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विदर्भ अर्थशास्त्र परिषदेची

तज्ज्ञ परीक्षित संशोधन पत्रिका

अर्थमीमांसा

(ARTHAMIMANSA)

Previously included in the UGC-CARE Group I List

भारतीय सौर शके १९४८

(जानेवारी-जून २०२६ / खंड १८, अंक १)

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विदर्भ अर्थशास्त्र परिषद कार्यकारिणी

(२०२६-२७)

☐ **कार्याध्यक्ष**

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परिषद आजीव सदस्यता शुल्क : रू. १५०० आहे, ही रक्कम सचिव डॉ. श्रीकृष्ण बोढे, सहयोगी प्राध्यापक, श्री आर. एस. बीडकर कला, वाणिज्य व विज्ञान महाविद्यालय, हिंगणघाट, जिल्हा वर्धा यांचेकडे "विदर्भ अर्थशास्त्र परिषद" या नावाने डिमांड ड्राफ्टने पाठवावी किंवा खाली दिलेल्या QR CODE स्कॅनद्वारा पेमेंट करून डॉ. श्रीकृष्ण बोढे यांच्याशी ८४२११५१५५१ या नंबरवर संपर्क साधावा.

☐ **प्रमुख संपादक – 'अर्थमीमांसा'**

डॉ. धीरज सु. कदम

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https://www.arthamimansa.in/

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'अर्थमीमांसा' या संशोधन पत्रिकेचा खंड १८, अंक–१ (जानेवारी–जून २०२६) वाचकांसमोर सादर करताना आम्हाला अत्यंत आनंद होत आहे. प्रस्तुत अंकामध्ये अर्थशास्त्र, वाणिज्य, ग्रामीण विकास, पर्यावरण, हवामान बदल, सार्वजनिक आरोग्य, औद्योगिक विकास, वित्त, शिक्षण, प्रादेशिक विकास आणि शाश्वत विकास या विविध क्षेत्रांशी संबंधित एकूण १३ दर्जेदार संशोधन लेख प्रकाशित करण्यात आले आहेत. हे सर्व शोधनिबंध समकालीन भारतासमोरील आर्थिक, सामाजिक आणि पर्यावरणीय आव्हानांचे तथ्याधारित विश्लेषण करतात तसेच सार्वजनिक धोरणे अधिक परिणामकारक करण्यासाठी महत्त्वपूर्ण दिशादर्शन करतात.

या अंकातील काही लेख भारतीय अर्थव्यवस्थेतील समावेशक विकास, विषमता आणि जागतिकीकरणाच्या परिणामांवर केंद्रित आहेत. काजल खरवार आणि डॉ. करुणा शंकर कनौजिया यांनी भारतातील थेट परकीय गुंतवणूक (FDI), आर्थिक विकास आणि उत्पन्न विषमता यांतील परस्परसंबंधाचा अनुभवाधारित अभ्यास सादर केला आहे. आर्थिक वृद्धी होत असली तरी तिचे लाभ समाजातील सर्व घटकांपर्यंत समानतेने पोहोचत नसल्याचे या अभ्यासातून अधोरेखित होते. इस्माईल पी. आणि हरी कुरूप के. के. यांनी आपल्या शोधनिबंधातून भारतातील महागाईच्या बदलत्या स्वरूपाचे संरचनात्मक विश्लेषण सादर केले असून, महागाईवर परिणाम करणाऱ्या विविध आर्थिक घटकांचा चिकित्सक ऊहापोह केला आहे. धीरज कदम यांनी *"भारतातील स्पर्धात्मकता, आर्थिक विषमता आणि संविधानिक विकासदृष्टी"* या संशोधन लेखातून भारताच्या स्पर्धात्मकतेस चालना देणारे घटक आणि आर्थिक विषमतेमुळे निर्माण होणाऱ्या मर्यादांचा चिकित्सक अभ्यास करून, भारतीय संविधानातील सामाजिक न्यायाच्या तत्त्वांच्या आधारे समावेशक व संविधानाधिष्ठित विकासाची आवश्यकता अधोरेखित केली आहे. तर राशी अरोरा यांनी, आपल्या संशोधन लेखात विदर्भातील प्रादेशिक आर्थिक विषमता आणि औद्योगिक विकासातील असमतोल यांवर प्रकाश टाकून समावेशक व संतुलित विकासाच्या आवश्यकतेवर भर दिला आहे. श्रीकृष्ण बोढे आणि डॉ. सुनील शिंदे यांनी आपल्या शोधनिबंधात विदर्भातील ग्रामीण पायाभूत सुविधांवरील केंद्र व राज्य शासनाच्या योजनांच्या परिणामांचे व अंमलबजावणीचे वस्तुनिष्ठ मूल्यमापन करून ग्रामीण विकासाच्या वास्तवाचे विश्लेषण करण्यात आले आहे.

