opportunities, driving innovation, entrepreneurship, and job creation in sectors such as technology, e-commerce, and digital marketing. Platforms like

freelance marketplaces and gig economy platforms offer flexible work arrangements and income-generating opportunities for individuals worldwide (Brynjolfsson & McAfee, 2014).

Demerits of Digitalization:

Digital Divide

Despite the proliferation of digital technologies, access to digital resources and opportunities remains unequal, creating a digital divide between socio-economic, geographic, and demographic groups. Disparities in internet access, digital literacy, and technological infrastructure exacerbate inequalities in education, employment, and civic participation (DiMaggio et al., 2001).

Privacy Concerns

Digitalization raises concerns about privacy and data security, as individuals' personal information is collected, analysed, and monetized by governments and corporations. Data breaches, surveillance practices, and online tracking erode individuals' privacy rights and raise ethical questions about data ownership and consent (Floridi, 2017).

Social Isolation and Mental Health:

Excessive use of digital devices and online platforms can lead to social isolation, loneliness, and mental health issues, particularly among younger generations. Screen time, social media use, and online gaming addiction contribute to sedentary lifestyles, sleep disturbances, and psychological stress (Twenge, 2017).

Displacement of Traditional Industries:

Digitalization disrupts traditional industries and employment sectors, leading to job displacement, economic restructuring, and skills mismatches. Automation, outsourcing, and digital platforms contribute to unemployment, underemployment, and precarious work arrangements, particularly for low-skilled workers (Acemoglu & Restrepo, 2019). While digitalization offers numerous benefits in terms of access to information, communication, economic opportunities, and efficiency, it also poses challenges related to the digital divide, privacy concerns, social isolation, and economic displacement. Addressing these challenges

requires a holistic approach that prioritizes equity, ethics, and inclusivity in the design, deployment, and regulation of digital technologies.

Conclusion

In conclusion, the relevance of social sciences to societal wellbeing in the era of digitalization is paramount, as evidenced by their multifaceted contributions across various domains. Social sciences provide critical insights into the socio-cultural, ethical, economic, and interdisciplinary dimensions of digitalization, offering valuable perspectives and solutions to navigate the complexities of the digital era by examining patterns of human behaviour, attitudes, and interactions in digital spaces, disciplines such as sociology, anthropology, and psychology shed light on the dynamics of online communities, digital identities, and virtual relationships (Boyd & Ellison, 2008).

Understanding these phenomena is essential for mitigating the risks of cyberbullying, misinformation, and social isolation, thereby fostering a healthier digital environment. Moreover, social sciences contribute to addressing the ethical dilemmas posed by digital technologies, advocating for regulatory frameworks and ethical guidelines that safeguard individual liberties and promote responsible technological innovation (Floridi, 2017). By engaging with questions of justice, equality, and human rights, social sciences inform ethical decision-making and promote trust in digital systems. Furthermore, social sciences play a crucial role in analysing the socio-economic disparities exacerbated by digitalization, advocating for inclusive policies that mitigate inequalities and promote equitable access to digital resources and opportunities (Acemoglu & Restrepo, 2019).

By examining the intersections of technology, economy, and society, social sciences inform evidence-based policymaking aimed at enhancing societal wellbeing. Additionally, social sciences facilitate interdisciplinary collaborations that integrate technological advancements with human-centered approaches, fostering the development of inclusive and sustainable solutions to complex societal challenges (DiMaggio et al., 2001). By fostering dialogue between technologists, policymakers, and social scientists, interdisciplinary research endeavours seek to address societal challenges while promoting societal wellbeing. The relevance of social sciences to societal wellbeing in the era of digitalization cannot be overstated by elucidating the social, ethical, economic, and interdisciplinary dimensions of

technological change, social sciences offer invaluable insights and solutions that are essential for promoting a more equitable, inclusive, and sustainable digital society.

References

Castells, M. (2010). The rise of the network society. John Wiley & Sons.
Boyd, d., & Ellison, N. B. (2008). Social network sites: Definition, history, and scholarship. Journal of Computer-Mediated Communication, 13(1), 210-230.
Floridi, L. (2017). The fourth revolution: How the infosphere is reshaping human reality. Oxford University Press.
DiMaggio, P., Hargittai, E., Neuman, W. R., & Robinson, J. P. (2001). Social implications of the internet. Annual Review of Sociology, 27(1), 307-336.
Acemoglu, D., & Restrepo, P. (2019). Automation and new tasks: How technology displaces and reinstates labor. Journal of Economic Perspectives, 33(2), 3-30
Turkle, S. (2011). Alone Together: Why We Expect More from Technology and Less from Each Other. Basic Books.
Brynjolfsson, E., & McAfee, A. (2014). The Second Machine Age: Work, Progress, and Prosperity in a Time of Brilliant Technologies. W. W. Norton & Company.
Twenge, J. M. (2017). iGen: Why Today's Super-Connected Kids Are Growing Up Less Rebellious, More Tolerant, Less Happy--and Completely Unprepared for Adulthood--and What That Means for the Rest of Us. Atria Books.
Lyon, D. (2018). The Culture of Surveillance: Watching as a Way of Life. Polity Press.
Sunstein, C. R. (2018). #Republic: Divided Democracy in the Age of Social Media. Princeton University Press.
Warschauer, M. (2004). Technology and Social Inclusion: Rethinking the Digital Divide. The MIT Press.
Belkhir, L., & Elmeligi, A. (2018). Assessing ICT global emissions footprint: Trends to 2040 & recommendations. Journal of Cleaner Production, 177, 448-463.

Sustainability and Green Finance; An Exploratory Study

Prof. T Prabhakar Reddy
Social Policy Consultant, UNICEF, Formerly Advisor, CIPS-ASCI, Hyderabad
Email: tprabha9@gmail.com

Sustainability and green finance are not only interrelated but also intricately related as the former one is dependent upon latter one in so far as meeting its timely funding requirements. Green financing is an apparatus that enables sustainability to remain as a central concern and addresses issues like climate change, environmental pollution and biodiversity loss which we call them as triple planetary crisis and paves the way for sustainable development.

It is a modest attempt to review the existing policies, laws and programmes meant for Green finance and ascertain the gaps, if any, and explore policy options to mop up resources for sustainability activities among others.

Firstly, it is to mop up resources from private sector and Corporates besides accessing public sector funding for undertaking activities pertaining to sustainability including mitigation and adaptation of climate change among others. Second, measures that promote green finance include Green banking, Green insurance, Sovereign Green bonds and other forms of assistance by the Governments and Corporates that encourage green economy, etc. Awareness generation by Governments and the Corporates, undertaking policy research on green finance, designing a proper regulatory framework which can manage the scarce resources from misuse and misappropriation and bringing about necessary laws and policies that can promote the mobilization of green finance and ensuring expenditures for the same and realizing sustainability ultimately.

***Key words**: Sustainability, Green Finance, Regulatory Authority, Laws and Policies*

Contextualization

Sustainability and green finance are not only interrelated but also intricately related as the former one is dependent upon latter one in so far as meeting its timely funding requirements. Green financing is an apparatus that enables sustainability to remain as a central concern and addresses issues like climate change, environmental pollution and biodiversity loss, which we call them as triple planetary crisis and paves the way for sustainable development.

In fact, there are many attempts that tried to define the green finance in the literature. Green finance has been defined as the financing of environment friendly activities, green technology and projects that reduce pollution (Bahl, 2012). Lindenberg (2014) on the other hand, while supporting the idea of Bahl argued that green finance encompasses all investments in environmental goods and services and investment in activities that reduce damage to the environment and the climate. He felt that in public policy, green finance involves the financing of public policies that encourage the implementation of environment protection projects or environment damage mitigation projects and initiatives. Ozili (2021a) gave a quite interesting definition of green finance which says that green finance as the financing of projects that yield economic benefits while promoting a sustainable environment. Further, Wang and Zhi (2016) defined green finance as finance that integrates environmental protection with economic profits.

Green finance has been defined as the acquisition and utilization of funds for activities that protect the environment and deliver a fair return to investors or lenders (Berensmann and Lindenberg, 2019; Ozili, 2021a). It has been argued that the objective of green finance is to increase the level of financial flows from financial institutions to economic agents involved in activities and projects that preserve the environment towards achieving the sustainable development goals (Lee and Baral, 2017;Force, 2015).

'Green finance may be defined as any financial assistance provided as a grant/loan from public, private and alternative sources for projects/activities with the major objective of contributing to sustainability like promotion of green buildings, efficient management of energy, waste management, promotion of conservation of biodiversity (terrestrial and aquatic), renewable sources of energy and sustainable management of living natural resources and land use'. It also ensures a comprehensive development of sustainable projects and offers investors flexibility in risk management.

The 2030 Agenda for Sustainable Development presupposes adequate resources for undertaking activities that promote sustainable development which is a universal agenda. Therefore, green finance is essential for which exploring policy options and mobilizing resources is need of the hour.

Brief Review of Literature

Human-induced climate change is already affecting many in terms of weather and climate extremes in every region across the world. Evidence of observed changes in extremes such as heat waves, heavy precipitation, droughts, and tropical cyclones and in particular their attribution to human influence has strengthened since Fifth Assessment Report of IPCC (Climate Change, 2021, IPCC).

Hence, 'shared prosperity' had been an underlying principle for several international initiatives that we are following while trying to address the issues confronting the poor and vulnerable sections, be it poverty or climate change or inclusive growth and sustainability. But when it comes to the issue of climate change and sustainability, we are not able to come to consensus on some key issues and more importantly mobilizing resources for climate finance more specifically for green finance and green urban development etc.

