Life Expectancy : Trends, Pattern and Policy Implications

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& Prasad.A.K

This study investigates global life expectancy trends through a comprehensive analysis of secondary data focusing on selected developed and developing nations. It uncovers gender gaps, the pandemic's influence, and infant and maternal mortality on life expectancy, emphasizing the importance of interventions and policies to enrich population health and longevity.

Keywords: Life Expectancy, Infant Mortality Rate, Maternal Mortality Rate, Longevity, Pandemic.

1. Introduction

With the fast-growing advancements in technology, the 21st century observed tremendous breakthroughs in genomics and personalised medicine. Thus, targeted diagnoses and therapies are becoming increasingly common. With such a pace in the advancements in medical science, the life expectancy of the world population is expected to increase. Gulland noted that since 2000 life expectancy has increased every five years, although variations exist between countries (Gulland, 2016). Each country has a unique story, reminding us of the profound value of cherishing and safeguarding every precious life.

Life expectancy is a central indicator of population health. It provides a valuable understanding of the well-being and development of nations. Despite numerous studies conducted on life expectancy, there remains a need for comprehensive research that investigates the latest global trends and patterns while considering the specific contexts of both developed and developing nations. This study focuses on global scenarios and selected developed and developing nations by systematically analysing secondary data to explore the trends, patterns, and policy implications along with an analysis of trends in mortality over two decades.

Studying trends and patterns helps to understand whether the population's life expectancy is enhancing or deteriorating. It also helps to plan effective healthcare initiatives, thus prioritising health accordingly. Additionally, Infant Mortality Rate and Maternal Mortality Ratio are analysed for the selected countries and the world average to provide a more comprehensive insight. Therefore, studying the trends, patterns and policy interventions is crucial for monitoring the population's health status to provide insights useful to researchers and policymakers to improve population health globally. Through country-wise analysis of trends and patterns, tailored interventions can be framed to address specific challenges countries face.

This study aims to analyse the life expectancy patterns in India, comparing them with global life expectancy trends. A comparative analysis examines the life expectancy trends in selected developed countries, developing countries and globally, focusing on the recent two decades. By comprehending how life expectancy is evolving across various selected economic landscapes, we aim to understand the implications of changes in life expectancy useful for policymakers.

2. Methodology and Data Source

The present study makes use of secondary data. The study is explanatory in nature. It is aimed to understand the trends and pattern in life expectancy at global level and in selected developed and developing nations, and make a comparative analysis of the trends. The selected developed nations are United States, Norway and Russia. The selected developing nations are India, Brazil and Mexico. The data used in the study

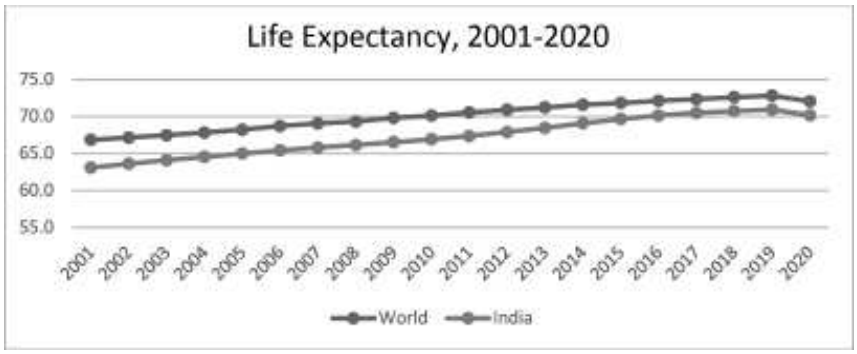
pertains to the period 2001 to 2020.The major sources of data are books, journals, government records, census reports, the World Health Organization (WHO), WHO Global Health Observatory (GHO), the World Bank, Our World in Data and other documents published by national and international organizations.

3. Life Expectancy: Global and National Trends

Life expectancy is a powerful tool for understanding the overall health and well-being of populations worldwide. Analysis of the trends in life expectancy at both global and national levels leads to profound insights that shape our longevity and pave the way for a brighter future. Life expectancy has witnessed remarkable progress, marking the triumph of human innovation and development.

3.1. Life Expectancy

Graph - 1: Trends in Life Expectancy



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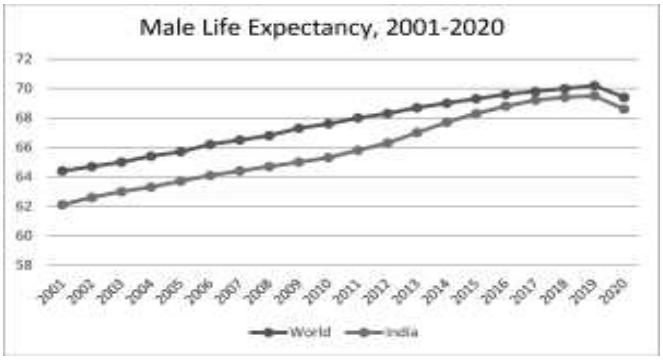
On analysing the World Life Expectancy trends between 2001 and 2020, global life expectancy has experienced a gradual increase from 66.8 years to 72.0 years. The highest recorded life expectancy during this period was 72.8 years in 2019. However, a slight decrease was observed from 2019 to 2020, dropping to 72.0 years. India has consistently increased life expectancy from 63.1 years in 2001 to 70.9 years in 2019. Over the recent two decades, India achieved an increase of nearly seven years in life expectancy. There was a notable decrease in life expectancy from 2019 to 2020, similar to the world average life expectancy, declining from 70.9 years to 70.2 years. The global average life expectancy has always surpassed India. The gap between the world and India narrowed as India's life expectancy grew consistently. The gap in life expectancy was 3.7 years in 2001 and has narrowed to 1.8 in 2020, showcasing the significant progress in enhancing life expectancy. However, the decline in life expectancy from 2019 to 2020 for both the world and India was due to the outbreak of the COVID-19 pandemic, causing instability in all parts of the world.

3.2. Male Life Expectancy

Graph - 2: Trends in Male Life Expectancy



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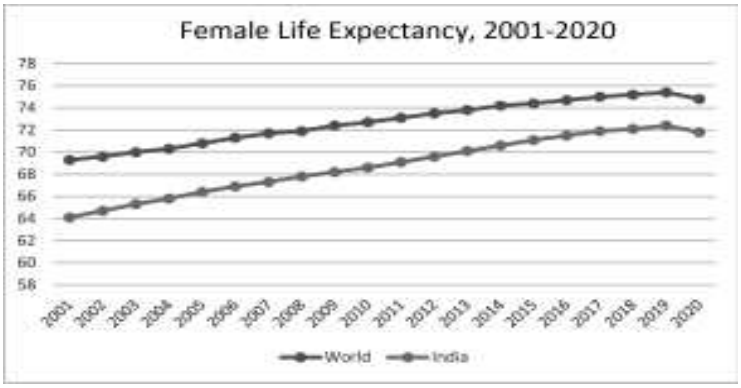
The male life expectancy at birth globally has been gradually increasing over the past two decades. From 2001 to 2019, the average life expectancy for men worldwide went up from 64.4 years to 70.2 years. A slight dip noticed in 2020 to 69.4 years could be attributed to the impact of the COVID-19 pandemic. In India, the male life expectancy has consistently grown from 62.1 years in 2001 to 69.5 years in 2019. Nevertheless, the male life expectancy in India is still lower than the global average, indicating room for further improvement in the inclusion of healthcare in the country.

3.3. Female Life Expectancy

Graph - 3: Trends in Female Life Expectancy



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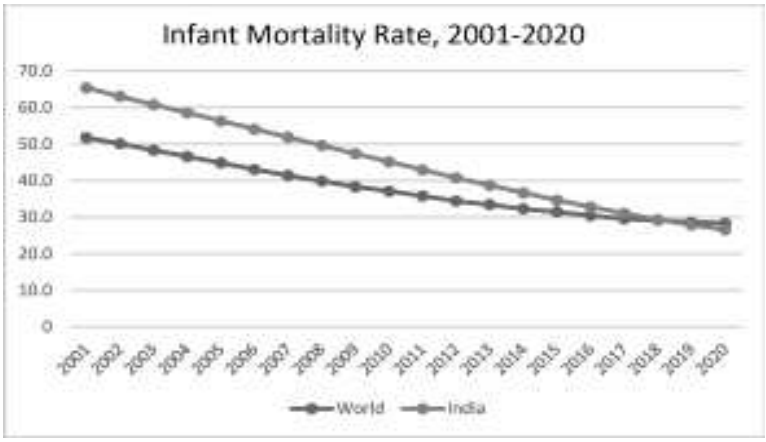
The female life expectancy patterns are similar to the male life expectancy. Women world wide's average life expectancy increased from 69.3 years in 2001 to 75.4 years in 2019. However, there was a slight decline to 74.8 years in 2020. Shifting the focus to India, female life expectancy has consistently shown improvement over the years. It has increased from 64.1 years in 2001 to 72.4 years in 2019, with a slight dip to 71.8 years in 2020. Both the world average and India experienced the same drop in life expectancy during the year of pandemic. The COVID-19 pandemic had a negative effect on life expectancy and overall mortality in India in 2020, and it widened the gap in life expectancy between genders (Yadav et al., 2021). The female life expectancy in India still lags behind the global average at all stages.

3.4. Infant Mortality Rate

Graph- 4: Trends in Infant Mortality Rate



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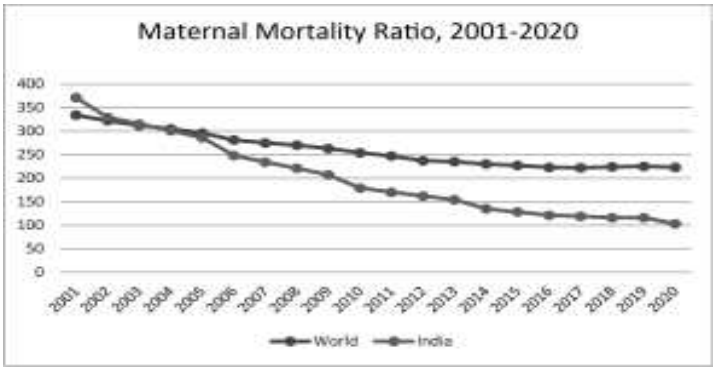
The global infant mortality rate has declined over the studied period, decreasing consistently from 51.8 deaths per 1,000 live births in 2001 to 28.3 deaths per 1,000 live births in 2020. In 2001, India's infant mortality

rate was 65.4 deaths per 1,000 live births, gradually decreasing to 26.6 deaths per 1,000 live births in 2020. India had a higher infant mortality rate than the global till 2018. Fluctuations in income at the state level considerably impacted infant mortality rates in rural households in India (Bhalotra, 2010). During 2019 and 2020, India exhibited a lower infant mortality rate (IMR) than the worldwide average. This highlights the progress made by India in infant health. Continued efforts are necessary to ensure sustained progress in reducing Infant Mortality rates globally and nationally.

3.5. Maternal Mortality Ratio

Graph - 5: Trends in Maternal Mortality Ratio



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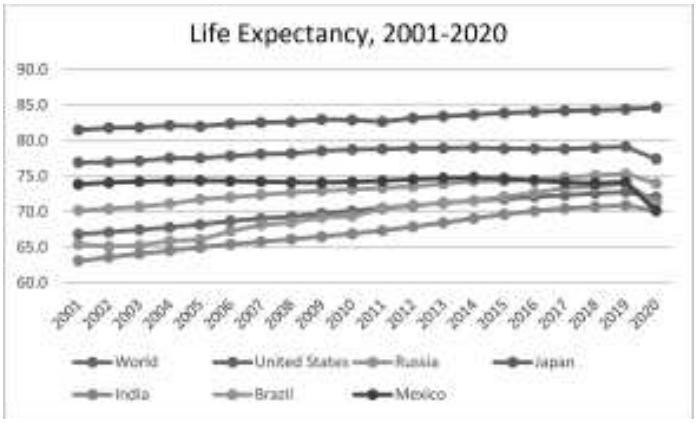
The global maternal mortality ratio decreased from 334 in 2001 to 223 in 2020, indicating a significant improvement in maternal health worldwide. A steady decline in maternal deaths worldwide highlights the success of various initiatives and interventions to improve maternal healthcare globally. India had a relatively higher maternal mortality ratio than the global average in 2001, dropping from 371 to 103 in 2020. The data reveals a decline in maternal mortality in India was faster than at the global level. This substantial improvement in India's maternal mortality ratio signifies the effectiveness of targeted interventions and initiatives implemented to address maternal health challenges in the country, thereby improving maternal healthcare access and skilled birth attendance. Our research aligns with the conclusions that India has made significant progress in implementing interventions to enhance maternal health, and it highlights the crucial role of high-quality emergency obstetric care in reducing maternal mortality (Meh et al., 2021).Overall, the data support the positive trends in reducing maternal mortality ratios globally and in India.

4. Comparative Analysis

4.1. Life Expectancy

Graph- 6: Trends in Life Expectancy

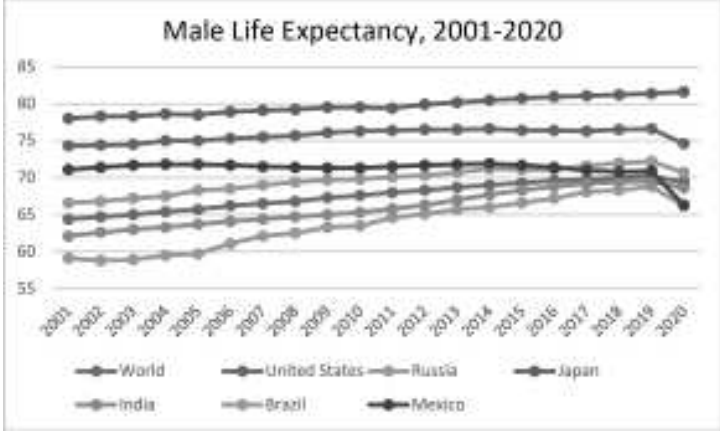


NB: Graph constructed using data sourced from United Nations, Department of Economic and Social Affairs, Population Division (2022). World Population Prospects 2022, Online Edition.

The life expectancy data from 2001 to 2020 for the developed countries (United States, Russia, Japan), the developing countries (India, Brazil, and Mexico), and the world average reveal interesting trends and patterns. The overall global life expectancy gradually increased, indicating a positive direction in overall health and longevity worldwide. United States, Japan, Brazil and Mexico have shown higher life expectancy trends than the world average. At the same time, India has yet to catch up with the global average despite its steady growth. Factors such as population size, socio-economic disparities, and healthcare challenges can influence the improvements in life expectancy in a country. The United States, Brazil and Japan have consistently maintained a relatively higher life expectancy than the global average, even during the pandemic outbreak. Russia started with a relatively lower life expectancy in 2001. However, it witnessed a steady increase indicating positive developments in healthcare in the country. Japan has the highest life expectancies among the countries considered. It has impressive trends throughout, reflecting the country's focus on promoting a healthy lifestyle. Tsugane has observed that the Japanese diet might be linked to the long-life expectancy in Japan (Tsugane, 2020).Japan has shown an increase in life expectancy, while all the selected countries experienced a decline in 2020. Mexico's life expectancy has generally been higher than the global average. However, in 2020, Mexico witnessed a notable decrease in life expectancy below the global average. While the pandemic had significant health consequences and disruptions in healthcare systems, a drop of approximately four years of life expectancy raises severe concerns in Mexico. The comparative analysis of life expectancy data from 2001 to 2020 reveals that individual countries have experienced varying improvement rates.

4.2. Male Life Expectancy

Graph- 7: Trends in Male Life Expectancy

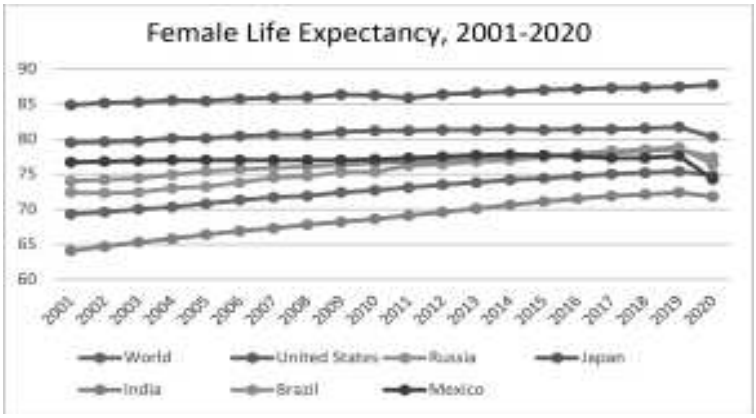


NB: Graph constructed using data sourced from United Nations, Department of Economic and Social Affairs, Population Division (2022). World Population Prospects 2022, Online Edition.

The average male life expectancy at birth globally has gradually increased, reaching 69.4 years in 2020. Male life expectancy at birth in developed countries such as the United States and Japan has consistently been higher, while Russia has been below the global average. Similarly, for developing countries, Brazil and Mexico have higher male life expectancy than the global average, while India is just behind it. Male life expectancy in Mexico has generally been above the global average, except for 2020, when it experienced a decline to 66.3 years, comparable to Russia at the time. Policymakers and researchers must address this sudden drop to induce a positive growth pattern of life expectancy in Mexico. Japan has shown higher and increasing life expectancy trends throughout the study. India began with a lower male life expectancy but witnessed steady growth.

4.3. Female Life Expectancy

Graph - 8: Trends in Female Life Expectancy

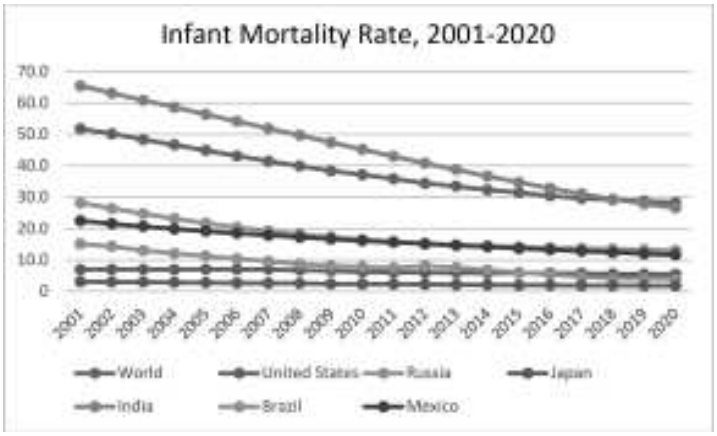


NB: Graph constructed using data sourced from United Nations, Department of Economic and Social Affairs, Population Division (2022). World Population Prospects 2022, Online Edition.

Female life expectancy at birth in Japan, the United States, Russia and Brazil has consistently been higher than the global average. India still faces challenges catching up to the global average in female life expectancy while showing significant improvements. Mexico's female life expectancy is generally above the global average, except for 2020. The impact of COVID-19 could have led to the decline to 74.3 years. The comparative analysis of female life expectancy at birth from 2001 to 2020 demonstrates varying trends across developed and developing countries similar to male life expectancy. Females have higher life expectancy than males regardless of their development status. The world average is influenced by the wide range of countries exhibiting varying development levels and healthcare systems.