निळी अर्थव्यवस्था (Blue Economy), मत्स्यव्यवसाय आणि शाश्वत विकास हा या अंकाचा आणखी एक महत्त्वपूर्ण विषय आहे. भारताच्या आर्थिक प्रगतीमध्ये निळ्या अर्थव्यवस्थेचे वाढते महत्त्व अधोरेखित करणारा रीटा चंदराणा यांचा लेख समुद्री संसाधनांच्या शाश्वत वापरासाठी आवश्यक धोरणात्मक दिशांचा वेध घेतो; तर फर्नांडिस रेलिटा आणि डॉ. सीताराम सुकथणकर यांच्या संशोधन लेखात गोवा राज्यातील मत्स्य पुरवठा साखळीमध्ये विश्वास, संस्थात्मक शक्ती आणि सामूहिक सहभाग यांचा शाश्वततेवर होणारा प्रभाव स्पष्ट करण्यात आला असून, शाश्वत मत्स्य व्यवस्थापनासाठी आवश्यक संस्थात्मक चौकटींचे महत्त्व अधोरेखित करण्यात आले आहे. व्यवसाय, उद्योग आणि वित्तीय व्यवस्थापन या संदर्भातील लेखांमध्ये शिवाली नाईक आणि डॉ. सुभ्रमण्या भट यांनी आपल्या संशोधनातून वस्तू व सेवा कराच्या (GST) अंमलबजावणीमुळे गोव्यातील सूक्ष्म व लघुउद्योगांच्या व्यवसाय सुलभतेवर झालेल्या परिणामांचे अनुभवाधारित विश्लेषण केले आहे. तसेच प्रकाश सिंह आणि राजनीश पांडे यांनी त्यांच्या लेखामध्ये उत्तराखंड राज्याच्या औद्योगिक विकासाचा प्रवास, त्यातील अडचणी, संधी आणि धोरणात्मक गरजांचे सखोल विश्लेषण सादर केले आहे.

ग्रामीण अर्थव्यवस्था, कृषी आणि हवामान बदल या विषयांवरील लेख विशेष लक्षवेधी आहेत. हवामान बदलामुळे निर्माण होणाऱ्या जोखमींना शेतकरी कशा प्रकारे प्रतिसाद देतात आणि अनुकूलनाच्या कोणत्या रणनीती स्वीकारतात याचे संरचित क्षेत्रीय प्रयोगावर आधारित विश्लेषण शा हुसेन याकोब खान आणि डॉ. के. सदाशिवम यांनी केले आहे. तर शिल्पा भागवत यांचा लेख स्वयं-साहाय्य गट (SHG)–बँक संलग्नीकरण कार्यक्रमाच्या २००० ते २०२४ या कालावधीतील वाढीचे व प्रादेशिक प्रवाहांचे सांख्यिकीय विश्लेषण ग्रामीण वित्तीय समावेशनाच्या प्रक्रियेचे महत्त्व अधोरेखित करते. हे दोन्ही लेख ग्रामीण उपजीविका, आर्थिक सक्षमीकरण आणि शाश्वत विकास या विषयांवरील चर्चेला अधिक समृद्ध करतात.