A recent study argued that the developing countries are confronted by, not only, climate change but also with economic downturn, COVID-19, biodiversity loss and conflict, etc. Besides, at a macro level, there is a triple planetary crisis, i.e., climate change, biodiversity loss and pollution which are interlinked and influencing the developing economies, therefore, a multi-pronged approach is required for which financial resources are necessary (Reddy, T Prabhakar 2023). In this context, it is pertinent to mention that the Government of India in Union Budget 2022-23 announced the issue of Sovereign Green Bonds to reduce the carbon intensity of the economy. The Department of Economic Affairs, Ministry of Finance, Government of India has designed a 'Green Bond Framework' in line with the Green Bond Principles of International Capital Market Association (ICMA). The principles include: use of proceeds, project evaluation and selection, management of proceeds and reporting (Framework for Sovereign Green Bonds, GoI, 2022). Further, the ICMA recommended two things to ensure transparency which includes: a) the issuer set out a Green Bond Framework which is accessible to the investor, and b) advises the issuer to consider for an external review.

Further, the Green Deal of the Government of India has emphasized the need for an increase in the flow of capital from the national government and private sector to establish green infrastructure. The Deal has devised four key areas to help accelerate the progress of green finance in India.

Firstly, a clear solid taxonomy provides a pathway for development of green projects and minimizes transaction costs. Secondly, devising a framework for pricing carbon in India

which will ensure that cost of climate change mitigation and adaptation strategies will be brought into the mainstream investments. Thirdly, the use of national investments comprising "Green Infrastructure Investment Trusts which include markets for bonds and instruments for green finance. Lastly, it is critical for entering into global markets by minimizing prevarication costs, designing guidelines for external borrowing and any other regulatory barriers that hinder green financing in India.

However, not many studies have attempted to establish the need for green finance for sustainability and discussed available policy options for Indian economy. Therefore, the present study assumes significance and tries to fill the gap with suggestive measures.

Objective

It is a modest attempt to review the existing policies, laws and programmes meant for Green finance and ascertain the gaps, if any, and explore policy options to mop up resources for sustainability activities among others.

Initiatives of Sustainability

The Hon'ble Prime Minister of India made a pronouncement in Glasgow in November 2021 to address the climate related issues and enhance the quality of climate by implementing the following five elements of India's climate action (Framework for Sovereign Green Bonds, GoI).

1. Reach 500 GW of Non-fossil energy capacity by 2030
2. Generate 50 per cent of India's energy requirements from renewable energy by 2030
3. Reduce total projected carbon emissions by one billion tonnes from now to 2030
4. Reduce the carbon intensity of the economy by 45 per cent by 2030, over 2005 levels
5. Achieve the target of net zero emissions by 2070

Agriculture

When we look at the policies pertaining to agriculture, it is heartening to note that the Government of India has brought in major changes in the focus of agriculture with a view to make it climate resilient agriculture and aligned the budgets too. For instance, natural farming encouraged by the Government of India is receiving good response from farmers from different parts of the country while they are getting financial support from the Centre.

India being a climate vulnerable country the farming community requires huge support in several ways be it PM Kisan Samman Nidhi, cheaper credit from organized institutions and subsidized seed and fertilizers and financial assistance for pursuing natural farming on a large scale.

Industry

As regards the Indian banking sector, Reserve Bank of India (RBI) has issued a notification in 2007 emphasizing the importance of banks and need for making efforts in achieving the sustainable development. Further in 2016, RBI released a report in collaboration with UNEP to explore various facets of financial systems in India and promote sustainable financial systems. As per Indian Companies Act, 2013 large capital companies to contribute 2 per cent of their profits on annual basis to 'Corporate Social Responsibility' schemes which include environmental sustainability, ecological protection, health care, rural development and education.

Further, carbon trading has been introduced in the policy framework of Government of India with a scheme called "Perform, Achieve and Trade". It emphasized on sectoral development especially renewable energy sector in its mission towards transitioning to 'green energy'. The RBI encouraged lending for renewable energy projects by entities up to Rs. 15 crores and for private individuals up to Rs.10 lakhs. Added to it, RBI joined in 2021 as a member of the Network for Greening the Financial System (NGFS) which is a cluster of nationalized banks which support transition to green economy through practices that encourage the preservation of environment and address climate related risks in the financial sector.

Sovereign Green Bonds

As a matter of fact, the Government of India has raised resources through issuing sovereign green bonds and spending the same for climate change mitigation and adaptation with a commitment and dedication. Although India's climate actions have so far been largely financed from domestic resources, it is now targeting generation of additional global financial resources as well as transfer of technology as agreed under UNFCCC and the Paris Agreement.

It needs to be mentioned that already Rs. 5000 crore worth bonds with tenure of five years were sold in the market in November 2023. Further, Rs. 10,000 crore worth of bonds with tenure of 30 years in two tranches of Rs. 5000 crore each are sold in February and March

2024. Again, the Government is contemplating to issue bonds worth of Rs. 5000 crore soon into the market. It all shows that the government is determined in mobilizing the resources for financing green projects and working towards net zero emissions by 2070.

Green bonds accounted for a majority of Green, Social and Sustainability (GSS) bonds' market size. As of 2021, the total size of the Indian GSS bond market stood at 19. 5 billion USD in which Green bonds alone accounted for 18.3 billion USD. It is followed by sustainability and social bonds with 0. 6 and 0.5 billion US dollars respectively (Statista, 2024). It shows that the significance of Green bonds in Indian market is on the rise and related policies are also providing a fillip to it.

The Ministry of Environment, Forest and Climate Change has issued notification in February 2024 to involve the private sector and Corporates in environmentally sustainable activities. In this connection, an interesting initiative taken up by The Securities and Exchange Board of India (SEBI) has proposed 'green credits' generated by the listed companies and the value chain partners can be considered as a leadership indicator under Principle 6 of Business Responsibility and Sustainability Reporting (BRSR) which emphasizes that businesses should respect and make efforts to protect and restore the environment. Further, SEBI mentioned that "Inclusion in BRSR shall incentivize listed entities and their value chain partners to participate in the generation of green credits by following environmentally sustainable activities".

In this direction, the markets regulator in May 2021 introduced BRSR, which requires the top 1000 listed entities by market capitalization to file BRSR covering Environmental, Social, Governance (ESG) perspective as part of the annual report from FY2022-23 onwards. In July 2023, SEBI introduced BRSR core, a subset of the BRSR comprising nine Key Performance Indicators (KPIs) for several ESG factors that need to be assured.

Green Banking

Green Banking is a policy and a form of banking activity wherein the banks undertake initiatives and daily activities as a conscious entity in the society by considering in-house and external environmental sustainability. The banks who perform such kind of banking activities are known as socially responsible and a 'sustainable bank' or 'green bank' or 'ethical bank' (Hossain et al., 2020; Zhixia et al., 2018).

State Bank of India being the largest commercial bank taken a lead in setting higher standards of sustainability and undertook foremost step towards 'green banking' initiative. SBI

is the first bank to inaugurate wind farm project in Coimbatore in this regard. The green banking initiatives include: green loans, green financing, green mortgages, loans for green construction, loans for eco friendly vehicles, automated cash deposit terminals, solar ATM and online payment channels, etc.

Implications and Intricacies

Indeed, the green financing benefits directly the environment and indirectly the economy and in several ways which include: healthy environment, efficient energy management, enhances eco-friendly projects with convergence between the Governments and the Private sector through corporate social responsibility and attracts Foreign Direct Investment. Of course, the Government of India is trying to mobilize the resources from external sources for environment and ecological balance.

Further, the Union Budget, 2022-23 announced the issue of Sovereign Green Bonds with a view to reduce the carbon intensity of the economy.

It says that as part of the government's overall market borrowings in 2022-23, Sovereign Green Bonds will be issued for mobilizing resources for green infrastructure. The earnings/proceeds will be invested in public sector projects which help in reducing the carbon intensity of the economy. As a result, resources are mobilized substantially which has been clear from the Ministry of Finance statement recently.

Further, the Union Budget 2022-23 has called for a shift from chemical farming to nature positive farming which depends on organic and locally available inputs. Further, nature based solutions that protect, sustainably manage and restore ecosystems can help effectively and adaptively address the challenges of this shift benefiting people and nature simultaneously. In fact, healthy soils help mitigate climate change by storing carbon and reducing green house gas emissions. Climate smart practices create important synergies for agricultural production, climate adaptation and mitigation, and livelihood and environmental objectives, through coordinated action at the level of the farm as well as the landscape (Varma and Sharma, 2023).

Furthermore, Government of India will utilize the proceeds raised through Sovereign Green Bonds to finance and / or refinance expenditure for eligible green projects falling under 'Eligible Categories' defined by the authorities. They include: Renewable energy (SDG-7, 13), energy efficiency (SDG-7, 13), clean transportation (SDG-9, 11, 13), climate change adaptation (SDG-13), sustainable water and waste management (SDG-6), pollution prevention

and control (SDG-12,13), Green Buildings (SDG-11), Sustainable Management of living Natural Resources and Land Use (SDG-13, 14, 15), Terrestrial and Aquatic Biodiversity Conservation (SDG-14, 15).[1]

As a matter of fact, the principle of selection of green projects by Green Finance Working Committee (GFWC)[2] lies in mapping eligible green expenditures to the environmental objectives of ICMA Green Bond principles, UN SDGs and which must be in accordance with the Framework in letter and spirit.