4.4. Infant Mortality Rate

Graph- 9: Trends in Infant Mortality Rate



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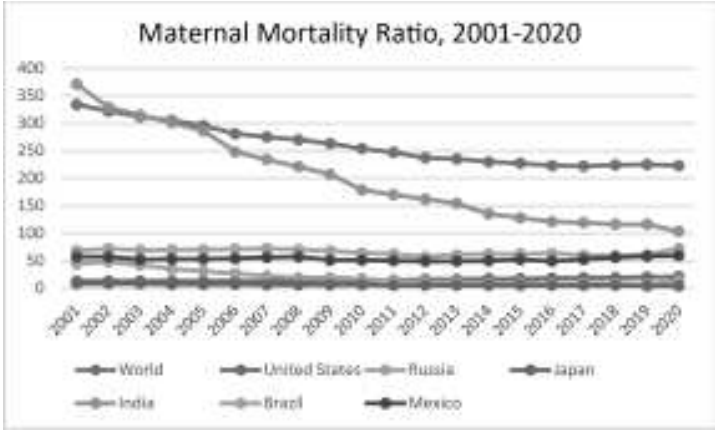
All selected countries except India have consistently maintained the lowest infant mortality rates compared to the global average. India has shown an impressive trend of decreasing the Infant Mortality Rate. India had one of the highest figures back in 2001. India started with a high infant mortality rate of 65.4 in 2001, but the rate decreased to 26.6 in 2020. Although still relatively high, the significant decline indicates ongoing efforts to improve infant healthcare in India. In the last two years, we have witnessed the rate in India falling below the global average. If the same trend continues, India will be one of the countries with the lowest Infant Mortality rates worldwide. Japan consistently maintained one of the lowest infant mortality

rates among the countries listed, reflecting Japan's effectiveness in ensuring the good health of infants. With the modernization of society and the creation of support systems, the health of mothers and children has significantly improved in Japan (Osawa et al., 2019). Brazil and Mexico also started with higher rates compared to developed countries. However, both countries showed a decline over the years. The selected developed countries, represented by the United States, Russia and Japan, generally had lower infant mortality rates than the developing countries (India, Brazil, and Mexico). Despite starting with higher rates, the developing countries showed progress in reducing infant mortality over the years. The world average also has showcased a positive trend, thus reflecting global efforts to improve infant healthcare. However, it is essential to address the disparities among countries and continue working towards the further reduction of infant mortality worldwide.

4.5. Maternal Mortality Ratio

Graph-10: Trends in Maternal Mortality Ratio



NB: Graph constructed using data sourced from World Bank Open Data, 2023

Similarly, to the Infant Mortality Ratio, all three selected developed countries and developing countries except India have consistently maintained the lowest infant mortality rates compared to the global average. However, the rate of decline in Maternal mortality has shown an appreciable trend in India. Starting with a higher mortality ratio in 2001, India has lowered the Maternal mortality ratio below the world average from 2004. Despite the appreciable trend of decline, India still faces the challenge of higher figures in Maternal Mortality ratios. Analysing further into the developed countries, the United States exhibits an overall increasing trend, while Japan and Russia have shown a decreasing maternal mortality ratio. Developing countries such as Brazil and Mexico have shown relatively fluctuating trends with minor ups and downs over the studied period, while India has shown a decreasing pattern. The global trend indicates progress in reducing maternal mortality rates and improving maternal health worldwide. Like the Infant Mortality rates, developed countries have less maternal mortality ratios than developing countries. These disparities must be addressed since everyone, irrespective of the region in the world they live in, has the right to enjoy life to the fullest.

5. Policy Implications

In analysing life expectancy trends as a whole, specific policy implications can be considered for further research. Countries with lower life expectancy, such as Russia and India, could focus on strengthening their healthcare systems and allocating more resources to expand access to quality healthcare services. Encouraging healthy lifestyle patterns can significantly impact life expectancy. Implement policies promoting physical activity, healthy diets, health education, and awareness campaigns. Maintaining a database of an individual's smoking and alcohol consumption can provide valuable information for healthcare officials and policymakers to understand its impact, prevalence and patterns within specific populations. It can provide data for focusing on individuals with higher health risks and assess the impact of policy with targeted interventions. There is a connection between the Gorbachev Anti-Alcohol Campaign and Russia's mortality crisis, as the campaign

effectively increased the cost of alcohol while promoting alternative activities, leading to a significant decline in alcohol consumption and a subsequent reduction in Russia's overall death rate (Bhattacharya et al., 2013). Mexico has been facing challenges in the health sector, especially during 2020, when the COVID-19 pandemic significantly impacted public health. So, framing policing for enhancing the testing rates and providing incentives for complete vaccination with consistent public health messaging becomes crucial.

The trends have shown that women have significantly higher life expectancy than men in all selected countries. So, developing and expanding gender-specific preventive healthcare services, addressing behavioural risk factors, equitable access to income, education and quality healthcare, strengthening occupational health, and yearly collection of gender-specific data for research, resource allocation, and policy interventions can be effective. This is specifically important for countries such as Russia, where we witness a striking gap in life expectancy between men and women. Men in Russia endure over a decade less of life. This is consistent with the conclusion of Razvodovsky in his study on Fatal Alcohol Poisonings and Gender Gap in Life Expectancy in Russia, highlighting that drinking is a significant contributor to the high gender gap in life expectancy and its dramatic fluctuations in Russia, particularly impacting men(Razvodovsky, 2017).

India, Brazil and Mexico have significant figures for Infant Mortality rate and Maternal mortality Ratio. Policies could be framed to improve and ensure frequent nutrition support, quality healthcare services for pregnant women and infants, incentivise full immunisation, financial support for registered pregnant women, increase the number of skilled healthcare professionals and targeted interventions by identifying areas with higher Maternal mortality ratios and Infant Mortality rates, especially in the rural regions of India. There is a need to emphasize the need for focused interventions to enhance access and address quality disparities in rural and tribal regions of India, aiming to improve maternal health outcomes in the country (Meh et al., 2021).The data reveals a significant drop in life expectancy for the global average and most selected countries analysed in 2020. Therefore, to mitigate further consequences, the researchers and policymakers can aim at developing targeted strategies in each country to strengthen healthcare systems. Also, providing incentives such as financial rewards and privileges could serve as an effective strategy to increase vaccination coverage at a faster rate. This can help countries recover from the pandemic and increase life expectancy rates.

6. Conclusion

The data reveals that there are country-to-country disparities in life expectancy. Over the last two decades, the world has made impressive progress in increasing life expectancy, but this improvement has been uneven across countries (Liu, 2023). However, in general, it is noticed that the population from developed countries exhibit higher life expectancy, lower Infant Mortality Rate and Maternal Mortality ratio compared to developing countries. Among the top 80 countries with the highest number of infant mortalities, all of them are developing countries, and among these nations, factors like percentage expenditure, infant deaths, and alcohol significantly impact life expectancy, unlike in developed countries (Liu, 2023). Findings support that efforts to reduce infant and child mortality rates in India are advancing yet acknowledging the significant variation in performance across different states (Bhatia et al., 2019). According to the study, India has the potential to achieve the UN 2030 MMR goals if the current rate of reduction is sustained, but additional intervention is required for the poorer states to meet the targets(Meh et al., 2021).

Despite being categorised as a developed country, Russia's life expectancy values are comparable to that of developing countries. The United States needs urgent attention to address the higher Maternal Mortality Ratio. Compared to other selected developing countries, Brazil has shown a higher and consistently increasing longevity pattern. Mexico witnessed a slight improvement in overall life expectancy over the analysed period, showcasing a rising need for investing in health expenditure and prioritising health needs.

The data also reveals that the female life expectancy is higher for every year analysed than the male life expectancy for all the selected countries and the world average. So, gender-specific interventions could significantly increase the population's longevity. Upon analysing the data, it becomes apparent that Mexico

experienced the most significant decline in life expectancy in 2020. This could be attributed to the challenges faced by the pandemic globally. The findings align with the study highlighting that Mexico has been severely impacted by the COVID-19 pandemic, ranking among the hardest-hit countries globally (Ibarra-Nava et al., 2020). So, it becomes vital to quickly recover from the impact of the pandemic so that it becomes a temporary fluctuation.

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SOCIAL SCIENCE IN PERSPECTIVE

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Introducing New Books

The Dynamics of Organic Farming in Velankallu Panchayath in Thrissur

Gayathri Somasekharan
& Syamlal G.S

The most natural method of raising food is through organic farming, which excludes the use of genetically modified seeds, herbicides, or fertilizers. The word "organic farming" has received the most attention in the agricultural field during recent times. Although the pandemic had a severe impact on the world, the demand from consumers for organic products nevertheless grew, sharply generating a more urgent need for the promotion of organic agriculture. India tops the list of countries with the most organic producers, which is an impressive accomplishment. It ranks fourth among the nations in terms of the area dedicated to organic farming. In Kerala, despite its efforts to develop an organically based agriculture, many challenges, such as a low yield and a high certification cost, are impeding this endeavour. Moreover, we have a general trend of saying that organic farming is costly to the farmers as the returns do not compensate their efforts. This paper attempts to examine the reality of this popular myth by studying organic farmers in Velankallu Panchayath in the Thrissur district.

Keywords: Organic, Fertilizers, Genetically Modified Seeds, Certification, Endeavour

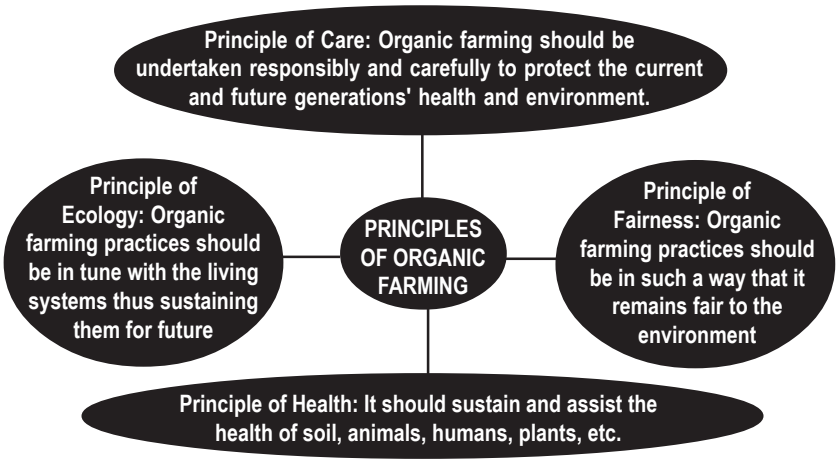
Introduction

The term "organic farming" is made up of the words "organic" and "farming," which both refer to systems of production that are alive and have a long lifespan. Since he demonstrated in his book "An Agricultural Testament" (1940) that old agricultural practices are vastly superior to modern practices, the British botanist Sir Albert Howard is regarded as the father of organic farming. It's interesting to note that Howard was motivated by the traditional Indian agricultural methods he encountered while working as an agriculture researcher in India. Organic farming is a very old idea that was lost over time with the invention of chemical pesticides and manures. Modern organic farming originated as a response to the detrimental effects of chemical overuse.

The primary characteristics of organic farming, which also contribute to its popularity, are preserving the level of organic matter and promoting biological activity in soils by supplying nutrients through microbial action. These characteristics are achieved by avoiding the use of chemical fertilizers to protect soil fertility. Legumes are also used to meet the soil's need for nitrogen. Other environmentally friendly aspects of organic farming include recycling organic matter like crop residues and manures, managing diseases, pests, and weeds with the help of natural predators, organic manuring, crop rotation, maintaining diversity, breeding resistant varieties, etc.

The past several years have seen an upward trend in organic farming on a global scale. The World of Organic Agriculture: Statistics and Emerging Trends, 2020, states that as of the end of 2020, there were more than 74.9 million hectares of organic farming worldwide. On all continents, there has been a sharp increase in organic agriculture. Chile saw the fastest growth in organic farms among 190 nations in 2020, at a rate of 650%. Additionally, there were 3.4 million organic growers worldwide in 2020, with India leading the pack. During the late 20th century, organic food sales increased dramatically mainly due to the health and

environmental effects caused by genetically modified seeds or chemical supplements. According to the International Federation of Organic Agriculture Movements (IFOAM), there are four principles of Organic farming - The principle of health, ecology, fairness and care.



Objective of the Study

This paper intends examine the costs and profits associated with organic vegetable production along with different aspects of organic farming in Velankallu Panchayath, Thrissur.

Methodology

The paper uses a field survey as the main source of data. Primary data is collected from Velankallu Panchayath where fifty organic farmers were selected randomly who concentrates on organic farming. Additional online sources, national and international publications were also consulted for this study.

Organic Farming in India

India has the largest number of organic producers in the world (1599010) and occupies the fourth position (2.66 million hectares) in the list of top ten countries with the highest land under organic agriculture (The World of Organic Agriculture: Statistics and Emerging Trends 2020). By following the strict procedures anyone can become a certified organic producer in India. It is in high demand and also remunerative. The effects of the green revolution have already reached their peak and are on the downward curve now. The Indian paradox of increasing population and limited food supply has pressed the need to develop a more sustainable mode of cultivation and thus organic farming was chosen North East India has been able to achieve very important milestones in organic farming. Sikkim is the first state in the world to be fully organic. Flaxseeds, Sesame, soyabean, tea, rice, pulses, etc. are some of the main organic items exported by India. In India National Programme on Organic Production (NPOP) regulates organic farming. NPOP controls exports under Foreign Trade Development Regulation Act and controls the domestic market and imports under Agriculture Produce Grading, Marking, and Certification Act. Agricultural and Processed Foods Export Development Authority (APEDA) is a regulatory frame of NPOP.

The total area under the organic certification process, which is registered under National Programme for Organic Production, is 9119865.91 ha in 2021-22. Madhya Pradesh has covered the largest area under organic certification followed by Maharashtra, Gujarat, Rajasthan, Odisha, Karnataka, Uttarakhand, Sikkim, Chhattisgarh, Uttar Pradesh, and Jharkhand. India contributed 3430735.65 MT of certified organic products which includes Oil Seeds, fibre, Sugar cane, Cereals & Millets, Cotton, Pulses, Aromatic & Medicinal Plants, Tea, Coffee, Fruits, Spices, Dry Fruits, Vegetables, Processed foods, etc. Similar to natural certification, Madhya Pradesh is the biggest natural manufacturer accompanied with the aid of using Maharashtra, Rajasthan, Karnataka, and Odisha.

As far as commodities are concerned, Fibre crops top the list followed by Oil Seeds, Sugar crops, Cereals and Millets, Medicinal/ Herbal and Aromatic plants, Spices & Condiments, Fresh Fruit Vegetable, Pulses, Tea & Coffee. If we look into the exports of organic commodities during 2021-22, it was 460320.40MT. Organic products are exported to the USA, European Union, Canada, Great Britain, Switzerland, Turkey, Australia, Ecuador, Korean Republic, Vietnam, Japan, etc. In phrases of export price recognition Processed ingredients along with soya meal (61per cent) lead among the goods observed with the aid of using Oilseeds (12.85 percent), Cereals and millets (12.71 percent), Sugar (4.77 percent), Plantation crop products such as Tea & Coffee (2.16 percent), Spices and condiments (1.72 percent), Pulses (1.1percent) and others. (www.apeda.gov.in/apedawebsite/organic/PresentStatus)

Table 1 : Category-wise Production of Organic Commodities in India - 2020-21

Sl.No.	Category	Organic Production (IN MT)	Conversion Production (IN MT)
1	Cereals & Millets	242,416.929	534.826
2	Coffee	20,070.623	0.000
3	Dry Fruits	14,459.125	9.386
4	Fibre	1,440,603.391	444,786.936
5	Flowers	7,329.653	0.000
6	Fodder	7,895.839	7,895.839
7	Fresh Fruits & Vegetables	85,548.005	6.400
8	Medicinal Plant Products	101,179.901	13.500
9	Miscellaneous	2.000	0.000
10	Oil Seeds	464,818.474	13,349.107
11	Others	10,263.655	500.000
12	Processed Food	6,268.731	0.000
13	Pulses	73,765.369	24.084
14	Spices & Condiments	95,087.202	0.000
15	Sugar	336,883.172	50.000
16	Tea	42,844.935	0.000
17	Tuber Products	1,483.781	0.000
Total	**2950920.785**	**459274.239**	

Source: Agricultural and Processed Food Products Export Development Authority (APEDA), Ministry of Commerce and Industry, Government of India

The table shows the statistics on organic production of different commodities along with the area converted into organic farming during 2020-21 for respective commodities. As previously mentioned, fibre products top the chart with a production of 1,440,603 metric tonnes in 2020-21 followed by oilseeds, cereals, medicinal plants, etc. The data demonstrates how our nation is transitioning to organic farming across all farming-related sectors.

Organic Farming in Velankallu Panchayath

Small-scale organic farming was being done by regular housewives, husbands, and even schoolchildren as a silent revolution took place in the backyards, terraces, poly-houses, roadside, and even balconies of Kerala households. The invasion of vegetables from neighbouring states that have been treated with pesticides has been a hot topic of discussion in Kerala for the past few years. Governmental institutions, social organizations, political parties, organizations for women, and farmer self-help groups have all joined the state's growing organic farming movement in recent years. The State Department of Agriculture started promoting organic farming in the state from 2002-03 onwards. Since 2011, the State Horticulture Mission has been distributing grow bags (plastic bags containing sterile growing medium and nutrients to enable plants to grow) in south Kerala. It distributed 8.25 lakhs of such bags in the first year to 33,000 people and 6.89 lakhs to 27,000 beneficiaries in the next year.

Organic farming began finding momentum in Kerala since the unveiling of a policy in 2010 that set the goal of converting the entire agricultural production in the state to organic farming within ten years. Kerala is going back to traditional organic farming after hundreds of farmers had faced the bitter consequences of chemical farming. The Department of Agriculture is now promoting organic food production by launching "Jaiva Keralam" (The Organic Sustainability of Kerala). It has been implementing a comprehensive project on organic farming in Kasaragod district and it is envisaged to cover potential areas in other districts. Under this programme, 100 vermicompost units, 625 rural compost units, 30 demonstration plots, and 42 ecoshops in 13 districts were established. Also, the existing 200 clusters were strengthened and 50 new clusters were formed.

With the majority of its households working in agriculture and being well-known in Thrissur for its organic farming practices, Velankallu Panchayath was chosen for this study. Around 162 of the 725 farmers are involved in growing organic vegetables. The organic growers in this area operate under the 'Safe to Eat' policy. 50 organic farmers were selected randomly for the study. The following are some general conclusions applicable to all farmers engaged in the study:

- Long Beans, Pumpkin, Bitter Gourd, Snake gourd, Ash Gourd, and Cucumber are the main vegetables cultivated by the farmers in this area
- The land size of the farmers in the sample ranges from 50 cents to six acres.
- They are professional organic farmers who take this occupation very seriously to earn a good profit. Many new technologies, organic pesticides, and fertilizers are developed by the farmers themselves to increase their yield.
- The education level of the sample ranges from higher secondary to post-graduates.
- They use hybrid seeds of international standard for cultivation. They believe that the free seeds they get from Krishi Bhavan are a huge flop as it has low yield and is highly disease prone. According to them the myth of organic production being costly and less remunerative is because of this factor.
- They use two methods to sell their produce. One is direct selling to customers through their shops. Another method is to sell the output to retailers and organic vegetable-selling shops. There are farmers whose vegetables even reach shops in Thiruvananthapuram.
- Farmers admitted the fact that they faced a shortage of agricultural labourers. They perform most of the farm work but still require a minimum amount of labour. Many of them depend on labourers from Bengal. Usually, in one acre of land, they employ two male labourers for 15 days and two female labourers for 10 days during one season. Male wages range between 700 to 800 per day and females are paid Rs. 550 to 650 per day.
- One of the main reasons for their high output is their knowledge of Vriksha Ayurveda. They also

use many organic growth promoters plus pesticides like panchagavyam, Haritha kashayam, jeevamrudham, gomoothram, nilamkanjirasathu, trychodarma etc.