सार्वजनिक आरोग्य आणि मानवी विकास या संदर्भात पश्चिम बंगालमधील कूचबिहार जिल्ह्यातील ग्रामीण-शहरी आजारपणातील विषमता आणि रोगभाराचे विश्लेषण करणारा सुशोवन मंडल आणि अम्लान मजुमदार यांचा लेख आरोग्य सेवांतील प्रादेशिक तफावत स्पष्ट करतो. हा अभ्यास आरोग्य पायाभूत सुविधांच्या समतोल विकासाची गरज स्पष्ट करून सामाजिक विकासाच्या व्यापक चौकटीत सार्वजनिक आरोग्याचे महत्त्व अधोरेखित करतो. तर श्रृष्टी चमोला यांचा संशोधन लेख उच्च शिक्षणासाठी शैक्षणिक कर्ज घेण्यामागील सामाजिक व आर्थिक निर्धारकांचा अनुभवाधारित अभ्यास करून शिक्षण वित्तपुरवठ्याच्या बदलत्या स्वरूपावर प्रकाश टाकतो.

या अंकातील सर्व संशोधन लेखांमध्ये अनुभवाधारित संशोधन, सांख्यिकीय विश्लेषण, आधुनिक संशोधन पद्धती आणि धोरणाभिमुख निष्कर्ष यांचा प्रभावी समन्वय दिसून येतो. त्यामुळे प्रस्तुत अंक संशोधक, विद्यार्थी, शिक्षक, धोरणकर्ते आणि समाजशास्त्रीय अभ्यासकांसाठी निश्चितच उपयुक्त संदर्भसाहित्य ठरेल, असा आम्हाला विश्वास आहे. हा अंक सिद्ध करण्यासाठी सर्व लेखक, समीक्षक, संपादकीय मंडळाचे सदस्य, विदर्भ अर्थशास्त्र परिषदेचे पदाधिकारी व कार्यकारिणी सदस्य तसेच मुद्रण सहकारी यांनी दिलेल्या मोलाच्या सहकार्याबद्दल आम्ही त्यांचे मनःपूर्वक आभार व्यक्त करतो. संशोधनातील गुणवत्ता, वस्तुनिष्ठता आणि शैक्षणिक प्रामाणिकता जपत 'अर्थमीमांसा'ची परंपरा अधिक समृद्ध करण्यासाठी सर्वांचे सहकार्य भविष्यातही लाभेल, अशी अपेक्षा आहे.

समकालीन आर्थिक, सामाजिक आणि पर्यावरणीय प्रश्नांवरील चिकित्सक विचारांना चालना देत शाश्वत, समावेशक आणि न्याय्य विकासाच्या दिशेने विधायक संवाद घडवून आणण्यात हा अंक महत्त्वपूर्ण योगदान देईल, अशी आशा व्यक्त करीत हा अंक आपल्या अभिप्रायासाठी सादर करीत आहोत.

दिनांक : ३० जून २०२६ **(डॉ. धीरज सु. कदम)**

स्थळ : नागपूर प्रमुख संपादक – 'अर्थमीमांसा'

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The Nexus between FDI, Economic Growth and Income Inequality in India: An Empirical Investigation

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Abstract:

This study examines the nexus between economic growth (GDP per capita Growth rate), Foreign Direct Investment (Net FDI inflow percent of GDP minus Net FDI outflow percent of GDP), and income inequality (Gini Index) in India over the period from 1991-2019 is investigated by using the Autoregressive Distributed Lag (ARDL) model, focusing on the period subsequent to economic reforms. By analyzing data spanning nearly three decades, the data analysis demonstrates that while both Foreign Direct Investment (FDI) and GDP growth have accelerated at a rapid pace, their impact on income inequality has been trivial, with marginal decline observed. The analysis shows that foreign direct investment inflow is greater than outflow which indicates that the country is attracting more foreign investment than it is investing abroad. This reflects India's appeal as an investment destination for foreign investors. Although, the analysis shows no significant long-term relationship between FDI and income inequality. Policymakers aiming to reduce income inequality should therefore consider these dynamics carefully, recognizing that short-term economic gains may not straightforwardly translate into reduced inequality. It's clear from the findings that despite the strong economic growth, the benefits haven't reached all population evenly, rethinking the usual assumption that increased FDI and GDP growth automatically lead to a reduction in income inequality.