Policy Options

The following policy options are available in order to mobilize the resources for green finance and achieve the sustainability. Firstly, the policy option is to mop up resources from Private Sector and Corporates besides accessing public sector funding for undertaking activities pertaining to sustainability including mitigation and adaptation of climate change while reviewing the existing policies in terms of efficacy. Secondly, measures that promote green finance include Green banking, Green insurance, Sovereign Green bonds, National Mission for a Green India and other forms of assistance by the Governments and Corporates that encourage green economy should be given priority. Finally, any innovative thinking and funding mechanisms that really contribute to the promotion of sustainability is welcome and we should realize that all of us are stakeholders in working towards the achievement of green economy.

The Way Forward

The path for the future is creating awareness about green finance for sustainability by Governments and the Corporates, undertaking policy research on mobilization and utilization of green finance, designing a proper regulatory framework which can manage the scarce resources from misuse and misappropriation and bringing about necessary laws and policies that can promote the mobilization of green finance and ensuring expenditures for the same and realizing sustainability ultimately. For this to happen, National Policy on Green Finance need

[1] Green project category followed by related SDG is given in parentheses.

[2] The composition of GFWC includes: Chief Economic Advisor (Chair), Additional Secretary, Infrastructure Finance Secretariat (Member Secretary), Ministry of Environment, Forest and Climate Change, Ministry of New and Renewable Energy, Climate Specialist from NITI Aayog, Public Debt Management Cell, Budget Division, Ministry of Finance and any other Ministry co-opted from time to time.

to be designed and implemented with commitment so as to achieve the NDCs mentioned by the Government of India.

References

- Bahl, S. (2012). Green banking-The new strategic imperative. *Asian Journal of Research in Business Economics and Management*, 2(2), 176-185
- Berensmann, K., & Lindenberg, N. (2016). "Green finance: actors, challenges and policy recommendations", *German Development Institute*, Briefing Paper, 23. Bonn.
- Berensmann, K., & Lindenberg, N. (2019). "Green Finance: Across the Universe, In *Corporate Social Responsibility, Ethics and Sustainable Prosperity* (pp. 305-332). Beijing
- Daniel Bodansky and Elliot Diringer (2010): *The Evolution of Multilateral Regimes; Implications for Climate Change*, December
- Government of India: *Framework for Sovereign Green Bonds, 2022*, Finance Unit, New Delhi.
- Hossain M, Rahman Karim M. The effects of green banking practices on financial performance of listed banking companies in Bangladesh. *Canadian Journal of Business and Information Studies***.** 2020 doi: 10.34104/cjbis.020.01200128
- IPCC, 2021: Summary for Policymakers. In: *Climate Change 2021: The Physical Science Basis, Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* [Masson-Delmotte, V., P. Zhai, A. Pirani, S. L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M. I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J.B.R. Matthews, T. K. Maycock, T. Waterfield, O. Yelekçi, R. Yu and B. Zhou (eds.)] Cambridge University Press, In Press.
- Intergovernmental Panel on Climate Change (2007): *Climate Change, 2007***;** Synthesis Report., Accessed from: http://www.ipcc.ch
- Joyeeta Gupta and Courtney Vegelin, "Inclusive Development, Leaving No One Behind, Justice and Sustainable Development Goals, *Springer*, The Netherlands 23 June 2023 online
- *Landscape of Green Finance in India 2022*, Climate Policy Initiative, August
- Lee, C. F., & Baral, P. (2017). Green Finance Opportunities in ASEAN. UNEP Report, Nairobi, Kenya.
- Lindenberg, N. (2014). Definition of Green Finance. Lindenberg, Nannette, Definition of Green Finance (April 15, 2014). DIE memo
- Lee, C. F., & Baral, P. (2017). *Green Finance Opportunities in ASEAN*. *UNEP* Report, Nairobi, Kenya.
- Madhu Varma and Parul Sharma (2023): 'Farming in the Times of Climate Change' *Climate Connection Report 2023, Stories of Climate Change from Rural India***,** December
- M B Dastagiri and Anjani Sneha Vajrala, "Financing Climate Change on Global Agriculture: An Overview, *International Journal of Environmental Sciences & Natural Resources*, Volume 12 Issue 5 July 2018
- Ministry of Finance, Government of India (2024): *White Paper on the Indian Economy*, February, New Delhi.

- MoEFCC (2022): India's Long Term Low Carbon Development Strategy, Ministry of Environment, Forest, and Climate Change, Government of India
- Peterson K Ozili (2022): "Green finance research around the world: a review of literature", *International Journal of Green Economics*, April 2022
- PEW Centre on Global Climate Change: *Adaptation to Climate Change; International Policy options* , November 2006 (Ian Burton et.al)
- Report of State Action Plan for Climate Change for Telangana state, **EPTRI**, Hyderabad
- Reddy T Prabhakar (2023): "Climate and Biodiversity", *Telangana Today*, 23 May, 2023 https://telanganatoday.com/opinion-climate-and-biodiversity-framework
- Sushma B S, "Green Finance; An Effective Tool to Sustainability, *International Journal of Creative Research Thoughts***,** Volume 9, Issue 1, January 2021
- Tasnim Uddin Chowdhury, Rajib Dutta and Haradhan Kumar Mohajan, "Green Finance is Essential for Economic Development and Sustainability", *International Journal of Research in Commerce, Economics and Management*, Vol.3, Issue 10, November 2013
- *UN Framework Convention on Climate Change*; What does the UN Climate Change Regime Do?
- Zhixia C, Hossen M, Muzafary S, Begum M. Green Banking for Environmental Sustainability-Present Status and Future Agenda: Experience from Bangladesh. *Asian Economic and Financial Review.* 2018;8 (5):571–585, doi: 10.18488/journal.aefr.2018.85.571.585.

Aristocratic Women During Kakatiya Kingdom: Whose contributions still inspiring the women of present era

Gajjala Vasanta Lakshmi
Training and Research Associate, Centre for Telangana Studies (CTS)
Dr. MCR HRD Institute of Telangana
Email: vasantalakshmig@mcrhrdi.gov.in / gajjlavasanta@gmail.com

Kakatiya dynasty (10th to 14th century) is prominent among all those who ruled over the present day Telangana during mediaeval era (10th to 18th century). Aristocratic women have played vital roles at various levels of administration and philanthropy during the Kakatiya rule. Melama, Dannamadevi, Erakasanamma, Kundamamba, Mailamahadevi, Ganapamba, Kamalabai, Rudramadevi, Gundadevi, Suramadevi, Yeitasani and Lakkadevamma are some of the aristocratic women who either participated in administration, or donated lands or cattle, to build public utilities like irrigation tanks, wells, etc. But such contributions by women are not known to the common public, except in the case of Rudramadevi.

Understanding and acknowledging the contributions of women in history are crucial for achieving gender equality and creating inclusive narratives that reflect the full spectrum of human experience. Their contributions are often overlooked or underrepresented in traditional historical narratives. However, as scholarship has evolved, there has been a concerted effort to highlight and celebrate the significant roles women played in shaping societies, cultures, and civilizations. This article aims to bring to light such women and their contributions so that their contributions become part of public discourse.

Key Words: *Aristocratic women; Kakatiya, Erakasanamma; Kundamamba; Mailamahadevi; Ganapamba; Mailamba; Rudramadevi*

Understanding and acknowledging the contributions of women in history are crucial for achieving gender equality and creating inclusive narratives that reflect the full spectrum of human experience. It is essential to recognize and celebrate the achievements of women from diverse backgrounds and contexts, honouring their legacy and inspiring future generations. Their contributions have enriched cultural diversity and fostered intergenerational continuity. Their contributions are often overlooked or underrepresented in traditional historical narratives. However, as scholarship has evolved, there has been a concerted effort to highlight and

celebrate the significant roles women played in shaping societies, cultures, and civilizations. This article is also one step in such directions.

From the ancient period we can notice women occupied higher positions in society. In the Indus valley civilization, one of the earliest civilisations in the world, we can notice that women's position was higher in the society. While excavating Indus sites one small pregnant female figure was found in every housing site. This female figure is known as *Mother goddess.* During the Vedic period and while establishing the republics (*Shodasa Mahajanapadas*) women enjoyed higher position in the society. Mediaeval era too witnessed a number of women, who worked as queens, courtesans, donors, etc. This paper discusses the contributions of aristocratic women during Kakatiyas prominent dynasty during the mediaeval era.

Kakatiya dynasty (10th to 14th century) is prominent among all those who ruled over the present day Telangana during mediaeval era (10th to 18th century). From early times onwards women played an important role in the society as well as in the administration of the Kakatiya kingdom. They ruled their kingdom as queens, as subordinates to the kings and donated land, cows and buffaloes to the temples and irrigation tanks, for the merit of themselves, their parents, husbands and their children. This shows us about the land ownership of the women during the Kakatiya rule. Inscriptions shows us that while donating land to a temple, the merit was given to both mother and father equally, for example Kakatiya Gundyana, gave donation of land in the name of his parents Betiya and Vindyanamba.

Aristocratic women played vital roles at various levels of administration and philanthropy during the Kakatiya rule, which is evident from the following:

1. **Melama** (AD 1117):

Melama, wife of Pergade Beta, a counsellor of Kakati Prola, constructed a Jaina temple, named Kadalalya Basadi, on the top of the Anmakonda hill. She bestowed a gift of two *mattars* of wetland, two *mattars* of the black soil on the west of the tank and six *mattars* of uncultivated land for the daily worship, incense, lights and oblations in the temple. She also gifted land for the food, clothing etc., of the temple priest and other rituals therein (Inscriptions of Warangal Districts, 2016, 55-60).