Table 2 : Vegetables Grown by Farmers

Type of Vegetables	No. of Farmers Cultivating These Vegetables
Long beans	50
Bitter Gourd	50
Snake Gourd	50
Pumpkin	45
Ash Gourd	38
Cucumber	44

Source: Primary Data

All the farmers in the sample grew long beans, bitter gourd, and snake gourd. While pumpkin was grown by 45 of them, ash gourd and cucumber were cultivated only by 38 farmers and 44 farmers respectively. According to them, cultivation of all these vegetables was highly profitable if nature stays favourable to them. Apart from these vegetables they also grew organic fruits like watermelon, but the study concentrated on vegetables. When asked why they were choosing organic farming, many educated young people in this panchayath responded that their goal was to provide the next generation with food that was free of toxins.

Table 3 : Cultivation Pattern

Starting Period	Harvest	Vegetables
February	June	Bitter gourd, Snake gourd
June	August	Long Beans, Pumpkin
September	January	Ash Gourd, Cucumber

Source: Primary Data

All farmers cultivate thrice a year. It starts in February and harvest is done in June (Bitter Gourd and Snake Gourd). The second is in June and harvest is done in August (Long Beans and Pumpkin). The last one starts in September and the harvest is in January (Ash Gourd and Cucumber). This pattern also can vary according to the climatic conditions and other unexpected events. They basically cultivate vegetables according to the favourable weather conditions and seasons like onam, vishu etc also influence their choices.

Table 4 : Initial Cost of Investment per Acre

Amount	Number	Percentage
50000	6	12
60000	10	20
70000	12	24
80000	22	44

Source: Primary Data

The initial investment cost covers the cost of constructing the shed, preparing the land for cultivation using tractors, organic fertilizers, and other preliminary infrastructure. The majority, 44 percent of the farmers, incurred Rs.80000 as their beginning investment. They don't need these sums for the subsequent harvest when the basic configurations are finished. They just require half of the first amount for the second and third times

as initial cost during the year. But this includes only the basic preliminary cost before starting the main cultivation. Second in the table comes farmers incurring Rs.70000 as initial cost (24%).

Table 5 : Yield and Income from Different Vegetables

Vegetables	Yield (In KG/ACRE	Number of Farmers	Income of the Farmers
Bitter Gourd	8000	10 (20 percent)	640000
(Rs. 80/KG)	10000	10 (20 percent)	800000
	15000	20 (40 percent)	1200000
	20000	10 (20 percent)	1600000
Snake Gourd	15000	30 (60 percent)	600000
(Rs. 40/KG)	16000	5 (10 percent)	640000
	18000	15 (30 percent)	720000
Long Beans	5000	5 (10 percent)	350000
(Rs. 70/KG)	6500	5 (10 percent)	455000
	7500	15 (30 percent)	525000
	8000	25 (50 percent)	560000
Pumpkin	30000	25 (50 percent)	750000
(Rs. 25/KG)	35000	12 (24 percent)	875000
	40000	8 (16 percent)	1000000
Ash Gourd	20000	20 (40 percent)	500000
(Rs. 25/KG)	30000	18 (36 percent)	750000
Cucumber	15000	20 (40 percent)	750000
(Rs. 50/KG)	16000	24 (48 percent)	800000

Source: Primary Data

The yield and earnings of the sample farmers over the previous year are shown in the table. Long beans cost Rs. 70/kg, bitter gourd cost Rs. 80/kg, snake gourd cost Rs. 40/kg, pumpkin cost Rs. 25/kg, ash gourd cost Rs. 25/kg, and cucumber cost Rs. 50/kg. The price at which each farmer sold their veggies was identical since they all used the same marketing strategy or combined sale. For bitter gourd, 40% of the farmers obtained a harvest of 15,000 kg/acre, earning them up to Rs. 1200000. In terms of snake gourd, 60% of the sample produced 15000 kg/acre, yielding a profit of Rs. 600,000. In the case of long beans, 50% of the farmers receive 8000 kg per acre, or Rs. 560000. For pumpkin, 50% of farmers produce 30000 kg/acre, or 750000 rupees, each year. For ash gourd, 40% of the sample receives 20,000 kg per acre and makes Rs. 500 000 a year. For 48 percent of farmers growing cucumbers, the yield is 16,000 kg per acre, generating an annual income of Rs. 800,000. Their performance in the yield as well as income is truly commendable.

Table 6 : Annual Cost and Income

Annual Cost of Cultivation/Acre	Annual Income/ Acre (In Lakhs)	Number of Farmers	Gross Profit Margin Ratio
6 Lakhs	1500000	5	60 percent
8 Lakhs	2500000	12	68 percent
	3000000	5	73 percent
10 Lakhs	3000000	20	67 percent
15 Lakhs	4000000	8	63 percent

Source: Primary Data; Gross Profit Margin Ratio = (Revenue – Cost)/Revenue×100 percent

The analysis shown above substantiates the paper's main objective. If we look at the numbers, it is obvious that organic farming is quite profitable if the correct growing techniques are used. Regarding the expense of cultivation per acre, the farmers' responses largely fell into four categories: six lakhs, eight lakhs, ten lakhs and 15 lakhs. The percentage of profit made by farmers is determined using the gross profit margin ratio (GPMR). It is a profitability metric that displays, as a percentage of total sales, the amount of revenue that remained after costs were eliminated. Twenty farmers, who make up the bulk, paid an annual cost of cultivation of Rs. 10 lakhs/acre and made a profit of Rs. 3000000, as well as their GPMR is 67 percent. This translates as a profit of 60% above their cost, which is very alluring. The farmers receive the maximum GPMR, which is 73%, with a cost of cultivation of 8 lakh and an income of 30 lakh. To conclude we can undoubtedly state that the farmers are in fact earning much more than what they invest into organic farming.

Table 7 : Factors Affecting the Yield

Factors	Number
Natural Calamities	50
Lack of Finance	16
Crop Diseases	20

Source: Primary Data

Crop illnesses are not as common in their farming since they employ several organic and ayurvedic pest control methods. Natural disasters, which are incredibly unexpected, are the primary element that influences their output. Farmers are suffering significant losses as a result of the increase in the frequency of such catastrophes. Despite this, they undoubtedly make a good living, which greatly inspires younger generations.

Table 8 : Organic Pesticides Plus Growth Promoters Used in Farming

Pesticides Plus Growth Promoter	Number of Farmers Using these Fertilizers
Veppin Pinnak	21
Goat, Cow, Hen, Excreta	50
Kadala Pinnak	46
Panchagavyam	50
Haritha Kashayam	38
Gokrupamrudam	50
Pseudomonosis	19
Trychodarma	23

Source: Primary Data

The accompanying table lists the organic growth promoters that the farmers of Velankallu panchayath use in combination. These are employed as a pest control measure and to promote plant development. Instead of treating the problem after the infestation, they attempt to prevent it. The farmers also highlighted how expensive these combinations are. They purchase these from surrounding stores and collect some of the ingredients from their animals. Some of them, like Panchagavyam, are made by the farmers themselves and are consequently pricey. However, these organic pest control techniques ultimately prove to be quite successful and give us veggies that are safe to consume.

Conclusion

The following suggestions and recommendations may be noted.

- Low production relative to other farms using chemical fertilizers and pesticides is the primary issue for organic farmers. The farmers of Velankallu panchayath have introduced a workable solution to this issue which can inspire more farmers to enter this industry.
- Farmers are also quite concerned about the rising cost of labour and labour scarcity. The farmers of this panchayath used labourers from Bengal as local labourers were difficult to be found.
- A more advanced irrigation system can help farmers during drought situations thereby resolving their water needs.
- Farmers' losses will be reduced by taking precautions against natural disasters like crop diseases and insurance, both of which were lacking especially during the recent floods, which cost them greatly.
- The use of cutting-edge technologies can assist farmers in reducing costs, and time, and solve the issue of inadequate labour, which is the main problem they confront in this region.
- Also, the government should implement a system where there is a provision to certify these vegetables as organic so that they can get a higher price for their produce. The certification cost is high, especially to get the individual certification.
- There are a lot of unwanted rules to certify a farmer as organic. Even though their farming is completely pesticide and fertilizer-free, the government has put forward many other conditions to certify them as organic farmers. If this can be relaxed a bit, that too can encourage many others to enter this industry.
- The best way to earn maximum returns is through direct marketing. Any middlemen or government societies can only create hindrance in their income.

The analysis of Velankallu Panchayath demonstrates unequivocally that they do make a considerable profit from organic farming despite their high costs and other barriers. As a result, this study dispels the fallacy that organic farming is not profitable, which was raised at the beginning of the paper. It demonstrates that, with the right direction and assistance, it has a significant potential to boost farmers' profits and also enhance people's health. Finding answers to the aforementioned issues facing organic farmers is urgently needed, especially concerning Kerala agriculture, which is rapidly becoming a consumer state and is hence highly unsustainable.

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Introducing New Book

Colonialism as an Embodiment of 'Political Violence'

Amar Farooqui, *The Colonial Subjugation of India*, Aleph Book Company, New Delhi, 2022, xiv + 298 pages, Rs. 899/-

Saurav Kumar Rai

There was a time when writing a textbook was viewed as one of the primary responsibilities of seasoned historians. In fact, the finest ever textbooks on Indian history have been produced by some prominent historians of their time like R.S. Sharma, Romila Thapar, Satish Chandra, Bipan Chandra and Sumit Sarkar. While doing this, these historians played a key role in disseminating historical research among non-specialist readers. However, from the 1990s onwards, the diverse trends of historical research undermined the spirit of textbook writing as historians focussed more and more on specialist reading of historical topics. Historians now feel more passionate about their own topics of research and try to address only those readers who are equally interested in their respective topics of interest. Consequently, students these days have to rely either on yesteryear textbooks or on books written by non-specialist historians. This often leads to restricted, or even lopsided, sense of historical consciousness.

In the aforesaid context, the present book by Amar Farooqui fills more than one gap. First, written in a textbook fashion it offers a well-researched narrative of the colonial subjugation of India. Secondly, it has been written by one of the esteemed historians of our time and hence can be relied upon so far as the stated historical facts and their interpretation inside the text is concerned. Thirdly, while historians these days are focussing more and more on social and cultural interpretation of colonialism, Farooqui banks upon the erstwhile technique of viewing colonialism as an embodiment of blatant 'political violence'. Hence, what follows is a history of the formation of the Indian empire, the violence inflicted on the people of this part of the world to conquer it, and the instruments of coercion that were put in place to rule over it (p. xii).

The book through its various chapters shows that no matter what traditional accounts of British colonialism and monarchy may claim, 'the Empire was anything but benign'. It begins as early as from the arrival of Vasco da Gama from Portugal to the west coast of India. It then goes on to delineate the arrival of other European trading companies to India and subsequent trade rivalries among them which soon translated into widespread political warfare. While doing this it charts the rise of the English East India Company and its territorial expansion in India ensuing massive bloodshed. In fact, more than half of the present book explores closely the mechanism through which the English East India Company spread its tentacles in the Indian subcontinent thereby creating the most 'prized possession' among the British colonies spread across the globe. In this regard, various expansionist strategies evolved by the Company such as the system of subsidiary alliance launched by Richard Wellesley (pp. 60-61) or the infamous 'doctrine of lapse' enunciated by Dalhousie (pp. 148-52) find due attention of the author.

The present book also examines the 1857 interregnum and subsequent transfer of power from the East India Company to the British crown in fair detail (pp. 159-98). The author further explores the continued exercise of violence and coercion even after this transfer of power by looking at the strategies of imperial control (pp. 199-208), military organisation (pp. 209-226) and bureaucratic apparatus (pp. 227-41) of the Raj.

The book ends with a lucid Epilogue delineating shift of capital from Calcutta to Delhi. The author interestingly compares three major projects for building capital cities that were launched around this time in the British empire. Two of these, Canberra and Pretoria were for newly constituted colonial entities within the empire, respectively the Commonwealth of Australia and the Union of South Africa. The third was the project for the new imperial capital for India, New Delhi. Farooqui fascinatingly connects the three projects in terms of their designs, buildings and layouts (pp. 261-69). Besides, the Epilogue also contains a cursory glance over events between the outbreak of World War I and independence.

It is a welcome book for those interested in reading research-based yet lucid narrative of the colonial subjugation of India.

Stress of Migration: Case Study of Tea Garden Workers of North Bengal

Nabanita Bhowal

The tea industry in North Bengal, India, has been associated with poor working conditions and challenges faced by tea garden workers. While the tea plantations contribute significantly to the economy, the workers often face socio-economic hardships and lack access to basic amenities. They often receive low wages, which are often insufficient to meet their basic needs. The wages may not be commensurate with the labour-intensive work they perform, and many workers struggle to make a decent living. The workers often work long hours in physically demanding conditions, including exposure to harsh weather conditions, manual labour, and inadequate safety measures. They lack proper protective gear, leading to health risks. There have been reports of exploitation and unfair treatment of tea garden workers which includes issues such as bonded labour,gender-based discrimination, and inadequate representation in decision-making processes. The use of simple technology and heavy reliance on manual labour makes tea industry different from other industries. The isolation of plantation industrial setup and the dependence of its workforce gives some specific characteristics to its labour force. The paper tries to explore migration of workers and their physical and mental stress related to migration from tea gardens. The paper also explores the ethical issues related to the workforce of tea estates of North Bengal.

Key words : Tea Garden, North Bengal, Workers, Migration

Stress of Migration

In fact, the issue of immigration illustrates the dialectic of capital and labour through the continuous transformation of the working class and the form of conflict between labour and capital. It is worth noting that within this overall dynamic, the concept of the working class - the gravedigger of capitalism - has changed dramatically. Unusual but inevitable shift - so-called - to organized sectoral work? More and more “informal”? The problems that accompany churn are just the tip of the iceberg. Interestingly, this shift occurred at a time when the tea farming industry, while on the verge of mechanization, could not claim to have rid itself of its labour-intensive skill set. In fact, the plantation labour system was not only responsive to whatever vices the neoliberal labour reform discourse might offer, but actually appropriate. In addition to the frontal assault on workers’ rights and welfare, plantation management regimes across India are proving the merits of persistently low labour costs (through measures such as temporary labour, labour outsourcing, and in some cases labour force) and the redefinition of formal employment [promoting the idea of self-employment by using the STG (Small Tea Growers) model as a parallel discourse of dynamic, entrepreneurial and capital accumulation domains]. Policies such as promoting workers’ entrepreneurial visions by making them shareholders aim to distract workers from labour exploitation and a labour rights framework in which workers are viewed as potential partners of the company (which is what happens in tea plantations run by Tata Global Beverages Ltd.). The disconnect between labour and capital accumulation processes and politics became evident throughout the North Bengal Tea Belt, where new “ethical” tea trade movements awakened notions of civil society, human rights, re-democratization and growing political ambiguity. This emphasizes the role of NGOs, self-help groups and Small Producers Organizations (SPOs) in creating and affirming appropriate labour institutional discourses (implying “resocializedlabour” adapted to contemporary capitalism) in support

of hard-working “ethical trade “Agribusiness. Not surprisingly, the various bodies of these global commodity chains and global value chains disseminate information about ethics, worker-friendly production systems and direct benefits through various forms of certification or agreements (Fairtrade, Ethical Tea Partnership and TRUSTEA, etc.) Minimizing the gap between producers in the southern hemisphere and consumers in the northern hemisphere increases workers’ incomes. All these new “moral” alliances in the global tea trade are directed at labour, but pay little attention to labour’s class dynamics. Jobs referred to in these new arrangements are essentially a depoliticized group, with the assumption that increased competitiveness at the firm level will lead to a win-win situation of higher capital gains and better wages for jobs. Interestingly, many tea plantations in North Bengal, despite being certified under this new global commodity chain framework, still have an astonishingly low wage structure for tea plantation workers, despite the so-called “labour-friendly” global value chain networks are on their agenda. There is nothing specific about it (Sarkar 2019).

One of the obvious effects of the continuous shift of active labour force from North Bengal tea plantations to other places is the shortage of labour in most of North Bengal’s tea plantations. Interviews with managers of various gardens, tea research association representatives and union leaders gave the impression that healthy gardens (e.g.Songachi, Dooars in Marbazar) had moderate absenteeism (according to Songachi TE office records, it 25 percent), while absenteeism rates are higher in Sick gardens (up to 55 percent in Kilcott TE, according to bureau records). Union (TU) sources mentioned that the migrants from Terai estates like Gangaram, Panighatta and Gayaganga are close to 70%. For the most part, the labour shortage in North Bengal plantations has been attributed to the rising immigration sweeping across the tea belt. Management likes to promote this “labour shortage” theory because it helps them unwind their workforce, which reduces overhead per job and ultimately drives the wage structure further in their favour. TU bowed to the situation and accepted the management’s pragmatic stance on labour shortages while insisting on their demands and mobilizaton to secure the long overdue Minimum Wage (MW) for plantation workers. The TU-mongers seem convinced that the lack of MW and other PLA 1951 benefits is a “push factor” forcing the exodus of the workforce; they are unable/unwilling to address this with the required political acumen. Indeed, with each new group of migrant workers, they are losing exciting young people who would have cemented TU’s ongoing struggle. The more dispersed work is, the less resilient it is. The spread of the perception of scarce labour has also steered labour management in the tea plantations of North Bengal towards potential work disabilities. The deputy director of the Dooars Nagrakata Tea Research Association gave us a clue. To quote him:

“In the absence of manpower, the management has had to welcome picking machines. Given the reality of rampant loss of tea estates, harvesting machines are becoming the order of the day and machine picking will soon be the norm for the entire Dooars tea region trend.” The deputy director is basically repeating that the government and the tea committee have already started discussing this issue. The 102nd report (2012) of the Parliamentary Plantation Performance Committee advocated the start of mechanization of tea gardens amid labour shortages as follows: Apart from field work such as picking, pruning and spraying, plantation is very labour-intensive (sic in this way). Labour shortages are severely hampering ongoing day-to-day activities, adversely affecting crop productivity.… The Committee also considers that mechanization of all tea operations is critical to the growth of the tea industry in the light of labour shortages and rising labour costs, accounting for approximately 60% of production costs (2012, 34-35) (Sarkar 2019).

Experiences of Migration

How can the workers of North Bengal tea plantations aspire for social justice and equality of opportunity in order to claim freely their fair share of the wealth that they have helped generate? We presume that work is not merely a negotiable commodity that fetches the highest profits for the lowest price. Work instead forms the core of one’s life world - a crucial component of actualising one’s self respect, dignity, wellbeing and livelihood. In this sense, no economic enterprise - whether a tea plantation or any other sector - could be a self-propelling one. The International Labour Standard perspective also reminds us that all economic

enterprises are to be undertaken not for their own sake but for the overall improvement of the lives of those whose contributions keep the enterprises rolling (ILO 2014: 10). How then to promote decent work and appropriate International Labour Standards in closed, abandoned, sick and even healthy tea plantations of North Bengal? A modicum of which, we believe, could contribute significantly in ameliorating the conditions of plantation labour and save them from their everyday vulnerabilities. An attempt was made to assess the tea estates in the light of decent work indicators as suggested by the ILO. The check list recommended by the ILO contains forty-nine questions. We put these questions to workers from different types of tea estates and documented their responses. The score sheet revealed alarming conditions. While closed and sick gardens were expected to fare poorly on decent work parameters, it is the score sheet for the running TEs that was really depressing. The running TEs secured twenty-three points, the sick estates scored twenty-two and the closed ones eleven. The country-wise score for India stands at thirty-eight. As per the criteria of decent work and their reflection in the forty-nine questions, the worst situation prevails in the closed gardens, followed very closely by the sick and running ones with almost equal scores, implying that there is ample room for improvement (Sarkar 2019).