Keywords: India, Income Inequality (Gini Index), Economic Growth, FDI, ARDL

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1. Introduction

Economic growth per capita, a key indicator of a country's economic health, represents the per capita income in a country is determined by dividing its total gross domestic product (GDP) by the number of people living in the country. It reflects how well a nation's economy is growing relative to its population size and providing a gauge for the country's standard of living over time. When GDP pc rises it suggests that an economy is expanding, potentially leading to higher incomes and improved living condition for the citizens. FDI is another crucial component of economic growth, especially in developing countries such as India. Net FDI is calculated as the difference between FDI inflows and outflows, where inflows refer to investments made by foreign entities into the domestic economy, and outflows represent investments made by domestic entities into foreign economies. A positive net FDI indicates that a country is receiving more foreign investment than it is investing abroad, which is typically seen as a positive sign of investor confidence and economic stability.

In the context of India, since the liberalization of its economy in 1991, the

nation has experienced notable variations in both FDI inflows and outflows. The liberalization policies aimed at reducing trade barriers, easing regulations, and opening up various sectors to foreign investments have led to a substantial increase in FDI inflows. This inflow reflects growing international confidence in India's economic potential, driven by its large and young population, growing consumer market, and strategic location. Conversely, the rise in FDI outflows from India, signifying the expanding global footprint of Indian enterprises. The difference between inflows and outflows offers an understanding of how its appealing India's economic environment then other countries.

The influence of FDI and GDP per capita on income inequality in India is a multifaceted topic that has attracted significant attention from economists and policymakers alike. FDI can stimulate economic growth, job creation, and technology transfer, which may reduce income inequality by creating gateways to a broader section of nations population. However, if the upsides of FDI are concentrated in certain sectors or regions, it can exacerbate income disparities. Similarly, while rise in GDP pc is generally linked to better living standards, the distribution of this growth is critical. If economic benefits are distributed unevenly, with wealth accumulating among the already affluent, income inequality may rise. Increasing income inequality hinders economic growth by reducing low-income families' ability to invest in education, health, and skills, ultimately limiting the availability of skilled labor (Brian, 2015 & Deaton, 2003). Societies with lower income inequality tend to experience better health and educational outcomes, underscoring the need for policy interventions to promote equitable growth (Maurya & Kanaujiya, 2021).

2. Theoretical Background

In economics, the connection between income inequality, GDP growth, and FDI is complex and has been widely explored in both theoretical and empirical studies. Numerous theories have been proposed to explain how these factors interact, often with differing conclusions depending on the context, time period, and specific country or region being studied. In this context the most famous theory is Kuznets Hypothesis (1955). This theory proposed by Simon Kuznets, the Kuznets Curve hypothesizes an inverted U-shaped correlation between income inequality and economic development (GDP per capita). Theory clearly mentioned that, in the initial phases of economic growth, inequality rises as income increases, but after a certain level of development, inequality begins to decline as more of the population benefits from the growth. In the initial phases of GDP growth, the benefits are often concentrated among the wealthy, leading to increased inequality. However, as the economy matures, wealth distribution becomes more equitable, and inequality decreases. Despite its widespread acceptance, Kuznets curve has faced criticism regarding its empirical robustness, as certain studies suggest that inequality does not inherently decrease at higher levels of development, especially within globalization contexts.

Another trickle-down effect, can trace its origins to the 19th Century, with the work of Rudolf von Jhering, who was the first to write about cultural diffusion. He traced how fashions filtered down from the upper classes to the lower classes. The key position of von Jhering's work was that the value of fashion is reduced to nothing when it has been adopted by everyone. As such, the upper classes are compelled to find and take up latest fashion trends that the lower classes will eventually adopt as well. After this it was used in the context of economics. Trickle-down theory suggests