During the time of Melama, Kakatiyas were still feudatories of western Chalukyas. Despite not being a queen or belonging to the king's family, she had enough resources to build a temple and donate land for its maintenance.

Jain Image Beside the Padmakshi Idol at Padmakshi Temple, in Anumakonda

Kadalaalya Basadi is known as Padmakshi gutta in present days, and the deity is Padmakshi Devi which is said to be constructed by Kakatiya Ganapatideva. Presently, we can see images of Jain Tirthankar Parshwanath sculpture along with the main deity Padmakshi Devi. This temple was originally constructed by Melama.

Carving of 23rd Jain Tirthankara Parshwanath on the hill rock of Padmakshi Temple, in Anumakonda

2. Dannamadevi (AD 1160-61):

Dannamadevi, the queen of Kakati Rudradevaraja, set up a perpetual lamp (Akhanda vatti) with a metal stand to the God Bhimeswara and also gifted 50 cows for the supply of ghee (The South Indian Inscriptions, Vol-IV, 1986, 366).

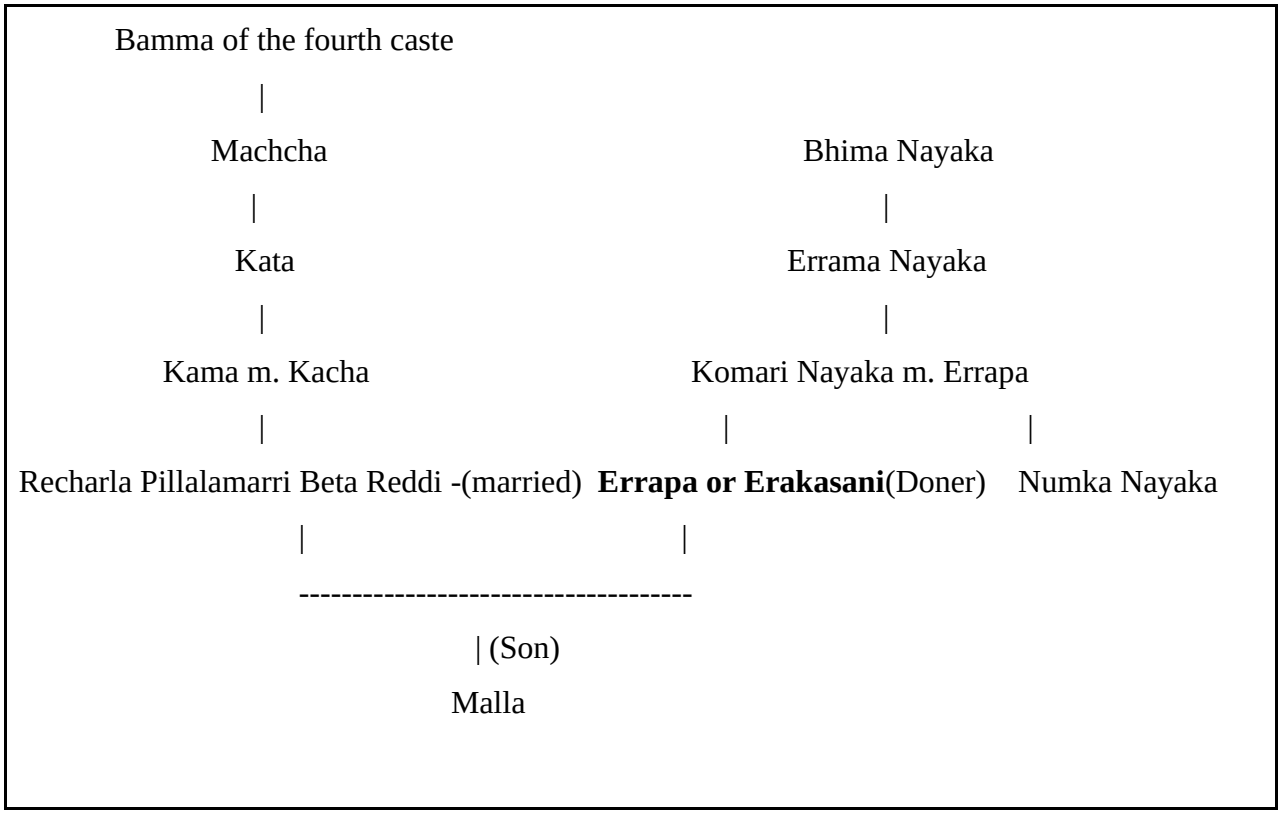
3. **Erakasanamma/ Errapa/Erakasani (AD 1208)**

While the Kakatiya king Ganapati was ruling the kingdom, Errapa or Erakasanamma, wife of Recherla Pillalamarri Beti Reddi. She has constructed the Erakesvara temple of God Shiva named after her own self. Even after 800 years the temple is still intact at Pillalamarri, Suryapet district. Along with the temple she constructed Gopura, provided it with a doorway, established a matha, dug a well, and granted lands to it for carrying on worship of the temple in it. The lands were situated in Erakavuram village named after Erakasani, irrigated by Erakasamudram. Lands in Pillalamarri irrigated by Lakshmasamudram built by Erakaasanamma **(***Epigraphia Telanganica*, Vol-II,2023, 134-140**)**.

Erakesvara Temple Built by Erakasanamma in Pillalamarri Village, Suryapet

The inscription traces the genealogy of the donor Erakasanamma, her husband Recherla Pillalamarri Beta Reddi. It is stated that Bamma, the progenitor of the Recherla family: Muchcha born in his lineage, had a son called Kata. His son was Kama who had taken a lady of the name Kacha as wife. Their son was Beta who married Erakasani the donor. She was the daughter of Komari Nayaka and his wife Errapa, the granddaughter of Errama Nayaka and the great grand-daughter of Bhima Nayaka, the lord of the city of Sannamguru. She had a son

called Malla and a brother named Numka Nayaka. She is Step-Mother of Recherla Rudri Reddy who constructed Rudreshwara (Ramappa) temple.



Family Tree of Erakasani

4. Kundamamba/ Kundala-Mahadevi (AD 1213):

Kundamamba, the sister of Kakatiya Ganapatideva and the wife of Natavadi Rudra gifted the village '*Vemula tonta'* renaming it as Kundavaram to several brahmanas as *agrahara* and a portion of it to the Gods of Nidigonda. She also constructed a Kundeshwara temple and irrigation tank named Kunda-Samudram (Epigraphia Telanganica 2023 Vol-II, 153) in present day Adilabad District.

5. Kakati Mailamba/Mailamahadevi (AD 1220):

Mailamba bears the title of *Dharmakirti* (EA Vol-I 1969, 71-94), the sister of Kakatiya Ganapatideva and the wife of Natavadi Rudra built a tank called Mailasamudram named after her own self. She also built the Bayyaram tank at Bayyaram village, Mahaboobabad district. On the banks of this Bayyaram tank an inscription by Mailamba gives the genealogy of Kakatiya rulers from Durjaya to Ganapatideva and this inscription is called 'Bayyaram tank inscription'.

The historical Bayyaram tank in Khammam district which dates back to the Kakatiya era. --PHOTO: G.N.RAO

Bayyaram tank and inscription by Kakati Mailamba in Mahabubabad district

Mailamba is known for setting up Shivalingas at various places. She has set up temples for the god Siva at *Inugurki* her capital town, Srisaila and its four gateways viz Tripurantakam (Siddhavatam or) Pushpagiri, Alampura and Umamahesvara, Mantrakuta, Daksharama, Orugallu, Kalesvara, Kasi, Dannada, Kalturu, Hidimbachala, Chandravelli, Kakolnu, Inumgurki and Setu (Inscription of Andhra Pradesh Nalgonda District Vol-I 1992, 174-177). Kundamamba and Mailamba both were co-wife's of Natavadi Rudra (K.Pramila. 2002, 71).

6. Ganapamba/Ganapambika :

Ganapamba is daughter of Kakatiya Ganapatideva. She married Beta. After the death of Beta, his widow devoted herself to pious works. She placed golden pinnacles on the shrine of Amareswara at Sri-Dhanyankapura (Amaravati) and built “in the city”, *i.e.* probably at Yanamadala, a temple of Shiva, which she called Betesvara after her deceased husband, and to which she allotted the revenue of the village of Bennadevi.

At Dhnayankapura, she built another temple of Shiva, which she called Ganapesvara after her father, king Ganapatideva, and granted to this temple the village of Chintanapadu. A list of the servants of the temple of Ganapesvara, and of the extent of the shares of the village

allotted to each of them. Chintapalli is evidently another form of Chintapadu, the village which was granted to the Ganapesvara temple. Seven traditional village servants were viz. *'taksha'* (carpenter), *'ayaskraa'* (blacksmith) *'kumbhakara'* (potter), *'suvarnakara'* (goldsmith), *'rajaka'* (washerman), *'napita'* (barber) and *'chandala'* (sweeper).

The temples which are mentioned in connection with Ganapamba, the first, Amareswara, still exists at Amaravati. The second, Betesvara, cannot be traced at Yanamadala now. It may be identified with the modern Chintapalle in the Sattenapalle taluka, which is about 16 miles from Amaravati, the residence of Ganapamba, and which accordingly may have been included in her dominions.

7. Kamalabai (AD 1257):

Kamalabai, the queen of Mahamandaleshwar Gangaya-Sahini who was the subordinate of Kakatiya Ganapatideva, gifted the village Gangapuram in the Mulkinati *sima* for the *amga-ramga bhogas* of the God of Pushpagiri. The gift was made in the hands of Isanya guru devara requesting that his line of spiritual disciples alone would continue as the trustees of the said endowment (Inscriptions of Andhra Pradesh Cuddapah District, P-I 1977, 207-208).