Santi Sarkar and Khoka Mali write about the tea gardens in North Bengal, and the migrations that enable them. This article takes into consideration the disparity in wages, in the payment of provident funds of the tea garden employees and the need for subsistence that send people out of the tea gardens, those who are the children of already migrant workers (Sarkar and Mali 2020).

Workers' Perceptions of their Work Environment After Migration

The concept of outmigration - projected through facts, figures and narratives - probably requires a few more comments especially when one is to think in terms of policies that may adequately redress the problem. Clearly, the arguments raised in the paper are not in favour of propositions that views plantation labour in terms of its radical exteriority to neoliberal labour regimes. On the contrary, it is argued that the political-economic mélange of people in flux - of outmigrants, trafficked, floating, latent, stagnant and pauperised populations - cannot be understood in isolation from the fundamentals of capitalist accumulation and the governing influence of neo-liberalism upon the tea industry as a whole. To conceptualise the issue of outmigration, two further comments are in order. Firstly, the need is to adopt a perspective on labour as a whole in the tea plantation industry and not on plantation labour per se. Hence the attempt made in this paper to show that the trajectory of plantation labour in North Bengal is far from linear or one that leads to a 'pure' form of wage labour. This was highlighted by the variety of labour regimes present, and the various forms in which plantation labour is incorporated into the circuits of capitalist tea economy, with blurred boundaries between the different categories of free and unfree labour. Secondly, to think in terms of a policy perspective for redressing the problems of outmigration and trafficking, at a time when precarious work conditions appear to be the 'new normal' for the plantation labour, one has to be careful about the approach taken to ameliorate the conditions of the working class in the plantations. The plantation labour issue is already overshadowed and bypassed by quick-fix, welfare-centric solutions - the governing principles of citizenship politics. What the workers need is not welfare nor are they aspiring for entitlements to be bestowed upon them for enhancing their capabilities or their skills in taking initiatives; they do not even need policies and programmes for alternative skill development. However, this is the approach currently in operation. The government is keen to promote citizenship politics at the cost of the politics of labour and displacement. Plantation politics - when viewed from the vantage point of the workers - is all about the workers' rights. Is it not at all possible to reach the domain of full citizenship entitlements via the domain of labour rights? Can't we address the fundamental questions of employment, wage and security for the plantation labour before channelizing huge amount of funds for sundry development initiatives? (Sarkar 2019).

The marginalized position of labour - a natural outcome of capitalism's foundation that talks about a radical separation between capital and labour - characterises the social system of the plantation even today. The 'margin', a necessary entailment of capitalism, was constituted by the history, sociology and politics of

plantation labour, and led to various forms of ineligibility, partial belonging, and disorder - conditions either endorsed by the plantation authority or emanating from within the plantation as a capitalist system. This is, however, not to suggest that plantations are static systems composed of a stagnant labour force. In fact, a plantation is a part of a wider social system and any change in the latter will cause a corresponding change in the prevailing production relations (Bhowmik 1981). This framework helps us understand the nature of the changes that have occurred after independence as the ownership, authority and control of the plantation passed on from the colonial capitalists to the native entrepreneurs of the newly independent nation. It needs to be emphasized that the immediacy of independence did not challenge or obstruct the class basis of the plantation system. Though Government laws (such as the Plantation Labour Act 1951, Employees Provident Funds Act Payment of Gratuity Act 1972, Equal Remuneration Act 1976, Child Labour Prohibition and Regulation Act 1986 etc.) were passed and some degree of security was introduced, the labour still remained at the 'margin'; in contemporary times, the marginalization has taken new shapes and given birth to new problem areas. After independence, plantation labour came under the purview of the organised sector - labourers were allowed to form or participate in associations/labour unions and their concerns were taken care of by the law of the state. Along with these modernizing forces, communication, media, and development initiatives have also penetrated into the so-called isolated captive plantations of North Bengal. Several studies have shown that the tea estates of North Bengal, barring a few exceptions, have failed to provide 'decent work conditions' to the huge number of workers they employed, the majority of them belonging to marginalized and resourceless tribal communities (Prasanneswari 1984; Abhishek Dacholia et al 2006; Bhowmik 2009). More than a thousand deaths were reported to have occurred due to starvation and malnutrition in several shut-down tea estates of Dooars (Kathalguri, Red Bank, Bundapani, Bharnobari, Dheklapara, Lankapara and Surendra Nagar, to name some) during the last decade; this bears testimony to the gross failure on the part of owners to provide good work conditions in the plantations of this region. This is forcing the workers - half of whom are women - to migrate outside in search of livelihood, often ending up falling prey to women traffickers (Biswas et. al. 2005; Chakraborty 2013; Ghosh 2014). All these have influenced the mobility of plantation labour to a significant extent. People moving out of plantations in search of better livelihood options is not an unusual phenomenon in the North Bengal tea belt, nor is it surprising to experience among the younger generation - irrespective of their level of education - an attitude of aversion towards plantation work. There have been isolated cases of plantation workers turning into peasants or becoming self-employed or picking up petty business in the nearby urban spaces, or getting a government service and thereby leaving the plantations permanently. The point is that the instances of outmigration of this sort are symptomatic of the fact that the 'captive labour' syndrome possibly no longer applies to plantation labour today. Historically, women workers have heavily dominated the working population in tea plantations in India, and contemporary trends reveal that the proportion of women workers has actually increased from 49% during 1990-95 to 55% during 2002-2007 (Viswanathan & Shah 2013, 22). In the sick, abandoned and closed tea plantations, susceptibility to trafficking increases manifold. The girl/women workers easily fall into the trap of trafficking agents, operating openly as 'placement agents' within and outside the plantations (Biswas et. al. 2005; Dachoia et. al. 2006). Faced with such crushing poverty, the young girls and women often become ready to move to far away places with parental consent and support. These may be treated as instances of voluntary migration (implying choice on behalf of the incumbent migrant) that varies on a case-to-case basis. In the true sense these sporadic instances can be seen as isolated individual cases that defy the pattern of large-scale outmigration - one that has typically characterized the entire tea belt of north Bengal for more than a decade now (Sarkar 2019).

Conclusion

The migration of tea garden workers from North Bengal, to other cities is a significant phenomenon. North Bengal is known for its tea plantations, and many workers from these tea gardens migrate to other cities within India in search of better employment opportunities and improved living conditions.

There are several reasons behind this migration:

Limited job opportunities: The tea gardens in North Bengal often employ a large number of workers, but the availability of permanent employment is limited. Due to the seasonal nature of tea cultivation, workers may face unemployment or underemployment during certain periods. This pushes them to seek alternative sources of income in urban areas.

Better wages: Tea garden workers often face low wages and poor working conditions. The lure of higher wages in cities motivates them to migrate in search of better-paying jobs. Cities offer a wider range of employment options in sectors such as construction, manufacturing, hospitality, and services.

Education and healthcare facilities: Many tea garden workers face challenges in accessing quality education and healthcare services in remote rural areas. Migration to cities provides better educational opportunities for their children and improved healthcare facilities for their families.

Urbanization and aspirations: Migration to cities is often driven by the desire for a better lifestyle and the aspirations for upward mobility. Workers may see cities as centers of economic growth, improved infrastructure, and a better quality of life.

However, it's important to note that migration also brings its own set of challenges for tea garden workers. They may face difficulties in adapting to the urban environment, including finding suitable housing, accessing social welfare benefits, and dealing with cultural differences. They may also face issues related to labour rights, exploitation, and discrimination.

To address the challenges faced by migrating tea garden workers, there is a need for government interventions and policies that focus on providing social security, skill development programmes, and ensuring fair wages and working conditions. Additionally, efforts should be made to improve the socio-economic conditions in the tea gardens themselves, to reduce the need for migration by creating more sustainable livelihood options locally.

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Water Sources of Domestic Households in Different Altitudes

Prabhavathy. C

Water scarcity is the lack of fresh water resources to meet water demand. It is manifested by partial or non satisfaction of demand, economic competition for water quantity or quality, disputes between users, irreversible depletion of ground water, and negative impacts on the environment. On the basis of the availability of water in a year, period is divided into two- normal and scarcity. The normal period is the period of time in which households are getting enough water to meet their domestic requirement without any financial burden. The scarcity period is when people are not getting enough water to meet their basic household requirements. In this period due to the non availability of water to meet their basic requirements people are facing different problems. In different altitudes, domestic households are depending on different sources. To find out the gravity of water scarcity a study has been conducted. Based on the objective hypothesis was tested. The result shows that there is significant variation in the dependency on sources of domestic water with respect to altitude in normal and scarcity period. To test the hypothesis major sources of water supply in all the three study area were classified on the basis of altitude which includes well, public water connection, public tap, tube well or bore well, rain water sources, protected spring, market sources and mobile water sources of the public authority, market sources of the water vendors and surface sources. Cramer's V is used for statistically testing the difference in source of domestic water among households on the basis of altitude during normal and scarcity period. The result shows that there is a significant difference in the source of domestic water on the basis of altitude both during normal and scarcity period because the level of Cramer's V is less than 0.05

Key words : Water Scarcity, Domestic Households, Water Accessibility, Market Source of Water

Water resource is critical for both humanity and the ecosystem as it is vital to all the sectors such as household sector, agriculture sector and industrial sector to meet the various requirements. Health and development are interlinked. Healthy development of a community depends on the availability of adequate and safe water. Water scarcity is an important factor which influence the economic condition and living standard of the household. Inadequate water causes 5,02,000 diarrheal deaths per year in low and middle income countries and for children below five it leads to 361000 deaths per year (WHO Fact sheet-9th Dec, 2018). A country is considered as water scarce if it reaches the point of seasonal or regular water stressed conditions below 1,700 m^3 annual per capita availability. Per Capita availability of water below 1,000 m^3 will affect human health, wellbeing, and economic development (Falkenmark (1998). Water scarcity imposes many types of burden to the households. Long time spent on water collection has harmful health consequences for women and children besides leading to the loss of school going days among children. Another consequence of water scarcity is that many households are forced to shift their dependency from costless public sources to private sources which in turn increase the financial burden of the households and this reduces the real income of household. It also reduces the proportion of income spent on other necessaries and convenience of life including food. Another consequence of water shortage is that due to the lack of sufficient water to

meet routine requirements of households they are forced to leave their occupation which seriously affect their marginal productivity and income of the households. United Nations General Assembly proclaimed access to water and Sanitation as basic human right. From the pilot survey it has becomes evident that considerable number of respondents suffers from domestic water scarcity. Therefore, an elaborate survey was conducted to find out the real victims of water scarcity and to analyse the different sources which are dependable.

Objective of the study

To study the gravity of water scarcity in different altitude in different periods.

Hypothesis

There is significant variation in the dependency on sources of domestic water with respect to altitude in residential areas of the household.

Methodology

To achieve the objective of this study both primary and secondary data were collected and used. The Economic Review published by the State Planning Board of Kerala since 2000, Report of the Water Resource Department and the Central and State Ground Water Department since 2000, Reports published by the Central and State Ground Water Authority, Articles, Journals, Books etc have been consulted for the study. Since these secondary data did not provide any data on the true picture of water scarcity faced by the households of different altitudes, a primary survey was also conducted.

The study was conducted in three areas of Kollam District in Kerala State. In order to study the economic consequences of water scarcity among the households, the major sources depended on by the households both during normal and scarcity periods were studied. On the basis of the availability of water in a year, period was divided into two-normal and scarcity. The normal period is the period of time in which households are getting enough water to meet their domestic requirement without any financial burden. Normal period is between June and November in a year. Where as the scarcity period is when people are not getting enough water to meet their basic household requirements. Scarcity period is between December and May. From each of the three areas a sample of 130 households were selected on the basis of multi stage stratified random sampling method. The total number of samples selected from all the three regions amounted to 390 households. The survey was carried out by using a questionnaire. This study design was chosen in order to measure the variation in the dependency in source of water with respect to altitude with in the economic conditions of the household during normal and scarcity period .The study intends to examine in detail if there was any prominent change in the source of dependency during these two periods on the basis of altitude. The intention behind this study was also to find out the region which had access to large number of sources during scarcity period and if there was any dependence on the market source. Application of Cramer's V for statistically testing the difference in source of domestic water among980 households on the basis of altitude both during normal and scarcity period was used.

Sources of Water Supply Available to Households of All the Three Regions

Water is not a scarce resource throughout the year. Climatic condition has a significant influence on the availability of water. Its availability varies based on the climatic condition. The rainy season which lasts nearly four months is abundant with annual rainfall of 3000 mm (119 inches), the bulk of which (65%) is received during the South West monsoon which sets in by June and continues up to the end of September. Where as in June and July due to the heavy influence of south west monsoon heavy rain is received. During this period, water resource is surplus and is considered as water surplus period. And gradually rainfall rate begins to decline and reached a normal stage. During this period availability of water become normal and this period is termed as normal period. From December onwards households do not get the required quantity of water and this time period is termed as the scarcity period.

The study examined the sources of water supply available to all the three regions during the normal and scarcity period. It was found that 11 sources were available to all the regions. These include

1. Own well
2. Public connection
3. Public tap
4. Household tube well/bore well
5. Public tube well
6. Rain water sources
7. Neighbours' Well
8. Mobile water source of public authority
9. Market source of water vendors
10. Protected spring
11. Surface water

Monthly Variation of Water Scarcity

In order to study the monthly water scarcity among households in each region, the respondent were asked about the number of months and specific month in which the households were facing water scarcity. Based on that a monthly analysis of water scarcity has been undertaken and the result of the same has been presented in the table 1 to 3.

Table.1 : Month Wise Distribution of Households Facing Water Scarcity

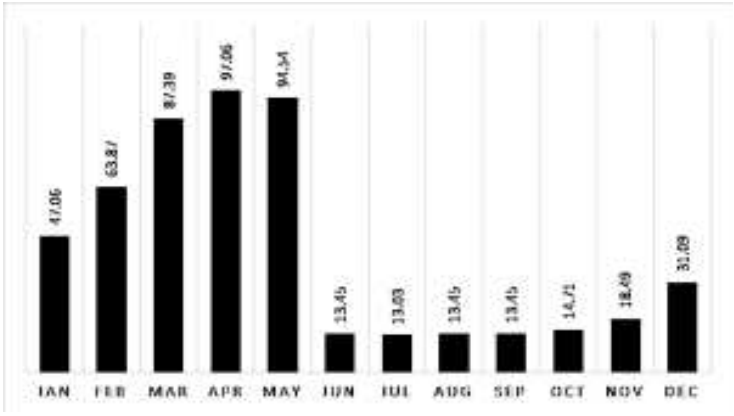
Sl. No	Months	N	%
1	January	112	47.06
2	February	152	63.87
3	March	208	87.39
4	April	231	97.06
5	May	225	94.54
6	June	32	13.45
7	July	31	13.03
8	August	32	13.45
9	September	32	13.45
10	October	35	14.71
11	November	44	18.49
12	December	74	31.09

Source : Field Survey

From the table it can be seen that out of 390 households, 47.06 percent have water scarcity in the month of January. The percentage of households facing water scarcity had increased to 63.87 percentage during February. The percentage further increased to 87.39 during March and to 97.06 percentage during April. The percentage of households facing water scarcity was reduced to 94.54 percentage during May.

The reduction in the percentage of households facing water scarcity during May was due to the influence of summer rainfall. But from June onwards the water scarcity suddenly reduced to 13.45 percent. The reason for the sudden reduction in the water scarcity is due to the onset of Monsoon. The low level of water scarcity remained almost stable during the succeeding three months from July to September. According to the report of Meteorological Department of India (2000), during June and July 65 per cent of rainfall was received from the influence of South West Monsoon and there was surplus water availability during this period. From the table 1 it can be seen that during these months about 13 percent of the households reported that they are facing water scarcity because of the fact that most of them are old people with poor physical conditions living isolated from their dependents.

Figure 1 : Month wise distribution of households facing water scarcity



From August to October availability of water is considered to be normal because during this period water availability is sufficient for the consumption. The percentage of water scarcity began to increase from October onwards. In October it increased to 14.71 percentage which is higher than that of September by 1.26 percentage. In November, water scarcity increased to 18.49 which are 3.78 percentage higher than that of October. In December the scarcity level increased by 12.6 percentage and reached 31.09 percentages.

From the analysis it can be concluded that in Kerala water scarcity is faced by majority of the households for more than six months in a year. Of this, most number of households face acute water scarcity during the months of March, April and May. Even in water surplus months of June and July 13 percent of the physically disabled and old age people face water scarcity.

The following table shows the distribution of households by their source of water during normal period on the basis of altitude.

Table. 2 : Distribution of Households by Their Source of Water During Normal Period on the Basis of Altitude

Source of Water	High land		Middle land		Low land	
	N	%	N	%	N	%
Own Well	119	91.54	108	83.08	107	82.31
Public connection	0	0.00	18	13.85	7	5.38
Public tap	0	0.00	3	2.31	14	10.77
Household tube well/bore well	7	5.38	7	5.38	1	0.77
Public tube well or Tube well or bore well	2	1.54	8	6.15	0	0.00
Rain water source	0	0.00	3	2.31	0	0.00
Neighbours well	6	4.62	10	7.69	14	10.77

Mobile water source of public authority	0	0.00	0	0.00	0	0.00
Market source of water vendors	0	0.00	0	0.00	1	0.77
Protected spring	1	0.77	0	0.00	1	0.77
Surface water (river, dam, etc)	2	1.54	0	0.00	0	0.00
Cramer's V	0.282					
Sig.	0.000					

The above-mentioned table shows that own well is the predominant source of water among all the three categories of households during normal period. During this period 91.54 percentage (n=119) of the households in high land, 83.08 percentage (n=108) in the midland and 82.31 percentage (n=107) in low land were depending on this source for their domestic requirements. The second major source of dependence however differs among all the three categories. Among the households of high land 5.38 percentage depend on tube well and bore well while in the mid land the secondary source of water is public connection provided by Kerala Water Authority where 13.85% depend on this source. While among the households living in the low land area there are two secondary sources which include public tap and neighbours well with 10.77% of the household from this region depending on these two sources each. The third main sources for the households of highland area neighbours well with 4.62 percentage of the households depending on it while 7.69 percentage from the midland depend on this source. However, the third dependable source of water for the households of low land area is the public connection with 5.38% depending on it during the normal period. Application of Cramer's V for statistically testing the difference in source of drinking water among households on the basis of altitude during normal period also reveals a statistically significant difference because the level of Cramer's V is less than 0.05.

Distribution of Household by Their Source of Water During Scarcity Period on the Basis of Altitude

From the pilot survey it become evident that the source of dependency varied among households during normal and scarcity period. The study therefore intends to examine in detail if there was any prominent change in the source of dependency during these two periods on the basis of altitude. The below given table show the distribution of households by their source of water during scarcity period.