that economic benefits provided to the wealthy, such as tax cuts or incentives for businesses (which can be a result of GDP growth and increased FDI), will eventually "trickle down" to the poorer segments of the economy. Post-1991 globalization in India has seen economic growth alongside rising income inequality, largely benefiting higher-income groups. Trickle-down theory suggests that benefits to top income earners eventually aid the broader economy through investment and job creation. However, this theory remains contentious, with limited empirical support, especially under conditions requiring significant investment, dependency on large industries, and low labor intensity (Kanaujiya & Gupta. 2021). When we see its implication for GDP Growth and Inequality, proponents argue that GDP growth fueled by investment from the wealthy will lead to overall economic improvement, reducing inequality. Critics contend that wealth does not truly trickle down and that, in fact, inequality may worsen, particularly given the absence of evidence to support this claim. Meanwhile, modernization aspect posits that FDI can lead to economic development and modernization, which in turn can reduce income inequality over time. The theory recommends that as countries modernize and industrialize, the benefits of the growth of the country's economy (which can be spurred by FDI) will eventually be distributed more evenly across society. When we discuss about the implication of FDI regarding Inequality, in early stages, FDI may increase inequality as it benefits the sectors that are closely connected with foreign investment. However, over time, as the economy develops, the benefits of FDI are expected to spread, reducing inequality. This study seeks to analyze the dual impact of FDI and GDP per capita on income inequality in India from 1991 to 2019 and beyond, examining the pathway through which these economic factors influence the distribution of income across different portion of the population. Grasping these dynamics is essential for developing policies that ensure inclusive and equitable growth as India progresses towards achieving a five trillion-dollar economy.

Over the last few decades India has experienced significant economic growth, positioning itself as one of the world's fastest-growing economies. According to the finance ministry, India is projected to rise to the position of the 3rd biggest economy globally with a GDP of $ 5 trillion by 2027 and touch $ 7 trillion by 2030 on the back of continued reform, said by the finance ministry (The Hindu, 29 January, 2024). Ten-year ago, India was previously the 10thbiggest economy globally with GDP of $1.9 trillion at current market price. Now, it is the 5th largest with a GDP of $ 3.7 trillion (estimate FY24), despite the pandemic, macro imbalances and a broken financial sector. During crises such as pandemics or natural calamities, the public sector plays a critical role in mitigating economic impacts. Following Keynesian principles, governments have implemented fiscal and monetary measures—such as stimulus packages and interest rate cuts—to counteract job losses, business closures, and supply chain disruptions. The effectiveness of public sector investment in such times depends on investment quality, robust frameworks, and stakeholder involvement (Kanaujiya & Singh, 2024). However, as the economy grows, the rich-poor gap is getting wider.

According to the HDRs, countries with lower human development levels tend to have higher income inequality (UNDP, 2010). For developing countries like India, this can mean a disparity between economic growth and real social progress, as inequality may reduce the effective gains reflected in HDI (Maurya & Kanaujiya, 2020). The article "Growth mania can be

injurious to society" (The Hindu, 30 January, 2024**)** aims to assess the relationship between economic development and income inequality in India, exploring whether the widening wealth gap is a consequence of rapid economic growth or not? India's economic expansion has been influenced by various factors, including globalization, liberalization, and technological advancements. Thus, the country has witnessed a significant rise in per capita GDP and overall prosperity. Despite economic growth, a substantial portion of the population being left behind. As stated in a report published by Oxfam, India's richest 1 percent possesses more than four times the wealth of the bottom 70 percent and is now own greater than 40 percent of the nation's total wealth, meanwhile the lower 50% of the population collectively holds a share just 3 percent of wealth.

For working on a whole, we should go from particular to general, in case of India the most populous state is Uttar Pradesh. A study highlights the disparities in employment and skill levels between different social groups, particularly SC/ST communities. Despite the economic growth in the region, structural issues like high unemployment, especially among educated and female workers, persist (Mamgain & Verick, 2017). It concludes that while economic policies have fostered growth, the benefits have not been equally distributed across social groups, indicating the need for targeted policies to address inequality (Kanaujiya, 2021), and it underscores how growth alone may not reduce inequality without targeted measures. The persistence of inequality, despite economic expansion, suggests that FDI and growth need to be managed with inclusivity in mind to benefit marginalized groups effectively.

3. Literature Review

The widening wealth gap in India can be attributed to various factors, including Income inequality, wealth concentration, Technological advancement, Globalization and trading, unequal access to education, healthcare, resources and employment opportunities, Inheritance, Discrimination, political connections, corruption, etc. Additionally, the wealth accumulation among a limited number of individuals and corporations has further leads to minimal or even negligible decline in the income disparity. If we talk about the Tax system in India it is progressive where high-income individuals contribute a proportion of their income to taxes, which leads to reduce income inequality along with economic growth (as this tax system leads to reduce disposable income of individuals and businesses to invest in growth-enhancing activities), so we can say that despite India's rapid economic growth, the pace of income inequality reduction has been disappointingly slow. The disparity remains stubbornly persistent, with any progress in narrowing the gap being minimal or even negligible.