Pushpagiri Temple

8. Rudramadevi:

Rudramadevi, is a significant ruler of the Kakatiya dynasty in mediaeval Indias, she ruled Kakatiya kingdom as queen for 27 years (1262-1289) (Sastry 2016, 115). She broke gender barriers by becoming one of the few female monarchs in Indian history. Her reign marked a period of strength and stability for the Kakatiya kingdom. During her reign we found more than hundred inscriptions mentioning about her by subordinates and herself. Mostly these inscriptions mention about the donation of land by Rudramadevi`s subordinates in the merit of the queen.

- In her reign Rudrama stopped invasions by Ganga, king of Orissa. She sent her army under the commanders of Poti-nayaka and Proli-nayaka and they succeeded in repelling

the enemies and river Godavari formed as a boundary between two kingdoms (Sastry 2016. 120).

- She suppressed the rebellion by her subordinate Kayastha Ambadeva and Tripurari successfully (Sastry 2016. 123 & 124).

Imaginary picture of Kakatiya Rudramadevi

Marco Polo, the Italian traveller, visited India during Rudrama devi`s reign (AD 1287) and mentioned her in his writings. The land is subject to a queen of great wisdom, whose husband died forty years ago, and her love to him was such that she has never married another. During the whole term she ruled the nation with great equity and was loved beyond measure by her people (Murray 1844, 301-302).

9. Gunda Devi/ Gundadevulam:

Gundadevulum/Gundadevi is *Bhogastri* (Concubine) of Sri Mahamandalesvara Kota Ketaraja, who was a subordinate of Ganapatideva. In AD 1209, on the occasion of *Uttarayana*

Samkranti, she donated 55 *inupayeddlu* (Buffalo's) for the perpetual lamp of the Sri Rameshwara Devra, the deity in Ramalingeswara temple, in the merit of her mother (The South Indian Inscriptions Vol-X 1948, 128-129).

10. Kasadi Suramadevi:

An inscription on a pillar, in the outer mandapa of the Ramalingeswara temple. It states that Kakatiya Ganapatideva's subordinate, Kota Ketaraja`s *Bhogastri* (Concubine) Kasadi Suramadevi in the Saka year 1131(*Chitra,* Wednesday) (A.D. 1209) on the occasion of *vishuvu sankranti* gave a donation 55 *inupayeddlu (Buffalos)* for the Perpetual lamp to the temple of Sri Rameswaramaha devara, in the name of her mother Yemarasani (The South Indian Inscriptions, Vol-X, 1948, 127).

11. Yeitasani:

Yeitasani, wife of Soma Routu, donated 25 *Modalu* (cows) for the merit of of Sri Mahamandalesvara Parama Mahesvara Kākati Ganapatideva Maharaja in Saka 1161 (*Bdrapada* month) (A.D. 1239) for the perpetual lamp to the lord Velpunuri Sri Ramesvara Mahādēva.

Kota Gokaraju – (Concubine) Kommasani
| (son)
Gokinaya (& his wife) Yeitasani
| (son) | (son)
Anantanayudu Naginayudu (& his wife) Bhramasani
| (daughter)
(Doner) Yeitasani (and her husband) Soma Routu.

Family Tree of Yeitasani

She called herself as *Sri Pada Padmopajivi* (subordinate) of Ganapatideva in an inscription on the third face of a pillar in the outer mandapa of the temple of Ramesvara. It means that she herself is a subordinate of the king (*Epigraphia Telanganica*, Vol-II, 2023, 217-218). The inscription traces her genealogy up to her great grandmother, Kommasani, who is *Bhogastri* (concubine) of Shri Mahamandaleshwara Kota Gokaraju.

12. Lakkadevamma/Lakma Devamma garu/ Lakkadevamma:

The queen of Prataparudradeva, Maharaja exempted some local taxes like *pannu, kanika, katnamu* and the remission of *pullari* on the milch animals as *vritti* to the god Ramanathadeva of Yelgedu for the merit of her father Paldevanayinim garu/Ponnamanayanim garu (Inscriptions of Karimnagar District 2016, 104-106) in AD 1301.

Conclusion

- The genealogy of Erakasanamma provides us with information regarding the socio-cultural practices of that time. At that time the woman donor is identified equally by the parents of herself and of her husband going back up to four generations. Similarly, in the case of Ganapamba, Yeitasani's inscriptions the person's family details are given importance. Such genealogy information helps historians to construct the history and fill the gaps if any.
- Kundamamba renamed the village *Vemula Tonta as* Kundavaram and donated it to the brahmins. It means she owns it and while donating it, she gave it as *varam* (boon) of Kunda. By naming it as Kundavaram which literally means boon given by Kunda, she recorded the donation in perpetuity in the name of the village itself.
- All the aristocratic women of the Kakatiya dynasty are patrons and devotees of Shiva in various forms and names except, Melama. Melama constructed a Jain temple but during her time Kakatiyas were not sovereign power yet.
- In the case of Ganapamba, even though her husband died, and she became a widow, she wielded power to construct temples, appoint servants, and administer revenue just like other aristocratic women. It indicates that being a widow does not become an impediment in cultural and administrative aspects.
- Despite being 'bhogastris', both Gundadevi and Suramadevi donated to temples. Suramadevi donated in her mother's name. Yeitasani, who is a subordinate of the king, traces her genealogy to Kommasani who is also a Bhogastri. These instances indicate that bhogastris wielded financial power and their children were married among royal families.

The Bayyaram tank built by Kakati Mailamba at Bayyaram village (in present day Mahabubabad district) 700 years ago is still irrigating 7200 Acres with a gross storage capacity

of 397 Mcft. Similarly, many other tanks built by the aristocratic women are still irrigating the lands and recharging the groundwater at various places. The Telangana Heritage (Protection, Preservation, Conservation and Maintenance) ACT, 2017 has added Erakeswara swamy temple at Pillalamarri, Suryapet into a state protected monument under category-III. Rudrama Devi was one of the few women who ruled over sovereign kingdoms in India and is well represented in popular culture. On her life a movie was made in 2015 and a TV serial of 100 episodes was telecasted in 'Star Maa' channel in 2021. Such contributions add to both the tangible and intangible heritage of Telangana.

References

Bayyaram Tank: https://irrigation.telangana.gov.in/img/projectspdf/bayyaram.pdf

Hultzsch.E. (1979) Epigraphia Indica, Volume-III (New Delhi: Archaeological Survey of India).

Murray Hugh (1844) *T*he Travels of Marco Polo, Greatly Amended and Enlarged, (London: Oliver & Boyd, Tweeddale Court; and Simpkin, Marshall, & Co)

Pramila.K (2002) Economic and Social Conditions of Andhra Desa (A.D. 1000 to 1323 A.D.) (Delhi: Bharatiya Kala Prakashan).

Ramayya. J (1948)The South Indian Inscriptions, Vol-X. (Delhi: The Manager of Publications)

Sastry. Krishna (Ed) (1923) The South Indian Inscriptions, Vol-IV. (Madras: Government Press).

Sastry P.V.P. (1969) Epigraphia Andrica, Vol-I. (Hyderabad: Govt of Andhra Pradesh).

- (1975) Epigraphia Andrica, Vol-IV. (Hyderabad: Govt of Andhra Pradesh).
- (1977) Inscriptions of Andhra Pradesh, Cuddapah District, Volume-I. (Hyderabad: Govt of Andhra Pradesh).
- (1978, 2016) The Kakatiyas (Hyderabad: Department of Archaeology and Museums, Govt of Andhra Pradesh)
- (1992) Inscriptions of Andhra Pradesh, Nalgonda District Volume-I, (Hyderabad: Govt of Andhra Pradesh)

Srvunnaidu. P. (2004) Kakatiya Ganapatideva and his Times (1199 to 1262) (Delhi: Kalpaz Publications)

Talbot, Cynthia (2001) Pre Colonial India in Practice Society, Region, and Identity in Medieval Andhra (New Delhi: Oxford University Press)

Vasanta, G. (Ed.). (2023). Epigraphia Telanganica Volume 2: Imperial Kakatiyas. (Hyderabad: Dr. MCR Human Resource Development Institute).

Vasanta, G. (Ed.). (2023). Epigraphia Telanganica Volume 3: Decline of Kakatiyas. (Hyderabad: Dr. MCR Human Resource Development Institute).

Venkatanarayana N. (2016) Inscriptions of Warangal Districts (Hyderabad: Dept of Archaeology and Museums, Govt of Telangana).

Yazdani. G. (2013) The Early History of the Deccan, Parts VII-XI. (Hyderabad: Dept of Archaeology and Museums. Govt of Andhra Pradesh).

The Role of Artificial Intelligence in E-Governance - An Explorative Study

Dr. Shaik Kamruddin
Department of Management & Commerce, Maulana Azad National Urdu University (Central University) - Hyderabad, Telangana
E-mail: khamuru.sk@gmail.com and

Dr. D. Thiruvengala Chary
Associate Professor of Commerce & Centre Head – Centre for Management and Behavioural Studies (CMB), Dr. MCR HRD Institute of Telangana
E-mail: dt_chary@yahoo.com

E-Governance is considered as one of the important public policy innovations for implementing Government Services. The main objective of E-Governance is to enable the Government departments to deliver the quality services to its stake holders in a most efficient and transparent manner. in recent times Governments are using AI tools for effective implementation of E-Governance. The present paper focusses on use of AI tools and IOT techniques to improve E-Governance services to all stakeholders. In this paper an attempt is also made to examine the application of AI in different sectors and governmental processes.