Table 3. Distribution of Households by Their Source of Water during Scarcity Period

	High land		Middle land		Low land	
	N	%	N	%	N	%
Own Well	113	86.92	45	34.62	81	62.31
Public connection	0	0.00	0	0.00	4	3.08
Public tap	0	0.00	0	0.00	17	13.08
Household tube well/bore well	5	3.85	9	6.92	4	3.08
Public tube well or Tube well or bore well	1	0.77	11	8.46	0	0.00
Rain water source	1	0.77	17	13.08	0	0.00
Neighbors well	26	20.00	16	12.31	46	35.38
Mobile water source of public authority	19	14.62	25	19.23	3	2.31
Market source of water vendors	0	0.00	93	71.54	8	6.15

Protected spring	3	2.31	0	0.00	0	0.00
Surface water (river, dam, etc)	18	13.85	3	2.31	4	3.08
Cramer's V	0.529					
Sig.	0.000					

Source: Field Survey Result

The above table shows that own well which was the predominant source of water supply for both the households of high land and low land areas during the normal period is still the most dependable source even during the scarcity period with 86.92% and 62.31% percentage of households using their own well for all their domestic requirement. Whereas about of 83.08% of the households from midland who were using own well as their primary source during normal period 71.54% have shifted to market source during scarcity period..

Among the various sources of water available to the households, dependence on market source is likely to have socio-cultural, psychological and economic impact on the households of midland area. This over dependence on market sources reduces the income of the households available to be spent on other goods. Economic water scarcity looms large in the midland region and the impact is clearly visible from the analysis of two tables shown above. In the table the secondary source of water for households in the midland during normal period was Public connection which on the average costs only Rs 60 per month whereas acquiring domestic water from market source for bathing, washing costs Rs 2.14 per litre. According to the Gleick index the quantity of water required for these two activities are 35 litres per person per day (Bathing 15 litres and Washing 20 litres) which in turn would cost Rs 74.90 (2.14*35 litres) Drinking water needed per person per day is 5 litres. Present market rate of drinking water is Rs 20 per bottle of one litre which would amount to Rs 100 per person per day. Thus the total cost incurred per person per day for those completely depending on market source for these activities would be Rs 174.90/- According to the UN General Assembly of Human Rights to water and Sanitation water source has to be within 1000 meters of the home and collection time should not be more than 30 minutes and water cost should not exceed 3% of the household incomes. In the case of the residents of midland these norms have been flouted.

This overdependence on market source by the residents of midland is due to the non-availability of water in their own wells and in public connection during scarcity period. Studies reveal that over dependence on piped water means lack of water provision. This is evident from the table that none of the households from high land nor from the mid land depend on public tap. Most of the water infrastructure including public taps in the areas of midland are aged and plagued with maintenance issues. The consequence of this water shortage can be seen from the table where people shift from pubic tap to private connection. Some households are digging of own wells which in turn increases the financial burden of the low income families. Most of the people being poor they have no adequate means to bear the installation cost of the alternative source of water. On the otherhand, if public authorities could provide water of WHO standards, then this expenditure could have been avoided. This further shows that among the three regions, temporary water trading has become prominent during scarcity season which calls for the immediate attention of public authorities. The secondary source of supply for the households of highland and low land are neighbours' well and own well respectively. 20 percentage from the high land and 35.38 percentage from the low land area are depending on the neighbour's well. Where as in the mid land the secondary source of water is own well, with 34.62 percentage of the households from this region depending on this source. 14.62 percentage and 19.23 percentage of the households from the highland and midland depend on mobile water sources of public authority as their third means of water supply. However, the third main water source for 13.08 percentage of the households of low land area is the public tap. The significance level of Cramer's V is less than 0.05, which indicates that there is significant difference in the use of water sources among various categories of households during the scarcity period was statistically tested and proved. Institutional failure is one of the reasons behind this crisis.

Conclusion

In this study, an attempt was made to examine the various sources of domestic water supply available to households in normal and scarcity periods. Based on the objective, hypothesis was tested. The result shows that there is significant variation in the dependency on sources of domestic water with respect to altitude in normal and scarcity period. To test the first hypothesis major sources of water supply in all the three study area were classified on the basis of altitude which includes well, public water connection, public tap, tube well or bore well, rain water sources, protected spring, market sources and mobile water sources of the public authority, market sources of the water vendors and surface sources. During normal period, own well was the predominant source of water supply among all the three categories of households. However, this source still remain the most dependable source for households of highland and low land even during the scarcity period with 86.92% and 62.31% percentage of households using their own well for all their domestic requirement**.** Whereas out of 83.08% of the households from midland who were using own well as their primary source during normal period 71.54% have shifted to market source during scarcity period. Most of the water infrastructure including public taps in the areas of midland are aged and plagued with maintenance issues**.** During the normal season none of the households from midland depended on market source but during scarcity period 71.54 percentage of the households from midland relied on this source. This shows the households are forced to spend on water for meeting their day to day requirement during scarcity period thereby affecting the proportion of income spent on other goods. Cramer's V is used for statistically testing the difference in the source of domestic water among households on the basis of altitude during normal and scarcity period. The result shows that there is a significant difference in the source of domestic water on the basis of altitude both during normal and scarcity period because the level of Cramer's V is less than 0.05

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From Crypto Currency to CBDC: The Transformation of the Virtual Currency Concept

Raju Narayana Swamy

Cryptocurrency shows the potential of completely decentralized communities. By combining cryptography, economics, code and networks, it creates something as fundamental and critical as money. Unlike modern currency which is a creature of law, cryptocurrency does not require faith in any public institution. The most remarkable thing about it is how it enables a global crowd of people and organizations all acting in their own interest to create something of immense shared value. Needless to say it sparked a wave of innovation and entrepreneurship. But despite ample worldwide enthusiasm, it did not meet with remarkable success. The failure occurred not because of intractable problems with mining or newly discovered vulnerabilities of the cryptocurrency, but for organizational reasons. The article analyzes this concept of virtual currency through a techno-legal lens particularly in the backdrop of the judgement of the Supreme Court in the case Internet and Mobile Association of India Vs RBI.

Keywords : Crypto Currency, Block Chain, Bitcoin, CBDC

Introduction

Crypto currency is an internet-based store of value, which is used and created for much the same purpose as physical currency, yet crypto currency has no physical representation in reality - it is created, stored and transacted electronically. It is a digital asset designed to work as a medium of exchange that uses strong cryptography to secure financial transactions, control the creation of additional units and verify the transfer of assets. Unlike traditional currency and financial instruments, it is not issued by a central bank. Rather anyone can attempt to "mine" it by using computers programmed to guess answers to a computational puzzle. It is thus neither a commodity currency (backed by gold or some other commodity) nor a fiat currency (used by convention as a result of a legal edict). It is fundamentally designed to bypass the established financial system. The objective for circumventing banks' intermediation finds basis in

(i) lack of bank's trustworthiness

(ii) costs charged by banks and

(iii) tracking of transactions.

The key characteristics of cryptocurrency are decentralization, anonymity and borderlessness. What makes it remarkable is that it settles the most controversial issue - who owns wealth - without the need for a law enforcement apparatus.

The Financial Action Task Force (FATF) defined a cryptocurrency as "a math based decentralized convertible virtual currency protected by cryptography by relying on public and private keys to transfer value from one person to another and signed cryptographically each time it is transferred."

Cryptocurrencies work with blockchain technology which ensures its security. Hash rate determines the degree of security of cryptocurrencies - the higher the hash rate, the lesser chance of security breach. With the highest hash rate of any network, bitcoin is considered the most secure cryptocurrency. A user of cryptocurrency chooses a private key, which is kept secret with him and generates a corresponding public

key which is shared with the world. Any payments made by the user are made using the private key, but any payment to be received is sent to the public key, known to the world.

The concept of cryptocurrency was first proposed by David Chaum, an American cryptographer, in 1983, as a way of creating electronic cash. Crypto currency transfers are instantaneous and borderless and many have been designed so that users can transact in relative anonymity.

The Satoshi Nakamoto Paper

On October 31, 2008 , a person or group going by the name Satoshi Nakamoto posted online a short paper titled "Bitcoin: A Peer -to - Peer Electronic Cash System." It addressed a straightforward question: Why do online payments have to involve banks, credit card companies and other financial intermediaries ? Why can't they be like cash payments in the physical world? As bitcoin transactions happened, Nakamoto proposed, they would all be recorded in a ledger that logged exactly which bitcoins were spent and the pseudonymous identity of both the buyer and seller as verified by their signatures. A universal, easily consultable ledger was essential for the bitcoin system in order to deal with the "double spend problem". This problem arises because bitcoins are purely pieces of information, yet it is essential that they do not all follow the free, perfect and instant economics of information goods. If bitcoins could be freely, perfectly and instantly copied, forgery would be rampant. Needless to say, a trusted universally accessible online ledger would solve the double spend problem by enabling merchants to verify that a prospective buyer actually has the bitcoins they say they do and that they haven't been already spent anywhere else.

But the billion dollar question that arose is: Who should be responsible for creating, maintaining and ensuring the integrity of this ledger? It cannot be a bank or credit card company because the whole point of the proposed system is that it could not rely on existing financial institutions or on governments. In fact, it had to operate in a completely decentralized way. By an ingenious combination of mathematics and programming, Nakamoto proposed an online system that would work as follows:-

1. As each transaction between buyers and sellers happens, it is broadcast throughout the system.
2. Specialized computers called "nodes" periodically collect all the transactions and verify that they are legitimate. The set of good transactions over a period of time is called a "block".
3. The nodes are also involved in a competition with each other consisting of trying to find a short numeric summary called a "hash" of the current block.
4. The winning node broadcasts its just finished block throughout the system. As its reward it is allowed to create and keep for itself a predetermined number of bitcoins.
5. Other nodes double-check this block.
6. Once nodes convince themselves that a block is correct and complete, they start putting together the next one and carrying out its proof of work and the entire block creation process starts all over again.

Many readers of Nakamoto's paper came to believe that the system he described could actually be built and would be valuable.

In May 2010, Laszlo Hanyeez, a programmer living in Florida posted a request on a bitcoin forum to trade 10000 bitcoins in exchange for a couple of pizzas. Four days later, 18 year old Jeremy accepted the offer and purchased the food via the Papa John's website. This was the first known trade of bitcoin for a physical product and gave the fledgling currency a value of about $.003 per bitcoin as Jeremy paid $ 30 for the pizza.

Skepticism of Mainstream Economists

Throughout this time, most mainstream economists were skeptical of bitcoin's potential as a rival to

the world's established currencies. Two of the main functions of any money, they pointed out, were a means of exchange and a store of value. For both these functions, stability of the currency is critical. But the value of the bitcoin fluctuated wildly and this volatility made the digital currency unsuitable as a mainstream means of exchange.

Apprehension prevails that if one or more private currencies are allowed, that may lead to a parallel currency system in the economy, which may result in "dollarization." If most people in a country start using cryptocurrencies, the central bank would lose the sole authority to print money - nay lose the significant power to control money supply and liquidity in the market. This in turn would hamper the ability of the bank to ensure macroeconomic stability of the country. Cryptocurrencies do not have an issuer, they are not an instrument of debt or commodities nor do they have any intrinsic value. Thus they can act as currency only in a private environment and not on a national scale.

Worries about cryptocurrencies range from issues of irreversibility and of investor protection to those of national security. On the investor protection front, there are concerns that speculative investments in cryptocurrencies could adversely affect innocent investors. Given the virtual, anonymous and decentralized nature of cryptocurrencies, it is feared that they may circumvent rules concerning Know Your Customer (KYC), Anti Money Laundering etc. As regards national security, there is a concern that cryptocurrency could be used for terror financing. This is because while the original purchase of the currency could be traced, any subsequent transaction is extremely difficult to detect. They have been linked to illicit cyber activity for some time and have become common bartering tools for illicit goods and services on dark marketplaces such as Silk Road, Alphabay and Valhalla. These platforms allow consumers to purchase items such as drugs, weapons, cybercrime-as-a-service, hacking tools, malware, stolen credit card details and compromised usernames and password combinations using bitcoins.

Cryptocurrencies, such as bitcoin and ethereum, are also involved in the facilitation of ransomware attacks, where users are prevented from using their systems until a ransom is paid. It is also worth mentioning here that advanced economies being mature markets may withstand disruptions by cryptocurrencies whereas India may not. However, the proven benefits of cryptocurrencies must also be acknowledged - low cost transactions, transparency, speed, security, cross-border nature, lack of the need for a middle man, investment profits and portfolio diversification.

To summarize, cryptocurrency shows the potential of completely decentralized communities. By combining cryptography, economics, code and networks, it creates something as fundamental and critical as money. Unlike modern currency which is a creature of law, cryptocurrency does not require faith in any public institution.The most remarkable thing about it is how it enables a global crowd of people and organizations all acting in their own interest to create something of immense shared value. Needless to say it sparked a wave of innovation and entrepreneurship. But despite ample worldwide enthusiasm, it did not meet with remarkable success. The failure occurred not because of intractable problems with mining or newly discovered vulnerabilities of the cryptocurrency, but for organizational reasons.

Legal Nature of Cryptocurrencies

The status of cryptocurrency has to be analyzed in the backdrop of the following Acts:

1. FEMA 1999
2. The Federal Reserve Bank of India Act 1934 (RBI Act)
3. The Coinage Act, 1906
4. Indian Contract Act, 1872
5. The Payment and Settlement Systems Act, 2007
6. The Securities Contracts (Regulation) Act, 1956

7. The Sale of Goods Act, 1930

Moreover, cryptocurrencies may fall under the definition of "computer program" under the Indian Copyright Act of 1957. Needless to say, they can be classified as intangible goods under the Sale of Goods Act of 1930. Again, use and trading thereof needs compliance with principles required under protection of information, especially IT Act of 2000 read with IT (Reasonable Security Practices and Procedures and Sensitive Personal Data and Information) Regulation of 2011.

The legal nature of cryptocurrencies can be explored by comparing them with money and property. Cryptocurrencies possess the positive and normative features of property-being definable, identifiable and capable of being exclusively controlled and transferred. They also share the essential function of money owned by the holder of the private key. Like bank accounts, the token provides access to some interests to which the owner has a legal entitlement. True, it has no value in itself as a chain of characters. But for those who recognize the value of cryptocurrencies, the alphanumeric character represents money. It can be used and transferred in exchange for goods, services, fiat currencies and other cryptocurrencies. It provides a claim to others who recognize the function and value of cryptocurrencies. But it is only a claim, an entry or ticket to the game. One must not forget that in Skatteverket Vs Hedqvist, the CJEV recognized the use of bitcoin as a means of payment between individuals - as a currency which has no purpose other than a means of payment. Similarly the Court of Southern District of New York in US vs Murgio held that as bitcoin was used as a means of payment for goods and services, it constituted funds or monetary value in law. Needless to say, money and property have no fixed meaning and scope, but are a variable collection of interests established by social convention and state recognition. Money for instance is credit, a social relation, a convention recognized by the state, a two sided balance sheet operation. We should expect the scope of these terms to evolve over time as soon as new uses are discovered or new technologies are applied. Law would then have to adapt to such social realities. No wonder why El Salvador became the first country to recognize bitcoin as a tender.

Some of the Cryptocurrency Platforms are as under

1. Bitcoin (formed in 2008. It is a peer-to-peer electronic cash system based on a PoW (Proof of Work) (which consists of a complex cryptographic math puzzle) consensus mechanism.)
2. Ethereum (launched in July 2015, it is promoted and supported by the Ethereum Foundation, a Swiss non-profit organization)
3. Ripple (XRP)
4. Bitcoin Cash (BCH) (Bitcoin developers wanted to raise the block size limit from 1 MB to 8 MB, to reduce transaction fees and improve confirmation times while others had different plans. Because the community could not reach a consensus, the new cryptocurrency Bitcoin Cash was created. Like bitcoin, Bitcoin Cash makes use of the PoW mechanism, which means that it can be mined. Anyone who held bitcoin at the time Bitcoin Cash was created (ie) 1st August 2017 also became owner of the same amount of Bitcoin Cash).
5. Litecoin (LTC) (Launched in October 2011. It is based on the ScryptPoW algorithm. Litecoin is often described as the silver to Bitcoin's gold. It is different from bitcoin in two ways - first, Litecoin offers a much faster transaction speed than bitcoin and second, the total supply limit of Litecoin is much higher)
6. Stellar (XLM)
7. Monero (XMR)
8. Dash (based on XII PoW algorithm. What is specific to Dash and makes it different from most other coins is that it has a two -tier network)

9. NEO

10. IOTA (launched in 2016. It is based on what is known as a directed acyclic graph)

Bitcoins have been used as means of exchange to buy online at some of the CD stores or even book tickets. Many countries have identified cryptocurrencies as a growing threat but responses to this threat have ranged from taking steps to make cryptocurrencies, such as bitcoin, illegal to taking a "wait and watch" stance. To date, few sustained efforts have been made to regulate bitcoin or other cryptocurrencies.

However, Chinese banks are prohibited from developing relationships with those using bitcoins or running bitcoin-related businesses. China has defined bitcoin as a "virtual commodity" that should not be considered or used as a currency.

In fact, the legality of bitcoins in India was a major question in the year 2014. The Enforcement Directorate (ED) searched and raided a few bitcoin exchanges to see whether they were violating Indian laws or not ED believed that bitcoins can be used for criminal activities including money laundering, hawala transactions and funding of terrorist activities. Indian Laxmicoin had even sought clarifications from regulatory authorities of India before its launch. Cyber attacks also targeted bitcoin users and bitcoin exchanges in the year 2014. According to some reports, bitcoin website Mt.Gox's disappeared due to sophisticated cyber attacks and stealing of bitcoins. The Enforcement Directorate also searched Seven Digital Cash LLP offices and websites for selling and buying bitcoins in India.

The Indian Context

RBI issued a circular on 6th April 2018 stating that 'it has been decided that, with immediate effect, entities regulated by the Reserve Bank shall not deal in VCs (virtual currencies) or provide services for facilitating any person or entity in dealing with or settling VCs. Such services include maintaining accounts registering, trading, settling, clearing, giving loans against virtual tokens, accepting them as collateral, opening accounts of exchanges dealing with them and transfer/receipt of money in accounts relating to purchase/ sale of VCs.' The ban was immediate and gave virtually no time to users and companies to organize their affairs.

Though the circular did not ban cryptocurrencies per se, the effect of the circular was to cut off the use of cryptocurrencies from the normal banking channels.This created a bottleneck for bitcoin companies like Zebpay and Unocoin (which had set up its first ATM in 2018 to enable Indians to buy and sell bitcoins). With the closure of banking channels, these companies resorted to intermediaries. People who hold bitcoins can choose to retain them, but will not be able to convert it into rupees or trade in Indian currency. In the 2018-19 Budget Speech, the Union Finance Minister has said that the Government does not consider cryptocurrencies legal tender.