Introduction

Over the last 6 decades Artificial Intelligence (AI) and its development has produced applications that have a significant impact on our daily lives. It focuses on using artificial technologies to mimic and change human intellect to create robots that are intelligent (Mohasses.M., 2019). Some studies contend that AI is capable of logical thought and behaviour, while others disagree, arguing that AI cannot behave or think like humans (Russell.S., Norvig.P. , 1995). Artificial Intelligence (AI) has been studied for more than 60 years, and it has roots in established disciplines including computer science, mathematics, philosophy, psychology, and linguistics (Darlingtom. K 2017).

The introduction of Turing Machine (1937), an ideal intelligent computer model that developed an automata theory, by Alan Turing (1912–1954) marked a significant turning point in the field of Artificial Intelligence (AI). This inspired other researchers to pursue the goal of creating "thinking machines" that are capable of thinking like humans (Russell.S., Norvig.P., 1995). AI research has gone through three waves: the first wave dealt with computers' limited

computational power and processing capacity; the second wave saw the development of artificial neural networks, which performed like the human brain, and computers with greater computational power; the third wave, which is currently dominating the field, is driven by deep learning and has more real-world applications (Darlingtom .K 2017).

With the advent of AI E-governance, the utilization of technology for public services and citizen engagement, has improved significantly. By implementing electronic systems, e-governance has enhanced transparency and streamlined public service delivery. This not only combats corruption but also paves the way for the transformation power of Artificial Intelligence (AI). Chatbots answer repetitive queries, voice recognition caters to diverse regional dialects, and predictive analysis algorithms unlock valuable insights from the data. These AI-powered solutions are poised to revolutionize e-governance in India.

In India, e-governance aims to improve the efficiency, transparency, and accessibility of government services. These objectives can be widely attained by e-governance with the use of artificial intelligence. AI streamlines service delivery, increases transparency, and eventually improves citizen satisfaction by automating repetitive processes, providing predictive analytics, and analysing data to find patterns and trends.

India with huge population and diverse geographical complexities, it has become very difficult to run the administration efficiently. This is addressed by e-governance, which provides digital access to services, streamlines procedures, and encourages openness. This lessens potential for corruption, empowers citizens, and increases efficiency and service delivery. AI, which is developing at a rapid pace, holds the potential to further alter e-governance by enabling data-driven decision making, task automation, and tailored citizen experiences.

The integration of AI into e-governance systems holds immense potential to revolutionize governance practices, service delivery, and efficiency while ensuring transparency and positive change. However, challenges like data privacy concerns, potential algorithmic bias, and the digital divide require careful consideration. To ensure successful and ethical Al adoption, robust data security protocols, bias detection and mitigation techniques, and digital literacy programs are crucial. A responsible governance framework that addresses these challenges will be essential to unlock the full potential of AI in e-governance.

AI is still lacking in several areas when it comes to application since there is a paucity of study on the subject for a variety of reasons, including fear of applicability risk and resource

scarcity. Artificial Intelligence (AI) has the potential to stimulate the creation of several novel services for individuals, governments, and corporations, provided that it is integrated with various devices, including wearables, cars, industrial sensors, cell phones, and security cameras (Kankanhalli.A., et al, 2019).

India's embrace of AI in e-governance is not just about tinkering with technology. It is a paradigm shift poised to reshape public administration. This goes far beyond automating tasks. It is an opportunity to craft intelligent, citizen-centric governance models. By tackling longstanding inefficiencies, AI unlocks innovative avenues for service delivery, foster deeper citizen engagement, and propels India towards administrative excellence.

India's e-governance landscape is on the cusp of a revolution with the integration of AI. This is not just a technology upgrade; it is a paradigm shift towards responsive, data-driven governance. By leveraging AI-powered chatbots to answer citizen queries or utilizing predictive analytics to streamline service delivery, India can navigate the exciting, yet nuanced, path towards a more efficient and citizen-centric administration.

To improve citizen engagement, accountability, and interoperability in various Government departments and services, it is essential to introduce digital technologies in administration and governance. This can be accomplished by utilising intelligent technologies to help the government become resilient in the face of a complexly changing environment and to act as catalysts for innovation, sustainability, competitiveness, and liveability (Harison,TM et al. 2019).

By automating repetitive operations and increasing transaction speed in the delivery of government services, artificial intelligence (AI) can help free up government employees. It can also correctly analyse the effects of policy decisions. Artificial Intelligence (AI) holds great promise for various government domains, including education, physical infrastructure, transportation, telecommunication, finance, healthcare, research and development, policymaking, legal and justice system, and so on. It is imperative that authorities acknowledge this potential and take steps to implement AI in these domains to enhance citizen quality of life and governance efficiency (Marda.V, 2018).

Review of Literature

Ravina Lamba and Kirti Morwar (2024) in their study explores the difficulties in applying AI to e-governance, including issues with data security, privacy, and algorithmic decision-making

bias. They also discussed the digital divide and the necessity of enhancing government officials' capacity to use AI technologies efficiently. Their study also highlights important chances to use AI in e-governance to solve social issues and promote sustainable development. Syed Asad Abbas Bokgari and Secunghwan Myeong (2023) examines the mediating role of e-governance between AI, e-governance and cybersecurity. The study provides practical implications for governmental bodies of smaltites for strengthening cyber security measures. Iqra Amin and Innabat Amin (2023) in their research paper delves into the dynamic synergy between Artificial Intelligence and electronic governance in India. It comprehensively explores the multifaceted applications and advantages offered by the integration of AI technologies in the public sector. Beyond its transformative potential, this research also engages with the ethical considerations, unveiling a nuanced discussion of the impact of AI adoption on service delivery and administrative efficiency in the Indian e-governance landscape. Abdul-Aziz Al Basher and Kailash Kumar (2022) focused on internet of things (IOT) and AI for smart governance. The proposed framework address IOT and AI research areas and concern for good governance.

Comprehensive research is needed on the ethical implications of AI in e-governance. Studies should focus on mitigating biases, ensuring transparency, and developing frameworks for accountability (Mäntymäki et al., 2022; Morley et al.,) There's a need for robust legal frameworks to address data privacy, AI use in public decision-making, and standards for AI systems in government operations (Butcher and Beridze, 2019; Minkkinen and Mäntymäki, 2023).

The paper "Trust in AI: Progress, Challenges, and Future Directions" by Saleh Afroogh, Ali Akbari, Evan Malone, Mohammadali Kargar, and Hananeh Alambeigi (2024) provides a comprehensive review of the current state of trust in AI systems. It discusses how AI has become deeply integrated into daily life through various applications and services, and emphasizes the importance of trust from a user perspective. The authors explore trust in AI through a systematic literature review, investigating different types of human-machine interactions and their impact on technology acceptance across various domains. They propose a taxonomy of trustworthiness metrics, which includes both technical aspects (such as safety, accuracy, and robustness) and non-technical aspects (such as ethical and legal considerations). The paper also identifies major factors that can either enhance or undermine trust in AI. For instance, threats to autonomy and human dignity are highlighted as significant trust-breakers.

The authors suggest future research directions and potential solutions for developing trustworthy AI systems.

A Review of Literature revealed that various studies have been made on AI role in E-Governance over a period. However, a detailed study on Evolution and Application of AI in E-Governance has not been done. Hence, the study is undertaken to fill this research gap.

Objectives of the Study

The study is aimed:

- To evaluate the Evolution of AI in the implementation of electronic governance in India.
- To examine the application of AI in different sectors and governmental process.

Applications of AI across different sectors

Public Health Care

Any nation's healthcare system draws a lot of attention as it enhances people's quality of life and reflects the standard of social welfare (Taun, et al., 2019). Since service failures in this industry are intolerable and put many people's lives at risk, the use of AI in public healthcare is one of the most sensitive and promising fields (Sun. T.Q. , Medaglia .R.2018). A paradigm change in healthcare has been brought about by AI's capacity to replicate human cognitive capabilities. This transition has been fuelled by the availability of more healthcare data and the quick advancement of analytics techniques (Jiang.F.et al, 2017). Unfortunately, the healthcare service industry's core of conventional face-to-face contacts can generate cost savings, which is the key reason for the delayed adoption of this technology (Jung.C., Padman.R.,2015).

Clinical application, translation application, and public health relevance are the three research areas where AI can be used in the public healthcare theme. Clinical application includes disease diagnosis, treatment efficacy, and outcome prediction; translation application includes drug discovery, repurposing, and in-silico clinical trials or biomedicine-related research (HO.C.,et al., 2019); and public health relevance includes everything pertaining to precision health and epidemic outbreak prediction .

Information and Communication Technology

An information and communication technology (ICT) is a collection of devices, apparatus, materials, software, networks, applications, and media that facilitate the gathering, processing, storing, and sharing of data, text, audio, video, and picture, among other types of information [Corvalan.C.,et al, 2018)]. First, the information environment, which includes fixed and mobile networks in charge of smoothly receiving and transmitting data and information to users [Brooks.T.,1984];

The need for smooth data receipt and transmission among many users has made the information environment essential. Artificial intelligence (AI) involvement will aid in new development and quicker information interchange, resulting in an information environment that is transparent and seamless [Mizoguchi.F.,1995]. By improving communication between citizens and the government within the public services provision—a long-standing area of concern—chatbots, which are intelligent machines with the capacity to comprehend and process spoken language and communicate at the user level through speech, can greatly lessen the administrative burden on public organisations [Androutsopoulou.a.etal.,2019].

The problem of data privacy stems from the need to define data ownership, which can cause serious conflicts between the various parties involved in the creation, management, and processing of data. In order to resolve these conflicts, it is necessary to pinpoint the data ownership and advantages brought about by AI applications. Despite the focus on developing capacities for data analysis, there is still much to learn about the function of data management in the context of artificial intelligence in the public sector [Gong .B, J. Ordieres-Meré.J.,20I6].

Environment and Sustainability

AI has enormous potential to address issues related to environmental sustainability because of its applications in machine translation, natural language processing (speech recognition), computer vision (image recognition and classification), data analytics, pattern recognition, and, most recently, sophisticated machine learning and deep learning. Applications in energy and utilities, agriculture, and environmental protection are only a few of the many environmental domains where artificial intelligence may be used (Raunch.C.,2018)

The first uses of satellite data are to forecast solar radiation globally in order to counteract global warming (Deo.R.V., et al., 2019), to track rich and poor areas in emerging or developing nations in order to eradicate poverty, or to protect global fisheries by enabling

transparency in the detection of fishing patterns in the oceans or sea. The second area of application is agriculture, which is undoubtedly going to undergo a revolution in AI with more efficiency and reduced consumption expectations, particularly in emerging nations like India. Using the Internet of Things (IoT) and bespoke sensors to grow crops indoors with just light, water, and other basic necessities is one of the industry's inventions. Another is a fully integrated beehive management system that enables beekeepers to watch their hives in real time on smartphones.

The first uses of satellite data are to forecast solar radiation globally in order to counteract global warming, to track rich and poor areas in emerging or developing nations to eradicate poverty, or to protect global fisheries by enabling transparency in the detection of fishing patterns in the oceans or sea. The second area of application is agriculture, which is undoubtedly going to undergo a revolution in AI with more efficiency and reduced consumption expectations, particularly in emerging nations like India. Using the Internet of Things (IoT) and bespoke sensors to grow crops indoors with just light, water, and other basic necessities is one of the industry's inventions. Another is a fully integrated beehive management system that enables beekeepers to watch their hives in real time on smartphones.

The third application is related to the energy sector and involves the following: establishing intelligent networks to link producers and consumers so that energy can be stored and supplied when needed; anticipating energy consumption peaks in densely populated areas to aid in real-time optimisation of operations settings (Skiba.M.,etal.,2017); and evaluating solar energy implementation strategies across nations to maximise the use of renewable energy sources.

Government Policy Making

In order to ensure that individuals have digital dignity, intelligent public administration works to advance the efficacy of rights and inclusive technology growth (Barth,T.J.etal.,1999). Governments may use AI to provide public services and to make policy, which is one of the complicated processes that takes place in constantly shifting contexts and affects the economy, society, and environment—the three pillars of sustainable development [Milano.M.etal , 2014]. Every political choice is made in response to social pressure that has an impact on the financial, environmental, and economic spheres [Blanzieri.E.,2012]. Several AI approaches, such as

game theory, agent-based simulation, data and opinion mining, optimisation, and decision support approaches, have the potential to enhance the policy-making process .

Artificial intelligence (AI) has a significant impact on the legal system, judging, and law enforcement. Tools that aid in argumentation or employ sentence-based case-based or abductive reasoning techniques are employed to combat crime and also offer automated legal advice at a lower cost. The most intriguing use of AI is in the administration of flawless elections through computerised voting, which will necessitate additional study into the accuracy of ballot readers, national voter registration systems, new voting techniques, which might involve using phones and other online platforms, and strategies for enforcing system integrity and computer programme correctness [Saltman.R.G.1991].

The Evolving Landscape of E-Governance in India

Table 1-The Evolving Landscape of E-Governance in India shows the evolution process of E-Governance in India.

India’s e-governance journey has undergone a metamorphosis, propelled by the transformative power of Artificial Intelligence (AI). The Digital India initiative serves as a cornerstone, fostering AI integration through research grants and creating a robust infrastructure. The landscape of e-governance in India is rapidly evolving, with a growing emphasis on leveraging AI to enhance efficiency, transparency, and accessibility. From chatbots that address citizen grievances to facial recognition for secure identity verification, AI-driven technologies are transforming how government services are delivered and managed across the nation.

Table 1

The Evolving Landscape of E-Governance in India

S.No	Method	Service
1	AI-Powered Citizen Services	Government agencies are leveraging AI to provide citizens with more personalized and efficient services. Chatbots and virtual assistants are being used to address common queries.
2	Data Analytics for Informed Decision-Making	It is used to process and analyse vast amounts of data collected by government agencies. It also helps in making data-driven decisions, predicting trends and optimizing resource allocation.
3	Smart Governance	Smart cities and smart governance initiatives are gaining momentum, where AI plays a pivotal role. AI-driven systems are used for urban planning, traffic management, and energy optimization, leading to improved quality of life for citizens.
4	Digital Identity and Authentication	Aadhaar, India's biometric identification system, incorporates AI for secure and efficient identity verification. This has streamlined access to government services and reduced fraudulent activities.
5	E-Government Portals and Apps	Government websites and mobile apps are increasingly employing AI to enhance user experiences. AI algorithms are used for content personalization and recommendation, making it easier for citizens to find the information they need
6	Predictive Policing	Law enforcement agencies are using AI to predict and prevent crimes. Predictive policing models analyse historical data to identify high-risk areas, enabling more effective resource allocation.
7	Automation of Administrative Tasks	AI-driven automation is reducing administrative burdens within government organizations. Routine tasks like document processing, data entry, and record keeping are being automated, allowing government employees to focus on more strategic and value-added activities.
8	Transparency and Accountability	AI is being used to monitor and analyse government transactions and expenditures. This promotes transparency and helps identify irregularities or misuse of funds

9	E-Governance Training and Skill Development	The government is investing in training programs to equip public servants with the skills needed to work with AI technologies. This ensures that the workforce is ready to adapt to the changing e-governance landscape
10	Cybersecurity and Data Protection	AI is deployed to strengthen cybersecurity measures in e-governance systems. It helps in detecting and mitigating threats and vulnerabilities, ensuring the integrity and confidentiality of government data.

Source: Compiled by Authors

Application of AI in Indian E-Governance

Table -2 explains the application of AI in Indian E-Governance is explained in various dimensions of its applicability and their relative uses.

Findings

The integration of AI application is revolutionizing e-governance in India. AI goes beyond convenience, it fosters transparency by streamlining data analysis for data driven decision-making, a hallmark of good governance.

- However, the path forward required addressing challenges like ensuring equitable access to technology and mitigating potential biases with AI algorithms.
- By prioritizing responsible development and implementation, India can unlock the full potential of AI and propel its e-governance landscape towards a brighter future that benefits all citizens.

Table 2

Application of AI in Indian E-Governance

S. No	Method	Service
1	Citizen Assistance and Chatbots	AI-powered chatbots and virtual assistants are deployed on government websites and mobile apps to provide quick and accurate responses to citizen queries, improving accessibility and service availability
2	Smart Governance in Smart Cities	Smart city initiatives leverage AI for urban planning, traffic management, waste management, and resource optimization. These technologies enhance the quality of life in urban areas
3	Predictive Analytics for Resource Allocation	AI-driven predictive analytics are used to forecast trends and allocate resources more efficiently. This is particularly valuable in disaster management, healthcare, and education sectors.
4	Aadhaar Verification	India's biometric identification system, Aadhaar, employs AI for identity verification, reducing fraud and ensuring secure access to government services
5	Data-driven Decision Making	Government agencies use AI to process vast amounts of data. This data analysis aids in making informed policy decisions, optimizing government resources, and monitoring various initiatives.
6	Digital Personalization	AI algorithms on government websites and apps personalize content and recommendations, enhancing the user experience and making it easier for citizens to access relevant information and services
7	E-Tendering and Procurement	AI streamlines the tendering and procurement processes by automating tasks like vendor evaluation, bid analysis, and contract management.
8	Public Health and Healthcare	AI applications assist in healthcare services, from managing patient records to telemedicine and health analytics, improving the overall healthcare infrastructure
9	Security and Surveillance	AI-driven video analytics and facial recognition are used for public safety, border security, and monitoring of public spaces
10	Cybersecurity	AI helps in detecting and mitigating cyber threats, protecting government data and critical infrastructure.

Source: Compiled by Author

Conclusion

AI is a game-changer for India’s e-governance, transforming government services across sectors like healthcare, education, transportation and agriculture. Citizens in these sectors directly benefit imagine AI-powered chatbots answering health queries or AI optimizing

logistics for faster deliveries. These advancements are driven by AI applications like chatbots with Natural Language Processing, predictive analytics for trend analysis, and Machine Learning algorithms for automation. By processing massive datasets, AI empowers decision-makers to identify areas for improvement and automate repetitive tasks, freeing up staff and streamlining service delivery.