Internet and Mobile Association of India Vs RBI

The circular was challenged before the Supreme Court by way of writ petitions. Two main questions were considered by the Court in Internet and Mobile Association of India Vs RBI (2020 SCC Online SC 275):-

1. Whether the RBI had the power to regulate cryptocurrencies at all?

2. If RBI indeed had the power, had that power been rightly used so as to ban cryptocurrencies?

As regards the first question, the Court was required to undertake a two-fold exercise: first, the Court was required to examine the extent and nature of RBI's powers and second, the Court was called upon to determine what the true nature of cryptocurrencies was. As regards the former, an extensive historical review of central banks was undertaken -from considering the establishment of the Bank of England under a royal charter in 1694 to the establishment of the Indian Central Bank by the Imperial Bank of India Act, 1921. After considering the history, the Court examined the functions that RBI was required to perform in modern

times and came to the conclusion that one fundamental role was the supervision of monetary policy. As per the preamble of the Reserve Bank of India Act, 1934 (as amended in 2016) the primary objective of monetary policy was to maintain price stability while keeping in mind the objective of growth. The Court also considered other statutory enactments to conclude that RBI had extremely wide powers to operate the currency and credit system of the country, including the sole right to issue bank notes that would constitute legal tender. In fact RBI had a special place in the economic system of the country which even enabled it to exercise functions that were essentially legislative in nature.

As regards the latter - and in particular the petitioners' contention that they were not 'money' as understood in the legal or social sense - the Court undertook an exhaustive analysis of how various other countries and regulators across the world had treated virtual currencies. The judgement contained a table, showing the different definitions of the term 'virtual currency' adopted by regulators around the world. It also considered the definitions of the term adopted in legislation and other statutory instruments in almost thirty jurisdictions. As a result of the intensive exercise, the Court reached the conclusion that there is unanimity of opinion among all the regulators and the Governments of various countries that though virtual currencies have not acquired the status of a legal tender, they constitute digital representations of value and that they are capable of functioning as a medium of exchange and / or a unit of account and / or a store of value. Hence the Court ruled that it was not possible to accept the contention of the petitioners that virtual currencies are just goods/commodities and can never be regarded as real money.

Thus the Court ruled that RBI did in fact have the power to regulate cryptocurrencies. RBI was not only to be a mute spectator and only determine interest rates. Since by their very nature, virtual currencies had the potential to interfere with those matters that RBI had been tasked to monitor, the Court rejected the first contention of the petitioners that the impugned decision is ultravires.

But the petitioners had another argument up their sleeves. They argued that the circular was violative of the right to free trade and business guaranteed under Article 19(1)(g) of the Constitution. Access to the banking system was imperative for any business and hence, the petitioners urged, a complete ban on accessing these services imposed an unreasonable restriction on their right to carry on their trade. To decide whether this contention had any merit, the Court relied on the doctrine of proportionality. The Court thus had to examine whether the ban was the best method to deal with the public interest argument raised by RBI or whether regulation without a ban would have been possible or desirable. In doing so, the judgement again referred to how other countries had dealt with the issues raised by virtual currencies. The Court held that "when the consistent stand of RBI is that they have not banned VCs and when the Government of India is unable to take a call despite several committees coming up with several proposals including two draft Bills, both of which advocated exactly opposite positions, it is not possible for us to hold that the impugned measure is proportionate." The circular was thus held to be unconstitutional and struck down.

The result of the judgement was to open up the cryptocurrency markets once again. The RBI Governor made statements warning of the dangers of cryptocurrencies. The effect of these statements was that banks kept on dissociating themselves from the crypto markets. Thus even though the ban had been struck down, not much has changed.

Rumours floated that the Cryptocurrency and Regulation of Official Digital Currency Bill 2021 (which sought the probation of all private cryptocurrencies) would be introduced in the Lok Sabha. However the bill was never introduced. Rather than banning the use of cryptocurrency, the Union Budget of 2022 introduced a tax of 30% on the profits earned through the trading of such currencies - a tacit admission of the legality thereof.

The dangers of speculative investments in cryptocurrencies are as real as they were when the circular was passed. A ban may not be the best option, but failure to regulate is an abdication of responsibility.

The International Scenario

The International Monetary Fund (IMF) recognises that effective policy coordination for cryptocurrencies will be required at national and international levels due to their cross-border reach, which increases the potential risks and creates opportunities for regulatory arbitrage. They argue that the initial focus of regulation should focus on the most pressing concerns related to cryptocurrencies - financial integrity, consumer/investor protection, and tax evasion - whilst leaving less immediate risks - financial stability and monetary policy - to later stages. Needless to say, for a regulatory framework tailored to bitcoin and other cryptocurrencies to function effectively, it must be global. This is because it is conceivable that anyone, in any country, could utilise them for illicit purposes. For example, an Australian individual could purchase them online and use them to pay an American hacker to carry out a ransomware attack on a third individual, who resides in Russia. If the relevant regulatory framework does not encompass all three jurisdictions and is not consistently implemented within said jurisdictions, the likelihood of successfully punishing those responsible diminishes significantly. Moreover, those misusing cryptocurrencies will simply migrate to regulation-free jurisdictions to acquire and use them unimpeded.

Conclusion

Needless to say, banning cryptocurrencies will sound like banning the internet. Hence the need of the hour is strengthening the Digital Rupee - India's very own CBDC (Central Bank Digital Currency). There is a fundamental distinction between CBDC and a non- public cryptographic money other than government backing. CBDC will be upheld through permissioned blockchain innovation than permission less block chain innovation that is generally utilized through different individual cryptographic forms of money like bitcoin. CBDC holds the promise to become "programmable money" (ie) it could be designed to act in a particular manner in predetermined criteria. This could herald in a new age for public services delivery which at present suffers from systemic issues - inefficiency and corruption, to name a few. When combined with Jan Dhan - Aadhar - Mobile trinity, CBDC can increase financial inclusion and stands to reduce the cost of printing, storage and distribution of money. However, challenges for CBDCs are galore – data breach, counterfeiting and quantum computing being the major ones. The road ahead is that of a sovereign - backed CBDC with high credit standing and stability backed by an infrastructure that is secure from cybersecurity threats especially in the light of emerging technologies including quantum computing. This should be accompanied by a G20 initiative on a global framework for regulating and overseeing cryptocurrencies.

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Role and Relevance of Block Panchayats with Special Reference to Kerala

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Numerous questions have arisen concerning the role and significance of Block Panchayats within the framework of the three-tier system of local self-government. There is an ongoing debate suggesting that Block Panchayats, positioned as the intermediary tier within the Panchayati Raj system, do not fulfill any substantial functions beyond those executed by the other two tiers. Consequently, some contend that they represent an inefficient allocation of both time and financial resources, particularly within a state like Kerala, which boasts favorable metrics in terms of democratic practices and human development. In the light of this, it becomes imperative to scrutinize the functions and purpose of Block Panchayats and underscore their relevance within the framework of decentralized democracy. Our argument asserts that Block Panchayats undertake vital democratic and welfare roles in conjunction with the other two tiers of Local Self-Government. Furthermore, apart from serving as a bridge connecting Village and District Panchayats, Block Panchayats assume a pivotal role as a democratic platform at representative and community levels. They also conceive and execute a plethora of distinctive and contextually pertinent welfare and developmental initiatives within the dynamic political and civic landscape of Kerala.

Keywords: Block Panchayat, democracy, Village Panchayat, role, functions

Introduction

The Panchayati Raj system in India, established under the Constitution of India, represents a three-tiered structure of local self-government. It comprises Gram Panchayats at the village level, Block Panchayats at the intermediary level, and Zilla Panchayats at the district level (Constitution of India, 1950). Elected representatives at each tier are entrusted with the responsibility of formulating decisions and executing various developmental initiatives and schemes (Planning Commission, 2007). The Block Panchayat System in India serves as a mechanism to empower local communities and encourage participatory decision-making processes in rural regions. It plays a pivotal role in nurturing grassroots democracy, granting citizens the agency to influence decisions directly affecting their lives (Government of India, 1957). Through the Block Panchayat, the government endeavors to address the specific needs and challenges of rural communities, fostering their holistic development.

The existence of Block Panchayats holds substantial importance as it promotes active community participation, enabling residents to engage meaningfully in the decision-making process (Government of India, 1957). It provides an inclusive platform for marginalized groups, including women, scheduled castes, and scheduled tribes, to voice their concerns and ensures their integration into the governance framework. Block Panchayats are instrumental in facilitating the provision of essential amenities such as roads, housing, employment opportunities, and other social and welfare services to the population they serve. They are crucial intermediaries connecting Village and District Panchayats, thus ensuring efficient communication and coordination within the local self-government system.

Kerala, which stands out for its high literacy rates, low infant mortality rates, and impressive life expectancy statistics has been a pioneer in decentralization and participatory local democracy, earning recognition as a model for other states within India and globally (Government of Kerala, 2021).

The Constitution of India introduced fundamental provisions to legitimize and dignify local government institutions. These provisions encompass regular elections, representation of historically marginalized groups, and devolution of authority and funding to ensure stability, continuity, and empowerment.However, questions have arisen regarding the role and functions of Block Panchayats within the Panchayati Raj system and their relevance in the overall governance structure. In the Panchayati Raj system, the three-tier institutions have distinct functions. Village Panchayats have direct connections with the people, ensuring that programmes and policies reach beneficiaries efficiently. District Panchayats are responsible for comprehensive district planning and development and have closer ties to higher-level ministries. In contrast, the middle tier, Block Panchayats, remains less familiar to the populace, necessitating an exploration of their significance (Planning Commission, 2007).While Kerala boasts a high level of political awareness and understanding of political institutions, there still exists confusion regarding the role and functions of Block Panchayats. This paper seeks to clarify the unique role of Block Panchayats and how they bridge the gap between the government and the common people.

This article is structured into four parts. The first section elucidates how Block Panchayats function as a crucial link between Village Panchayats and District Panchayats. The second section delves into the relevance of Block Panchayats as democratic platforms at both representative and community levels. The third section explores the diverse welfare and developmental activities undertaken by Block Panchayats. Lastly, the fourth section contains special reference to local self- government in Kerala and concluding comments.

The Block Panchayat as a Linkage

The establishment of a three-tier system of Panchayats at the village, intermediate, and district levels, along with Municipalities in metropolitan areas, is mandated by the 73rd and 74th Constitutional Amendment Acts of 1992 in India (Constitution of India, 1992). These amendments prescribe the allocation of appropriate authority, responsibilities, and resources to these entities for the formulation and execution of plans aimed at achieving social justice and economic development. These acts lay down the foundational framework for decentralizing powers and responsibilities to various Panchayati Raj and Municipal organizations, with the onus falling on individual states to translate this framework into concrete action.

The Constitution 73rd and 74th Amendments signify a milestone in India's democratic decentralization process, granting elected representatives the authority to make decisions regarding grassroot initiatives that directly affect people's lives. These amendments mandate regular elections for Panchayati Raj and municipal bodies, embedding these institutions firmly within the nation's democratic system. Block Panchayats, often referred to as "block-level" or "taluka-level" panchayats, occupy a crucial position in India's decentralized local governance system. Serving as an intermediary tier between village panchayats and district panchayats, they play a pivotal role in coordinating and facilitating developmental activities, ensuring effective service delivery, and fostering local democracy (Planning Commission, 2007).

Block panchayats represent a geographic and administrative unit that typically encompasses several villages, bridging the gap between grassroot governance provided by village panchayats and the broader administrative functions of district panchayats. Each block panchayat comprises representatives elected from village panchayats within its jurisdiction. In the state of Kerala, there are a total of 941 Grama panchayats, 152 Block Panchayats, 14 District Panchayats, 87 Municipalities, and 6 corporations, amounting to a total

of 1200 local government institutions (Local Self Government Department, 2023). Kerala's 152 block panchayats encompass approximately 2079 wards, with variations in their numbers across districts. The structure of Block Panchayats in Kerala includes a President and Vice President, both chosen from among the members of the block panchayat, with the Block President serving as the institution's head. To facilitate efficient functioning, the government appoints a secretary, commonly known as the Block Development Officer (BDO), who serves as a liaison between the village panchayats and the district panchayat (Government of Kerala, 2021).

One of the primary functions of block panchayats is to coordinate and plan development activities within their respective jurisdictions. They serve as a platform for village panchayats to collaborate on projects that may require resources beyond the capacity of individual villages, crucial for the effective utilization of funds and resources allocated by higher levels of government.Block panchayats also oversee the functioning of village panchayats within their jurisdiction, ensuring adherence to legal and administrative guidelines and promoting transparency, accountability, and good governance. They function as a conduit for financial resources to flow from the district panchayat and state government to the grassroots level, facilitating the implementation of developmental schemes and projects. Moreover, block panchayats foster participatory democracy by organizing regular meetings and discussions among elected representatives from various villages, enabling them to address issues, plan developmental activities, and make decisions impacting their communities. They serve as intermediaries between village-level and district-level authorities, facilitating communication and collaboration to ensure the effective implementation of policies and initiatives (Planning Commission, 2007).

In brief, Block Panchayats in India, and particularly in Kerala, play an integral role in the decentralized local governance system. They serve as intermediaries, coordinators, and promoters of local democracy, contributing significantly to the holistic development and improved quality of life in rural areas (Planning Commission, 2007; Government of Kerala, 2021).

Block Panchayat as a Democratic Agent

The Block Panchayat plays a pivotal role in upholding the democratic and participatory principles of the Panchayati Raj system in terms of its structural framework and its programmes. It acts as a vital component of grassroots democracy, promoting engagement at both the community and representative levels. Elected representatives within the local self-government structure are chosen through direct elections, wherein voters clearly understand the candidates they elect. Typically, elections for Village Panchayats, Block Panchayats, and District Panchayats are conducted simultaneously, establishing a direct and tangible connection between the elected representatives and the constituents they serve.

This direct link between elected representatives and beneficiaries ensures that the concerns and needs of the local population are well represented in the decision-making process. The simultaneous elections also enhance the accountability and responsiveness of these representatives to their constituents.Furthermore, the Block Panchayat promotes inclusivity by establishing various standing committees, each focusing on different sectors within society. These standing committees, such as those dedicated to health and education, development, and finance, ensure thorough consideration of sector-specific issues and challenges.Importantly, these committees often reserve chairperson seats for women and scheduled groups, fostering representation and inclusiveness within decision-making (Planning Commission, 2007).

Seat reservation in Block Panchayat in Kerala

Category	No. of People	Percentage
Scheduled Caste Woman	76	3.66
Scheduled Caste Others	146	7.02
Scheduled Caste Total	222	10.68
Scheduled Tribe Woman	11	0.53
Scheduled Tribe Others	20	0.96
Scheduled Tribe Total	31	1.49
Women General	1015	48.82
Women Total	1102	53.01
Reservation Total	1268	60.99
General	811	39.01
Total	**2079**	**100**

Source: Local Self Government Department, Government of Kerala, 2023

The reservation of seats within the Block Panchayat is a mechanism that ensures representation for various segments of society, particularly the marginalized and underserved groups such as women and scheduled castes. By reserving seats, the Block Panchayat aims to provide a voice to all sections of the population, fostering inclusivity and equitable participation in local governance.Active community-level participation is of paramount importance for the effective functioning of Block Panchayats. Continuous engagement with the local populace enables the establishment of a robust connection between the community and elected representatives. It involves residents actively participating in the decision-making process and various developmental activities within their respective block or rural area.

Regular meetings and discussions serve as fora where community members can express their concerns, propose projects, and provide feedback on ongoing initiatives. This participatory approach reinforces the sense of belonging and ownership among the residents, ensuring that they perceive themselves as integral components of the local governance system. The formation of committees with representation from diverse sections of the community enhances decision-making and project implementation. While elected representatives play a vital role, these committees facilitate a deeper understanding of the issues faced by the people, especially those from different socio-economic strata.

Conducting awareness campaigns on various topics, including health, education, and sanitation, can mobilize the community to take collective action. These campaigns encourage communities to pool their resources, both financial and human, to fund and execute local development projects. Such collective efforts promote self-reliance and community-led development initiatives. Engaging the community in monitoring and evaluating the progress of projects is a fundamental aspect of ensuring transparency and accountability. It empowers residents to hold their elected representatives and local authorities accountable for the outcomes of various initiatives (Planning Commission, 2007). Providing training and capacity-building programmes further empowers community members, enabling them to actively participate and contribute effectively to the development process. Timely and accurate information sharing is essential for keeping the community informed about government policies, programmes, and opportunities. Leveraging social media platforms such as WhatsApp groups and Google Meet can be effective in disseminating information and fostering communication among thecommunity members. The mechanism used by the local self-departments in the time of the pandemic is a significant example. It was not only by the effort of ministerial level that Kerala succeeded in fighting against COVID-19, but it was also by the smart work that happened at the local level.

Kerala government was able to connect the representatives of local government and through them local cases were handled wisely. The second phase of Gram Sabhas, which also function at the Block level, is a space where common people can address their issues and priorities of development which in turn are taken up at the Block level. It is an extension of the discussions conducted at the Village level. Based on the decisions and suggestions of the Gram Sabhas, the concerned department of the Block panchayats allocates funds for various developmental and welfare activities. Thus Block Panchayat constitutes a very vital democratic space at the representative and community levels.

Welfare and Developmental Activities

Block Panchayats undertake a wide array of socio-welfare and developmental activities autonomously, while also serving as a crucial link between the other two tiers of the three-tier Panchayati Raj system. Infrastructure development stands out as a prominent focus area for Block Panchayats, where they allocate resources for rural infrastructure projects such as roads, public buildings, Anganwadi centers, schools, health facilities, bridges, and more.

Compared to Village Panchayats, Block Panchayats often possess the capacity to allocate substantial funds for these infrastructural projects, given their larger administrative jurisdiction and resource pool. This allows for a more comprehensive approach to address the pressing infrastructure needs of their respective areas. Another critical aspect of Block Panchayat's role is the allocation of resources to sectors that have historical and geographical significance within their regions. For instance, sectors like agriculture and cattle farming, which are deeply rooted in the local economy, fall within their purview. Block Panchayats play a pivotal role in providing necessary tools, techniques, and training to enhance production in these sectors, thereby empowering local farmers and safeguarding them from significant losses. Collaborative efforts with departments such as the agricultural department facilitate the dissemination of modernized techniques to benefit the farming community (Planning Commission, 2007).

Furthermore, Block Panchayats initiate various programmes aimed at unifying communities and recognizing their achievements through awards and incentives. These initiatives serve to foster social cohesion and motivate residents to actively participate in the development process. In addition to infrastructure and economic development, Block Panchayats take the lead in implementing a range of social welfare schemes. These encompass initiatives related to healthcare, education, women's empowerment, and child development, among others. By addressing these essential social aspects, Block Panchayats contribute significantly to the overall well-being and quality of life of the local population.

- **Education**

Education plays a pivotal role in various facets of development, including employment, healthcare, sanitation, hygiene, and poverty reduction (United Nations, 2015). It serves as a foundation for acquiring new skills and achieving better work prospects (United Nations, 2015). Recognizing the paramount importance of education, India enacted the "Right of Children to Free and Compulsory Education Act," commonly referred to as the "Right to Education Act," in accordance with Article 21A of the Indian Constitution. This landmark legislation mandates free and compulsory education for children aged 6 to 14 across the country, underscoring the significance of ensuring access to quality education (Government of India, 2009). To effectively implement this Act, with particular emphasis on primary education, special attention must be directed towards rural areas. Local self-governments play a crucial role in enhancing the socio-cultural environment within schools and families, thereby uplifting the quality of education (Planning Commission, 2007). Block Panchayats allocate funds for essential infrastructure development within schools, complemented by the redirection of Member of Parliament (MP) and Member of Legislative Assembly (MLA) funds to address critical needs (Planning Commission, 2007).