References

1. Ravina Lamba and Kirti Morwar (2024), Artificial Intelligence in E-Governance in India: Impact, challenges and Opportunities, International Journal of Creative Research Thoughts (IJCRT), Vol. 12, Issue 4, ISSN: 2320-2882.
2. Syed Asad Abbas Bokgari and Secunghwan Myeong (2023), The influence of Artificial Intelligence on E-Governance and Cybersecurity in Smart Cities a stakeholder's perspective, IEEE Access, Multidisciplinary Open Access Journal, Digital Object Identifier: 10.1109/ACCESS.2023.3293480,
3. Iqra Amin and Innabat Amin (2023), Artificial Intelligence in E-Governance in India: Exploring the potential applications, benefits and ethical implications of integrating AI technologies in electronic governance systems to enhance service delivery and efficiency in India, IJFANS International Journal of Food and Nutritional Sciences, Vol. 12, Issue 1, ISSN print: 2319 1775 Online: 2320 7876.
4. Abdulaziz AI Besher and Kailash Kumar (2022) Use of Artificial Intelligence to enhance e-government services, Measurement: sensors 24, 100 484.
5. Birkstedt, T., Minkkinen, M., Tandon, A. and Mäntymäki, M. (2023), "AI governance: themes, knowledge gaps and future agendas", *Internet Research*, Vol. 33 No. 7, pp. 133-167. https://doi.org/10.1108/INTR-01-2022-0042
6. Butcher, James & Beridze, Irakli. (2019). What is the State of Artificial Intelligence Governance Globally. The RUSI Journal. 164. 88-96. 10.1080/03071847.2019.1694260.
7. Afroogh, Saleh & Akbari, Ali & Malone, Evan & Kargar, Mohammadali & Alambeigi, Hananeh. (2024). Trust in AI: Progress, Challenges, and Future Directions.
8. Mohasses.M (2019), How AI-Chatbots can make Dubai smarter? Proceedings of the Amity International Conference on Artificial Intelligence (AICAI), pp. 439-446
9. Russell.S, Norvig. P, NJ (1995) Artificial Intelligence: A Modern Approach Prentice Hall Englewood cliffs,
10. A. Kankanhalli, Y. Charalabidis, S. Mellouli IoT and AI for smart government: a research agenda Gov. Inf. Q., 36 (2) (Apr. 2019), pp. 304-309
11. T.M. Harrison, L.F. LunaReyes, T.A. Pardo, N. DePaula, M.M. Najafabadi, J.M. Pal mer (2019). The data firehose and AI in government: why data management is a key to value and ethics Proceedings of the 20th Annual International Conference on Digital Government Research (2019)
12. V. Marda, Artificial intelligence policy in India: a framework for engaging the limits of data-driven decision-making Philos. Trans. R. Soc. A Math. Phys. Eng. Sci., 376 (2133) (Nov. 2018), pp. 1-19

13. M.N.D. Tuan, N.N. Thanh, L. Le Tuan, Applying a mindfulness-based reliability strategy to the Internet of Things in healthcare –a business model in the Vietnamese market, Technol. Forecast. Soc. Change 140 (2019) 54–68.
14. T.Q. Sun, R. Medaglia, Mapping the challenges of artificial intelligence in the public sector: evidence from public healthcare, Gov. Inf. Q. 36 (2) (2019) 368–383.
15. F. Jiang, Y. Jiang, Z. Hui, Y. Dong, H. Li, S. Ma, et al., Artificial intelligence in healthcare: past, present and future, Stroke Vasc. Neurol. 2 (4) (2017) 230–243.
16. C. Jung, R. Padman, Disruptive digital innovation in healthcare delivery: the case for patient portals and online clinical consultations, The Handbook of Service Innovation, Springer, 2015.
17. C.W.L. Ho, D. Soon , K. Caals , J. Kapur , Governance of automated image analysis and artificial intelligence analytics in healthcare, Clin. Radiol. 74 (5) (2019) 329–337.
18. J.G. Corvalán, Digital and intelligent public administration: transformations in the era of artificial intelligence, A&C Revista Direito Adm. Const. 18 (71) (2018) 55–87.
19. F. Mizoguchi, Development of a seamless information environment: information network using ISDN, Telemat. Inform. 11 (3) (1994) 225–235.
20. T. Brooks, New technologies and their implications for local area networks, Comput. Commun. 8 (2) (1985) 82–87.
21. A. Androutsopoulou, N. Karacapilidis, E. Loukis, Y. Charalabidis, Transforming the communication between citizens and government through AI-guided chatbots, Gov. Inf. Q. 36 (2) (2019) 358–367.
22. C. Rauch, "AI for good —how artificial intelligence can help sustainable development, "2018. [Online]. Available: https://medium.com/@C8215/ai-for-good-how-artificial-intelligence-can-help-sustainable-development-58b47d1c289a .
23. R.C. Deo, M. Şahin J.F. Adamowski, J. Mi, universally deployable extreme learning machines integrated with remotely sensed MODIS satellite predictors over Australia to forecast global solar radiation: a new approach, Renew. Sustain. Energy Rev. 104 (2019) 235–261.
24. B. Gong, J. Ordieres-Meré, Prediction of daily maximum ozone threshold exceedances by preprocessing and ensemble artificial intelligence techniques: case study of Hong Kong, Environ. Model. Softw. 84 (2016) 290–303.
25. T.J. Barth, E. Arnold, Artificial intelligence and administrative discretion - implications for public administration, Am. Rev. Public Adm. 29 (4) (Dec. 1999) 332–351.
26. M. Milano, B. O'Sullivan, M. Gavanelli, Sustainable policy making: a strategic challenge for artificial intelligence, AI Mag. 35 (3) (2014) 22–35.
27. E. Blanzieri, The role of causal beliefs in technology-supported policy, IFAC Proc. Vol. 45 (10) (2012) 171–176.

Dr. Marri Channa Reddy
Human Resource Development
Institute of Telangana
NABET Accredited Excellent (उत्कृष्ट) Institute

Road No. 25, Jubilee Hills, Hyderabad-500 033

https://www.mcrhrdi.gov.in

Notification for Invitation of Articles/Papers for publishing in *Samriddhi*, Journal of Dr. MCR HRD Institute of Telangana

SAMRIDDHI- Journal of Dr. MCR HRD IT (Online)

Half-yearly Online Journal

ISSN 2584-1033

Contributions

The Institute invites articles from interested civil servants, academicians, civil society members, on various areas, including:

- Good Governance
- Public policy
- Public administration
- Law
- Economics
- Information Technology
- Management
- Related fields and
- Related good practices

The Journal aims to provide a platform for sharing insights, research, and perspectives on various aspects of the above subject areas to facilitate the exchange of knowledge and ideas between civil servants, academicians, and members of civil society.

Guidelines and Style Guide are available at the Institute's website: https://www.mcrhrdi.gov.in/samriddhi.html

Articles may be emailed to: journal@mcrhrdi.gov.in with a copy to cisdrmcrhrdit@gmail.com

About Dr. MCR HRD Institute of Telangana

Dr. MCR HRD Institute of Telangana, premier Administrative Training Institute (ATI) of Government of Telangana, founded in 1976, has been supporting the Government's initiatives in capacity building for reforms, good governance, change management, and revamping delivery systems.

The Institute has a sprawling 33 acre campus in the heart of Hyderabad. It is a lush green area which is fully WiFi enabled and buildings with rooftop solar panels. It has well-furnished classrooms, auditoria, indoor and outdoor sports facilities including swimming pool, gymnasium and hostel blocks with capacity to accommodate 900 persons. In addition, the Institute established a network of Regional Centres for Training to provide training to field level functionaries.

The Institute's mandate is carried out through the following Centres:

i. Centre for Information Technology (CIT)
ii. Centre for Law & Public Administration (CLP)
iii. Centre for Telangana Studies (CTS)
iv. Centre for Management & Behavioural Studies (CMB)
v. Centre for Disaster Management & Sustainable Development (CDS)
vi. Centre for Finance and Economics (CFE)
vii. Centre for International Relations & Security (CIS)

In addition to training programs for Government employees from Telangana State and from across the country, the Institute has been offering Foundation Courses for All India Services Officers & Central Civil Services Officers, Military Engineer Services Probationers, etc. The Institute conducted a training program for Civil Servants from ASEAN countries in 2019.

As a part of "Training for All" program, sponsored by DoPT, Govt. of India, the Institute has successfully trained 6,495 personnel of Tribal Welfare Department.

Under the second "Training for All" program, the Institute is in the process of conducting training for 6,864 employees of Women Development & Child Welfare Department. Under the project, entire workforce - from Anganwadi Teachers to District Welfare Officers, are

being trained. The project is sponsored by DoPT. Under the Project, the Institute undertook saturation training of front-line staff manning public service delivery chain in identified sectors, in specific geographical area to cover the entire public service delivery chain of the identified sector to bring about change in values and culture of an organization as a whole.

The Institute has also been conducting training programs on a massive level, for Trainers, PIOs, APIOs, First Appellate Authorities and other officers on the Right to Information (RTI) Act since 2005. The Institute conducts Workshops on different aspects of the RTI Act by involving Civil Society apart from officials across various departments, including Indian Air Force, Geological Survey of India and so forth. The Institute has conducted Orientation Programmes to the Information Commissioners of Telangana Sate Information Commission.

The Institute has published the following books on various concepts of the Right to Information law to facilitate understanding the intricacies of the legislation:

1. *Exemption from Disclosure of Information under the RTI Act: An Introduction.* Hyderabad: Dr. MCR HRD Institute, 2021.
2. *The Right to Information Act: A Handbook for Public Authorities*. Hyderabad: Dr. MCR HRD Institute, 2022.
3. *Proactive Disclosure of Information under the Right to Information Act: A Guide* Hyderabad: Dr. MCR HRD Institute, 2021.

The publications are available on our website at:
https://www.mcrhrdi.gov.in/rti_publications.html

The Institute won the prestigious SKOCH Governance Silver Award at the 68th SKOCH Summit held in 2020, for offering Virtual Training Programs, especially the Foundation Course for All India Services and Central Services Officers.

Dr. Marri Channa Reddy
Human Resource Development
Institute of Telangana
NABET Accredited Excellent (उत्कृष्ट) Institute