Furthermore, Block Panchayats actively monitor school attendance patterns to identify irregularities and dropout rates, thus promoting continued education. They also play a pivotal role in monitoring educational

quality through Parent-Teacher Associations (PTAs) and School Management Committees (SMCs), ensuring the maintenance of high educational standards. Addressing the issue of inadequate restroom facilities for girls is another vital role undertaken by Block Panchayats. They collaborate with relevant organizations to construct girls' restrooms where none exist and rehabilitate non-functional restrooms, thereby promoting gender equity and ensuring a conducive learning environment. Block Panchayats actively contribute to the success of the Total Literacy Campaign (TLC) strategy aimed at eradicating adult illiteracy. Through TLC, adults keen on completing their education without attending regular classes are provided with opportunities to do so. Block Panchayats oversee the application process and coordinate the classes, offering additional training programmes that enhance employability (Government of Kerala, 2021).

At higher school levels, Block Panchayats grapple with various student-related issues. Combatting the sale and usage of drugs and alcohol by students on school premises is a significant challenge, requiring collaboration with the excise department. Regular awareness classes for students and parents are conducted to address this issue (Planning Commission, 2007). Block Panchayats also engage student leaders, particularly those involved in initiatives like the Student Police Cadet programmes, to report any such cases to the relevant authorities.

- **Child Development**

Elected representatives bear a significant responsibility in safeguarding the rights and well-being of the villagers they serve. Their role encompasses advancing socio-economic development and, critically, protecting the rights of the vulnerable segments of the population, notably children. Although children may not possess voting rights at present, they are the future citizens of our society, and it is the duty of adults, including elected representatives, to ensure their proper upbringing and protection (United Nations, 1989).

Regrettably, children are often subjected to violence, exploitation, and abuse. These challenges are rooted in societal injustices, but they are also exacerbated by a general lack of awareness regarding children's rights within our culture. Despite the efforts of government and non-governmental organizations to protect children's rights, many children still engage in labour, lack access to education, and endure violence and abuse in their homes, schools, and communities (United Nations, 1989). Children, particularly girls, are also susceptible to discrimination based on factors like caste and religion. Gender discrimination places girls at a higher risk of facing societal and familial prejudice, resulting in limited access to education and growth opportunities. Tragically, this discrimination sometimes leads to the killing of female infants in some communities. Another harmful practice that hinders children's development is child marriage, which robs them of the opportunity for education and subjects them to early domestic responsibilities. Given these challenges, it is crucial for panchayat representatives to comprehend the current situation of children, their rights, and how advocating for these rights can create a secure environment for them.

In Kerala, Anganwadis play a significant role in children's development. These centres provide child and maternal care in rural areas. They offer services such as supplemental nutrition, non-formal education for preschoolers, vaccinations, health check-ups, nutrition and health education, and referral services. Block Panchayats actively organize ongoing programmes for these centres, including training initiatives and participation in other welfare programs. They play a leadership role in matters related to the development of children and women, ensuring their well-being and holistic growth (Government of Kerala, 2021).

Moreover, the Integrated Child Development Services (ICDS) is a significant national programme that collaborates with local self-government entities to cater to the needs of young children under the age of six. ICDS provides comprehensive services, including supplemental nutrition, healthcare, and early education. The programme extends its scope to include adolescent girls, pregnant women, and breastfeeding mothers, recognizing the interconnectedness of child and maternal health (Ministry of Women and Child Development, 2021). ICDS acknowledges the critical importance of early childhood in the overall development of human potential and strives to ensure the survival and growth of children during this crucial phase by offering a

range of programmes. These programmes encompass the physical, psychosocial, cognitive, language, and creative development of children, following an integrated approach. Furthermore, the ICDS programme underscores the importance of nurturing and caring for young girls, women, and children through a child-centred strategy that requires cross-sector collaboration and service convergence. ICDS is based on a community-centred, multidimensional approach, and Block Panchayats play a vital role in providing guidance and support to ICDS representatives through various programmes.

- **Development of Scheduled Castes and Scheduled Tribes**

Social exclusion encompasses the systematic marginalization of certain groups from full participation in society's social, economic, and political spheres. It manifests as pervasive prejudice, ranging from socio-cultural biases to economic disparities. Economic injustices involve the exploitation of labour, denial of access to essential resources, and the absence of opportunities for a decent standard of living. Cultural injustices, on the other hand, result from societal norms and representations that marginalize or devalue specific groups (Sen, 2000).

In India, the caste system epitomizes economic and socio-cultural devaluations, particularly affecting the lowest caste, Scheduled Castes (SCs) (Government of India, 2016). The creation of political parties representing backward castes and Dalits, organized along caste lines, has allowed these marginalized groups to consolidate their political influence. Parties such as the Bhartiya Kisan Dal (BKD), Bhartiya Lok Dal (BLD), and Bahujan Samaj Party (BSP) have emerged through caste-based horizontal mobilizations. These parties play a pivotal role in representing the collective interests of marginalized communities in politics (Kumar, 2012). Reserving seats for SCs in Panchayati Raj Institutions (PRIs) is considered a tool to empower Dalits and provide them with role models. The inclusion of Dalits in PRIs through affirmative action is predicated on the assumption that it will empower them collectively, redistribute power, and create a critical mass of Dalit local leaders actively participating in decision-making (Government of India, 2016).

Recent research conducted by Participatory Research in Asia (PRIA)and its affiliates on Dalit leadership in Panchayats reveals that political awareness, economic independence, and education have enabled elected SC officials to exercise their authority effectively. These leaders have contributed to their communities by spearheading essential amenities and reorganizing relationships within Panchayats (PRIA, 2021). However, the participation of Scheduled Castes in Gram Sabhas has remained limited and often occurs through proxy representation. This can be attributed to various factors, including prevailing power dynamics, low levels of awareness among SCs, and practical challenges. Many SC members do not actively engage during Gram Sabha meetings because they are often unaware of their role in shaping village plans. Calls for increased political participation by SCs in Gram Sabhas must consider practical obstacles such as meeting schedules, quorum requirements, decision-making procedures, quality of deliberations, and the potential dominance of discussions by more influential groups (Government of India, 2016).

Furthermore, issues like the inability of low-wage workers to forgo a day's pay, illiteracy, and unfamiliarity with the new governance system also impede SC participation. Addressing these challenges is crucial to ensuring meaningful and inclusive participation of marginalized groups in local governance.

- **Women Development**

The empowerment of women and the establishment of gender equality in society are critical factors for fostering peace, progress, and equality. Despite India's longstanding democratic tradition, a substantial portion of women remains marginalized in the political arena. True democracy and public participation in governance and development can only be achieved through the equitable and proportional representation of both men and women at various levels of decision-making. Women's progress is intrinsically linked to their active participation in politics. Societal norms and values vary across communities, leading to differential gender roles and responsibilities. In many underdeveloped nations, women are primarily associated with

their reproductive roles and are excluded from public life. Cultural factors often impede women's engagement in politics, limiting their participation.

Institutional factors also play a significant role in women's political participation. The adoption of a more representative electoral system utilizing proportional seat distribution can enhance women's involvement. Additionally, the quota system is a crucial institutional tool that guarantees a certain percentage of seats for women in legislative bodies. India has witnessed transformative changes in governance through interventions aimed at women's empowerment. Constitutional amendments mandating the reservation of seats for women in local governments, such as the Panchayati Raj Institution System (PRI), have resulted in a significant increase in the number of women elected to local councils. These women, whether representing a single village or a larger territorial unit, have made a substantial impact on the political landscape. The increase in women's participation, from 4-5 percent to 25-40 percent, has not only been quantitative but also qualitative. These women contribute their expertise to local governance, raising awareness about issues such as poverty, inequality, and gender injustice.

Article 21 of the Universal Declaration of Human Rights emphasizes the right of all individuals to participate in their country's government either directly or through freely chosen representatives. Reserving seats for women in local self-government ensures their involvement in addressing local-level issues, benefiting from their gender-specific perspective. In Kerala, despite a high literacy rate among women, their access to employment opportunities does not align with the ratio. Socio-cultural barriers often relegate women to household duties, resulting in financial dependence and socio-political backwardness. Panchayati Raj institutions provide support to women by enabling them to initiate projects through financial assistance, empowering them with knowledge about various modern institutions and officials, and expanding their access to public and private spaces.

Through their involvement in grassroots politics, women engage in diverse development initiatives, from increasing panchayat revenue to create irrigation systems and addressing basic needs like access to clean water, healthcare, and education. Their presence in panchayats leads to better-targeted welfare schemes, increased awareness of government programmes, and greater accountability of elected representatives. The participation of three million women in grassroots politics has expanded their access to public and private spaces. They actively participate in gram sabha sessions, attend panchayat meetings alongside male colleagues, and engage with government offices and officials. The effective implementation of various social and welfare programmes, especially those targeting vulnerable sections of society, relies on the collaboration of local, state, and central governments. Many of these programmes are interlinked and function at the grassroots level, making the involvement of local self-government crucial for their smooth operation.

The Context of Kerala

The structure and functioning of Panchayati Raj institutions in Kerala vary based on the region's unique social, cultural, economic, and political dynamics. Kerala, renowned for its exceptional human development indicators, has embraced the Panchayati Raj system to empower its local communities and promote inclusive governance. One of the primary objectives of the Panchayati Raj system in Kerala is to strengthen grassroots democracy. It achieves this by decentralizing power and decision-making to the village level through various tiers of Panchayats. This decentralization empowers residents to actively participate in shaping the development agenda of their communities. Elected local representatives, chosen through democratic processes, bear the responsibility of addressing issues related to the welfare of their villages. This ensures that governance decisions are firmly rooted in the genuine needs and aspirations of the local population. Kerala's Panchayati Raj system has been instrumental in empowering marginalized groups, including women, scheduled castes, and scheduled tribes. The system incorporates reserved seats for these under-represented groups, guaranteeing their representation within local governing bodies.Kudumbashree is a state poverty eradication programme that aims to empower women through the Panchayati Raj. Because

of these measures, women's participation in the decision-making process has witnessed a significant boost, resulting in the formulation of more gender-sensitive policies and programmes. Furthermore, the Panchayati Raj system actively addresses the concerns of historically marginalized communities, thereby promoting social justice and fostering a more inclusive society.

Conclusion

The Panchayati Raj system in the state of Kerala has emerged as a pivotal driver of localized developmental and welfare endeavors. This system entrusts Panchayats with the responsibility of formulating, executing, and overseeing development projects within their respective jurisdictions. This decentralization of resources has led to the more efficient allocation of funds, allowing for the prioritization of region-specific developmental requirements. Consequently, key aspects such as basic infrastructure, education, healthcare, and environmental preservation have witnessed substantial enhancements throughout Kerala's rural areas. The Panchayati Raj system in Kerala has endowed local bodies with fiscal autonomy, thereby empowering them to manage resources autonomously. These local bodies generate revenue through mechanisms such as local taxation and grants received from higher levels of government, enabling them to independently finance development initiatives. This financial autonomy has facilitated the timely and targeted allocation of resources to sectors critical for the welfare of their communities, reducing their reliance on external funding sources. Moreover, the Panchayati Raj system has catalyzed community engagement and the accumulation of social capital in Kerala. Regular Gram Sabha meetings serve as platforms for direct interaction between the local populace and their elected representatives. This participatory engagement fosters a sense of ownership, instills civic responsibility, and fosters social cohesion. Consequently, it enhances the effectiveness of development programmes and strengthens the social fabric of the community. The Block Panchayat is an important link and platform in all these activities.

Despite prevalent perceptions that Block Panchayats may hold a less prominent role within the Panchayati Raj system, their functions remain indispensable and relevant. They act as intermediaries bridging the gap between Village Panchayats and District Panchayats, overseeing the activities of the former and ensuring transparency in their operations. Most of the programmes of the Block Panchayats are connected with the other two tiers of the Panchayati Raj system with the power to carry out policies independently. Kerala is a state which gives equal importance to every levels of Panchayati Raj system especially Block panchayat which is different from other states. The extent of welfare activities carried out by the Block Panchayat in relation to child development, women empowerment, education, backward classes etc. are noteworthy. That is why the local self-government in Kerala, including the Block Panchayat, have the tag of state with the most efficient grassroot politics.

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Employment Elasticity & Productivity Growth in Manufacturing by Technology Intensive Classification

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The generation of meaningful employment opportunities for the workforce is a crucial determinant of economic prosperity in both developed and developing nations. However, various factors, including changes in the structural policies and labor market regulations, have worsened the challenge of employment creation in several countries. The International Labour Organization (ILO, 2014) asserts that globalization has also played a role in the deterioration of labor conditions, leading to increased precariousness in many nations. India, like other countries, is grappling with similar employment challenges and has not been resistant to the transformations occurring in the labor market. In this article, we find that the manufacturing industries in India vary greatly in their ability to generate employment despite increases in productivity. Our analysis indicates that the adoption of new technologies does not necessarily lead to employment creation in Indian manufacturing industries.

Key words : Technology, Productivity and Employment

Introduction

Technological advancements during the process of technological transformation yield a more intricate and economically efficient production system, thereby resulting in heightened incomes and economic growth. The manufacturing sector plays a pivotal role in this process by generating fresh employment opportunities and expanding the market, thus acting as a catalyst for further innovation. As time progresses, a nation's manufacturing sector becomes increasingly reliant on capital and technology, necessitating a more skilled workforce. This, in turn, stimulates further innovation and augments productivity growth. The impact of technological change on economic growth can be elucidated through two aspects: employment creation and income distribution. Consequently, two crucial questions arise: whether new technological innovations engender job creation or job displacement, and whether innovation enhances income distribution within society. Technological innovation serves as a significant determinant of productivity changes in the economy. This article has undertaken an analysis of the influence of technological change on employment.

Following the implementation of economic reforms in the 1990s, India has experienced notable structural changes in its GDP and employment landscape. However, in relation to GDP, the pace of structural transformation in the employment sector has been comparatively sluggish (Kochhar 2015). Despite robust economic growth, there has been a deficiency in job creation in recent years. From 2010 to 2018, although India's GDP witnessed an average growth rate of 7.3%, this expansion did not generate a commensurate number of jobs, failing to keep pace with the growth of the labor force. Starting from 2015-16, there has been a steady decline in the growth rate of India's GDP, decreasing from 8.26% to 6.81%. Furthermore, during this period, the overall unemployment rate, measured by usual status, experienced a significant increase, rising from 2.2% in 2011-12 to 8.1% in 2021-22. The task therefore becomes to speed up the structural reform process and return India's economy to a quicker growth track. Increasing the productivity growth rate is a key strategy for accomplishing this goal. However, information on output, labour, and capital for the entire economy as well as for particular industries is required in order to analyse productivity.

Unfortunately, there hasn't been much access to continuous time series data. The India KLEMS project attempted the goal of creating a trustworthy time series dataset that contains the necessary information, including a series on employment, in answer to this problem.

Employment and Productivity: Theoretical Review

Employment, productivity, and output are interdependent, with output being the product of employment and productivity, where productivity is measured as output per unit of labour. A higher rate of output can be achieved through high productivity growth with low employment growth or vice versa. Technical advancements that increase productivity can result in a decline in employment, particularly in sectors that experience rapid productivity growth through capital-intensive techniques. During the 1970s, a notable deceleration in productivity growth was observed across a majority of European nations, coinciding with an upsurge in unemployment rates. Similarly, in the United States, a significant increase in productivity growth has been recently recorded alongside a decline in unemployment levels. In the late 1990s, the United States experienced a noteworthy acceleration in productivity growth, primarily attributed to the rapid expansion of Information and Communication Technology. Interestingly, this surge in productivity did not hinder employment growth. Zavodny (1999) points out that existing empirical studies examining the relationship between wage-employment dynamics and productivity growth rates predominantly rely on macroeconomic data derived from developed countries.

Researchers including Harrison (2009), Lopez and Zilva (2005), and Elgin et al. (2012) have investigated the relationship between productivity and employment as well as wages in the manufacturing industries in their respective countries. These studies have revealed a considerable gap between productivity and real earnings in the manufacturing sector. However, in India, there is a scarcity of research in this area due to the unavailability of appropriate data. Some studies including those conducted by Bhalotra (1998), Pal (2004), NSSO different rounds, Goldar et al. (2005), and Das et al. (2015) have examined the impact of technological advancements on production and employment in Indian manufacturing industries using NSSO and ASI data. These studies have identified a mismatch between output and employment growth with significant disparities in India

Technological progress may impact the efficiency of capital and labor in a neutral, capital-biased, or labor-biased manner, affecting the relationship between the two in the production process by increasing either labour productivity or capital productivity. Over the long term, technological progress leads to two opposing effects: capitalization and job reduction. In the case of labour biased technical progress, capitalization contributes to the increased demand for labour, while capital-based technical progress reduces it. Bukowski and Dyrda (2009) suggest that the reallocation of labor resources across sectors of the global economy due to technical progress may prevent significant changes in employment levels over the long term.

The quantification of the direct impact of technological change on economic production and employment poses challenges, leading economists to frequently rely on measures of productivity. In industries with low technological intensity, the growth rates of labor productivity are modest at lower development levels but exhibit significant variation across countries. In contrast, growth rates of value added are relatively high. This combination of findings suggests that countries with low technological intensity industries are experiencing growth in a labor-intensive manner, as proposed by Viverelly in 2015. The variability of growth rates in value added is also notable, particularly at lower levels of development, although it tends to be lower than the variability observed in labour productivity growth rates. According to OECD's observations in 2014, a noteworthy pattern emerges at higher levels of development, where the curve of labor productivity growth takes on an S-shaped trajectory. As development advances, the variability of labour productivity growth rates gradually diminishes. Meanwhile, as countries progress in development, the growth rate of value added follows a monotonically declining trend. This implies that with increasing levels of development, growth tends to become more dependent on productivity-enhancing technologies. Consequently, in the wealthiest

nations, employment tends to decrease as productivity outpaces the growth of value added. Moreover, the variability of value added growth also decreases with development, albeit at a slower rate.

Data and Methodology

The analysis presented in this paper is essentially based on the India KLEMS data base, version 2016, RBI. The main source of data used for the preparation of the India KLEMS data base is the National Accounts Statistics (NAS), published annually by the Central Statistical Office (CSO). The 2004-05 national accounts series and the corresponding back series have been used. These data are supplemented by Input - Output tables (published by CSO) and Annual Survey of Industries (ASI) brought out by CSO and various rounds of NSSO (National Sample Survey Office) surveys on employment and unemployment and organized manufacturing. Industries are classified on capital intensity on the basis of International Standard Industrial Classification. Further to examine the industrial dynamics, the study has regrouped them in to technology intensive category following the OECD (2011) classification. These are High Technology (HT), Medium Technology (MT) and Low Technology (LT) intensive industries.

Structure and Growth of Employment in India

The development history of developed nations reveals that as country develops more resources (labour) shift from less productive activities of agriculture sector into activities with higher productivity in the non-agricultural sector. The structural shift from agriculture to industry and to services has been discussed by many literatures (Kuznets, 1966; Chenery 1975).

Table.1 : Distribution of Employment in Broad Sectors of the Economy(% per annum).

Sectors	1980-81	1993-94	2003-04	2011-12	2017-18
Agriculture, Forestry and Fishing	70%	64.8%	57.4%	48.6%	41.8%
Mining and Quarrying	0.8%	0.7%	0.6%	0.5%	0.4%
Manufacturing	10.4%	10.6%	11.6%	12.3%	11.6%
Construction	2%	4.3%	5.4%	7.9%	12.4%
Services	17%	22.3%	26.8%	29.4%	35.6%

Source: Authers' Calculation based on INDIA KLEMS data base 2019.

The table presents the distribution of employment across different sectors of the economy in India for the years 1980-81, 1993-94, 2003-04, 2011-12, and 2017-18.In 1980-81, agriculture, forestry, and fishing sector accounted for the highest share of employment at 70%, indicating a predominantly agrarian economy. The manufacturing sector employed 10.4% of the workforce, while mining and quarrying accounted for a small proportion of 0.8%. Construction and services sectors contributed 2% and 17% to the employment distribution, respectively. Over time, there have been significant changes in the distribution of employment. By 2017-18, the agriculture, forestry, and fishing sector witnessed a decline in employment share to 41.8%, reflecting a shift away from agriculture. The mining and quarrying sector also experienced a decrease, reaching 0.4% in 2017-18.On the other hand, the share of employment in the manufacturing sector remained relatively stable, fluctuating between 10.4% and 12.3% during the observed period. The construction sector, however, witnessed a substantial increase in employment, rising from 2% in 1980-81 to 12.4% in 2017-18.

The most notable change occurred in the services sector, which witnessed a consistent increase in employment share over the years. Starting at 17% in 1980-81, it grew to 35.6% in 2017-18, indicating a significant shift towards a service-oriented economy. The data demonstrates the transformation of employment distribution in India over the years, with a declining share of employment in agriculture and mining sectors and a rising share in construction and services sectors. These changes reflect the shift from an agrarian economy to a more diverse and service-driven economy, highlighting the evolving structure of employment

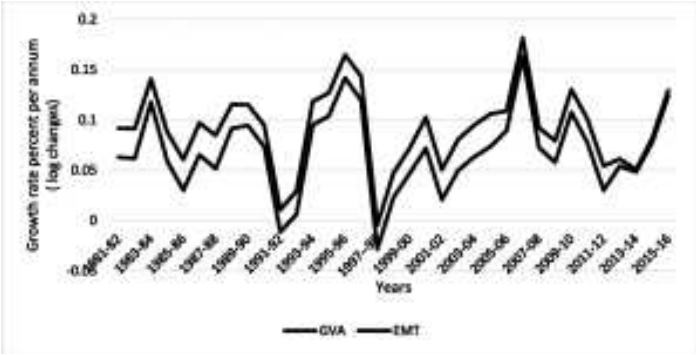
in India.It seems manufacturing could not play the role of being the engine of employment growth in the economy.

Although several service sector industries, including business services, financial services, communications services, other services, etc., experienced significant development as a result of the reforms, employment creation lagged behind. Between 1981 and 2017, the employment in the service sector rose at a pace of 3.2%, although since 2003, the growth has been sluggish. Market services have a faster decline than non-market services (around 1% in both the sub-periods of 2003-07 and 2008-17). However, the growth of the manufacturing and services industries helped the construction sector by boosting demand for urban infrastructure, housing, and commercial real estate. There were more job openings in the construction industry, and its proportion of total employment increased. Since the year 2003, there has been a discernible downturn in the expansion of employment opportunities and a general deterioration in the overall employment. Ghose and Kumar (2021) assert that this deceleration is particularly notable among individuals with lower levels of education, specifically those who have only completed basic schooling. This observation suggests the presence of a "skill-biased" technological advancement within the manufacturing domain. The researchers have uncovered compelling evidence that substantiates the decline in employment prospects for individuals with limited educational attainment in both the agricultural and non-agricultural sectors, particularly following the turn of the millennium.

Productivity and Employment Trends in Indian Manufacturing Industries

The literature highlights a deceleration in output and negative employment growth in registered manufacturing industries in India, with employment declining in most states since the 1990s. The loss of jobs has been significant, with approximately 1.11 million workers losing their jobs at the national level between 1995 and 2005, and such losses widening across major states and industrial groups. There is ongoing debate on the relationship between productivity growth and employment, particularly in India where unemployment rates are high. Productivity growth in advanced countries has lifted living standards, but in developing countries, technological and capital-intensive investments, the main sources of productivity growth, may result in job destruction, especially for unskilled workers. While some states have outperformed others in terms of productivity growth, negative employment growth has been observed in some sectors. These stylized facts raise questions about a possible trade-off between employment and productivity growth and a conflict between employment growth and real wage growth. A graph (Figure 1) depicting the real output share of manufacturing and level of employment (percent per annum, logarithmic changes) in India over the last three decades demonstrates a positive output growth achieved by replacing labor during the 1990s and the mid-2000s.

Figure:1 : Growth rate of Output and Employment (log changes)



Source: Own computation based on INDIA KLEMS database, 2019

In Figure:1, it is evident that the growth in employment has been much weaker in comparison to the rise in output during the entire period of study. The growth rate of output and employment was measured using log linear trend over the period. The average annual growth rate of output during the 1980s was 5.9%,

which slightly increased to 6.5% during the reform period of 1993-94 to 2002-03. In the post-reform period (2003-04 to 2015-16), output grew to 8.1%. The trend of growth rate of employment, however, was not satisfactory. During the pre-reform period, the average annual growth rate of employment was only 2.6%, which marginally increased to 2.7% during 1993-94 to 2003-04. After 2006, there was a downward trend in employment growth, declining to 1.7% during the period of 2003-04 to 2015-16. This is clear evidence that the share of the Indian manufacturing sector is not growing in employment as expected. The Compound Annual Growth Rate (CAGR) approach is the most widely used method in India for measuring the growth rate. Table 1 shows the compound annual average growth rate of employment in Indian manufacturing industries for the period from 1980 to 2017. Figure 4.3 illustrates the growth rate of employment by industries in the manufacturing sector. The analysis reveals that sectors such as Electricals, Machinery, Rubber, Coke, and Refined petroleum registered around 5% employment growth, while the worst performance was observed in Wood, textiles, other nonmetallic, and Food products industries.

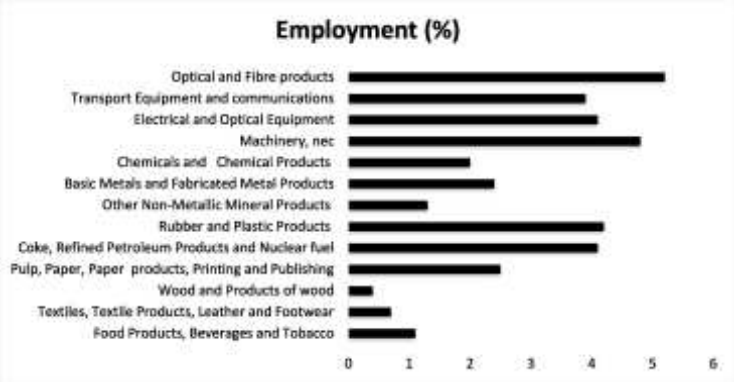
Tabl:2 : Growth rate of Employment by Industry in Manufacturing sector (CAGR)

KLEMS Industries	1980-85	1986-90	1991-95	1996-00	2001-05	2006-10	2011-17	1981-2017
Food Products, Beverages & Tobacco	2.29	2.46	2.42	1.29	0.2	1.18	-2.4	1.34
Textiles, Textile Products, Leather and Footwear	2.25	-0.51	-0.64	1.15	3.65	-1.27	-0.46	0.71
Wood and Products of wood	1.98	1	2.69	3.99	1.2	-3.45	-3.65	0.54
Pulp, Paper, Paper products, Printing and Publishing	3.58	1.38	1.7	3.88	3.35	-0.73	1.65	2.49
Coke, Refined Petroleum Products & Nuclear fuel	6.99	4.56	1.22	1.54	0.39	3.99	4.1	4.09
Chemicals and Chemical Products	3.71	3.58	2.48	1.07	1.64	-0.2	0.74	2.11
Rubber and Plastic Products	4.88	7.35	5.2	1.71	2.26	4.32	-0.31	4.56
Other Non-Metallic Mineral Products	2.33	0.88	0.86	1.53	3.77	1.27	-2.43	1.5
Basic Metals and Fabricated Metal Products	3.17	1.41	1.84	2.89	1.41	2.27	0.85	2.43
Machinery, nec.	0.31	2.85	5.75	6.13	2.18	2.73	5.56	4.43
Electrical and Optical Equipment, Accounting & Computing Technology	4.46	4.42	2.93	1.81	3.11	6.82	6.43	5.41
Transport Equipment and Communications	3.59	3.32	1.88	2.07	2.61	3.11	2.65	3.45
Pharmaceuticals, Medical & Optical instruments.	4.8	3.05	0.92	1.35	5.55	2.35	-1.62	3.03

Source: Author's computation based on INDIA KLEMS data base-2020

The figure 2 given below depicts only a few of the 13 KLEMS manufacturing industries exhibit fast trend job growth. Because of this, even though manufacturing created 24 million jobs between 1980 and 2017, its percentage of total employment stayed relatively constant throughout that time, hovering between 10.5 and 11.5 percent. Electrical and optical equipment, machinery, nec, rubber and plastic goods, and coke, refined petroleum products, are the manufacturing sectors with the fastest growth rates (more than 4% per year). At the other end of the spectrum, there are industries - mostly traditional, low-tech manufacturing industries - where employment growth has been sluggish (less than 2%), including those that produce food, non-metallic mineral products, chemicals, textiles and leather products, wood and wood products, chemicals, and other products made from wood and other non-metallic minerals.

Figure.2 : Employment trends in manufacturing KLEMS industries



Employment Elasticity & Productivity Growth: By Technology Intensive Classification.

The study has revealed significant variations in employment growth across industries, which is also linked to technology classification. Both LTIs and MLTIs experienced a decline in employment growth, and this was particularly evident in industries such as food and textiles, where the majority of employees belong to the informal sector. However, Rubber & Plastics and Coke Refined Petroleum industries have demonstrated robust employment growth and have the lowest capital intensity. Given the widely accepted notion that capital-labour ratio (capital intensity) plays a vital role in determining employment levels, further investigation is necessary in the manufacturing sector. The analysis indicates that MLTIs and MHTIs have a better employment growth rate than the other two sectors, and the employment elasticity can be estimated to examine the actual effect of capital intensity on employment generation. This approach will enable researchers to determine whether technological advancements in the manufacturing sector have impacted employment, and to identify which industries have been more effective in creating employment opportunities.

Employment Elasticity in Indian Manufacturing Sector

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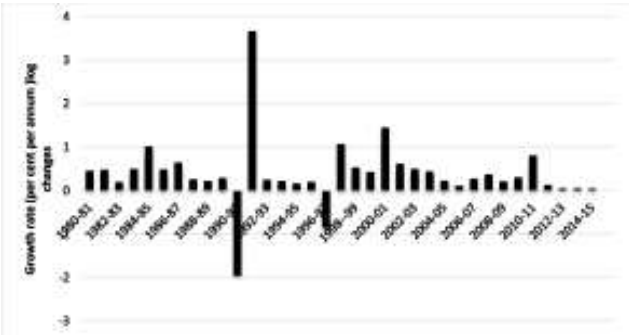
Figure.3 : Annual Output Elasticity of Employment Across Manufacturing Industries



Source: Own computation based on INDIA KLEMS database, 2019

Table.5 : The Output Elasticity of Employment in Manufacturing Industries: (CAGR)

Year	Out Put Growth	Employment Growth	Employment Elasticity
1981-1985	6.6	2.8	0.5
1986-1990	6	2.6	-1.4
1991-1995	9.3	2.3	0.2
1996-2000	2.7	2.5	1.4
2001-2005	8.8	2.9	0.5
2006-2010	6.5	2.1	0.8
2011-2017	6.7	0.9	0.1

Note: Author's computation by INDIA KLEMS data, version-2019

The table show the output elasticity of employment by technology intensive classification for the period 1980-81 to 2016-17. By examining the data, one could understand the employment elasticity for all technology group industries have an average of zero per cent growth only. The sub period breakup reveals that across various technology sectors employment elasticity is inelastic. It also reveals, in the Medium High Technology Industries during the second half of reform period registered 2.5 per cent of employment elasticity. The major industries in this group like, Electrical, Machinery and Apparatus, Transport equipment etc. have exhibited better performance.

Table.6 : The Output Elasticity of Employment by Technology Intensity

(Annual average, % per annum)

Year	LTI	MLTI	MHTI	HTI
1980-81 to 1992-93	0.42	1.73	0.25	0.6
1993-94 to 2003-04	-1.3	0.2	0.52	0.21
2004-05 to 2015-16	0.24	0.86	2.51	1.24
1980-81 to 2015-16	0.7	1.95	0.83	0.8

Note: LTI- Low Technology Industries, MLTI- Medium Low Technology Industries, MHTI- Medium High Technology Industries& HTI- High Technology Industries. Author's computation by INDIA KLEMS data, version-2019

The table:4.8 explains the output elasticity of employment by major industries in manufacturing sector. Inspite of the fact that, improvements in employment during the post reform period in the organized manufacturing sector, there exist an inter- industry variation too. In the table below we could find that industry wise variations in employment elasticity among manufacturing sectors. Some industries have been creating employment in large ways and have higher elasticity of employment than others. These include Electrical&Electronics, Rubber and Plastic products, Coke, refined Petroleum products, Transport & Optical instruments. At the same time Chemical, Wood, Pulp and Paper & Printing etc. have registered negative trends in employment.

Table.7 : Rate of Growth of Employment: By Technology Intensive Classification

	Industries	1980-85 to 1992-93	1993-94 to 2003-04	2004-05 to 2015-16	1980-81 to 2015 -16
LTI	**Food Products, Beverages and Tobacco**	2.71	1.5	0.1	1.3
	Textiles, Textile Products, Leather and Footwear	0.71	2	-0.5	3
	Wood & Products of wood	1.6	4.1	-3.7	0.5
	TOTAL	**1.67**	**2.53**	**-1.37**	**1.60**
MLTI	**Pulp, Paper, Paper Products, Printing and Publishing**	2.5	4.3	0.7	2.5
	Coke, Refined Petroleum Products and Nuclear fuel	6.1	1.9	3.9	4
	Rubber and Plastic Products	7.2	3	3.1	4.5
	Other Non-Metallic Mineral Products	1.6	2.5	0.4	1.5
	Basic Metals and Fabricated Metal Products	2.3	2.8	2.1	2.4
	TOTAL	**3.94**	**2.9**	**2.04**	**2.98**
MHTI	**Chemicals and Chemical Products**	3.9	2	0.4	2.1
	Machinery, nec.	2.2	5.9	5	4.3
	Electrical and Optical Equipment	5	2.5	8.2	5.3
	TOTAL	**3.7**	**3.47**	**4.53**	**3.9**
HTI	**Transport Equipment and communications**	3.9	2.5	2.1	3.4
	Pharmaceuticals, Medical & Optical instruments.	4.2	2.8	1.9	3
	Total	**4.05**	**2.65**	**2.00**	**3.22**

Note: LTI= Low Technology Industries, MLTI= Medium Low Technology Industries, MHTI= Medium High Technology Industries and HTI= High Technology Industries. Source: Auther's calculation from INDIA KLEMS database, 2019.

The above table presents the rate of employment growth categorized by technology-intensive industries, comparing actual and estimated values. The industries are classified into Low Technology Industries (LTI), Medium Low Technology Industries (MLTI), Medium High Technology Industries (MHTI), and High Technology Industries (HTI). The data spans different time periods: 1980-85 to 1992-93, 1993-94 to 2003-04, 2004-05 to 2015-16, and 1980-81 to 2015-16. In the LTI category, the employment growth rate for Food Products, Beverages, and Tobacco was 2.71 during 1980-85 to 1992-93, followed by a decline to 1.5 during 1993-94 to 2003-04, and further decreased to 0.1 during 2004-05 to 2015-16. However, the overall employment growth rate for this category during the entire period 1980-81 to 2015-16 was 1.3. For Textiles, Textile Products, Leather, and Footwear in the LTI category, the employment growth rate was 0.71 during 1980-85 to 1992-93, which increased to 2 during 1993-94 to 2003-04. However,

there was a negative growth rate of -0.5 during 2004-05 to 2015-16. The overall employment growth rate for this category from 1980-81 to 2015-16 was 3.

In the Wood and Products of Wood industry in the LTI category, the employment growth rate was 1.6 during 1980-85 to 1992-93, followed by a significant increase to 4.1 during 1993-94 to 2003-04. However, there was a substantial decline of -3.7 during 2004-05 to 2015-16. The overall employment growth rate for this category from 1980-81 to 2015-16 was 0.5.Moving to the MLTI category, the Pulp, Paper, Paper Products, Printing, and Publishing industry experienced an employment growth rate of 2.5 during 1980-85 to 1992-93, which further increased to 4.3 during 1993-94 to 2003-04. The growth rate slowed down to 0.7 during 2004-05 to 2015-16. The overall employment growth rate for this category from 1980-81 to 2015-16 was 2.5.In the Coke, Refined Petroleum Products, and Nuclear Fuel industry in the MLTI category, there was a significant growth rate of 6.1 during 1980-85 to 1992-93, followed by a decrease to 1.9 during 1993-94 to 2003-04. However, the growth rate rebounded to 3.9 during 2004-05 to 2015-16. The overall employment growth rate for this category from 1980-81 to 2015-16 was 4%.The Rubber and Plastic Products industry in the MLTI category experienced a high growth rate of 7.2 during 1980-85 to 1992-93, which declined to 3 during 1993-94 to 2003-04.

Conclusion

This paper presents a comprehensive analysis of the employment elasticity and productivity trends in the organized manufacturing sector of India over the period from 1981 to 2017. The study adopts the growth accounting framework and utilizes the KLEMS dataset to categorize manufacturing industries into four distinct technology intensity groups. Two approaches, namely the value-added and gross output frameworks, are employed to measure productivity. The findings of the study reveal a substantial increase in manufacturing productivity since the advent of technological innovation but does not necessarily lead to employment creation in Indian manufacturing industries. Furthermore, a gradual shift in employment creation is observed, with a focus on medium-low to medium-high technology industries, including chemicals, machinery, iron and steel, Electrical and Optical Equipment and transport equipment. Conversely, traditional low technology sectors such as food, textiles, and paper have experienced a decline in their relative shares over the years.

Moreover, the study indicates an overall increase in capital intensity across most sectors. Notably, a cyclical pattern of Total Factor Productivity (TFP) is identified across industries, with a relatively higher and significant growth rate observed among technology-intensive sectors after 2000. Although low technology industries continue to hold a larger share, their productivity and employment performance has been relatively poor. During the 1980s and 1990s, a majority of industrial product groups witnessed negative Total Factor Productivity Growth (TFPG). However, a noteworthy shift occurred during the period of 2001-2007, where a considerable number of industries exhibited a positive TFPG with more technological intensity. It is worth noting that the conclusions drawn in several industries are sensitive to the measurement techniques employed in the analysis.

It is widely acknowledged that effective policy measures are necessary to mitigate the negative impact on job creation stemming from the rapid growth of capital-intensive production, particularly in the manufacturing sector. Such policies have the potential to generate more employment opportunities than would otherwise materialize. One promising policy approach involves curtailing the escalation of prices of wage goods, such as food items, which could potentially curb the growth of real wages. This, in turn, may enhance the cost competitiveness of labour-intensive industries and enable them to retain their position in the economy, especially amidst increasing import competition.

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