Extensive scholarly research examines the correlation between income disparities and economic growth, with the Kuznets Curve being one of the most notable theories. Simon Kuznets, in 1955, proposed that this relationship follows a U-shaped curve drawing from data collected on United States, England, and Germany. According to Kuznets, during the initial phase of economic growth, income inequality increases. However, as the economy matures, income inequality decreases. Kuznets acknowledged that his data measured household incomes before taxes and government contributions. He suggested that the transformation from an agricultural to an industrial economy plays an important role in reducing income inequality, as urbanization provides more

opportunities for lower-income groups and one of the sources of urbanization or industrialization is inward FDI (Patra, 2019). Further Scripcar and Ciobanu (2021) also agreed with the existing belief that urbanization and openness to foreign trade leads to decrease the income inequality but not as significant as education. In a study Wang, Xu, Liu and Sun (2023) the empirical test, relying on the dataset taken from 126 countries found that FDI inflows reduce income inequality in emerging market countries (like India) but increase income inequality in developed countries. Nicholas Martin (2023) assesses the relation between income disparity and macroeconomic variables in developed (US, Italy) and developing (Peru, Belarus, Indonesia) countries. Regression analysis shows no significant impact of Gini index on GDP growth. However, macroeconomic variables especially GDP growth explain the significant variations in Gini index across countries (73%-84%).

Country-specific factors drive income inequality. The findings of Luan and Zhou (2017), study indicated that the Gini index is more influenced by GDP per capita (PPP) than GDP growth. Higher PPP correlates with lower income inequality, suggesting that economic development reduces inequality through factors like improved social welfare and higher minimum wages. Keskin (2017) found there is a complexity between income distribution and economic growth, building on Kuznets' (1950s) foundational work. Results show income inequality's impact varies between developed and developing countries. Extreme income inequality hinders growth in developing countries, while optimal inequality (Gini coefficient ≈ 0.45) fosters growth. Government intervention and altruistic behaviors can promote equitable income distribution. Developing countries should decrease inequality, while developed countries should increase it to optimize growth. Further research is needed to fully understand this multifaceted relationship. Contrary to the existing hypothesis Scripcar & Ciobanu (2021) came with the conclusion that economic growth is positively correlated with the Gini index.

An increase in GDP growth or GDP per capita will worsen the gap generated by the income inequality. Kuznets also noted that in the early phases of economic growth, especially in older countries, income inequality might initially widen due to the disruptive effects of industrialization on pre-existing economic and social structures. This transformation from pre-industrial to industrial economies explains why income structures are more unequal in underdeveloped countries compared to more advanced ones. As stated in classical approach, it has been posited that income inequality and wealth accumulation in a small proportion of individuals would result in higher growth in the future. There may be three reasons for positive relationship (Dadkhah, 2006): First, the rich consume proportionately less of their income and a higher propensity to save stimulate a faster growth rate. Second, indivisibility of investment project makes the concentration of resources in a few hands a prerequisite for investment and growth. Finally, workers and employers require incentive to exert their utmost efforts. A society committed to equality would not provide the incentive system necessary for growth.

3.1 Research Gap

In reviewing the existing literature on income inequality, GDP, and FDI, a significant research gap emerges. The majorities of studies rely on older datasets and primarily focus on cross-country analyses, which, while informative, do not capture the unique dynamics within India. Additionally, these studies have primarily examined the effect of income inequality on GDP, rather than exploring how

fluctuations in GDP, whether increases or decreases, influence income inequality specifically within India. Additionally, while some research has considered the function of FDI, there's a noticeable absence of studies that specifically assess the effect of FDI on income inequality in India during the critical period from 1991 to 2019—a period marked by significant economic reforms and globalization. Moreover, the methodologies employed in previous studies, such as OLS, 2SLS and GMM models, are limited in their ability to distinguish between short-run and long-run effects. This study examines these gaps by focusing solely on India, using up-to-date data from 1991 to 2019, and employing the ARDL model to provide a deep analysis of the short-run and long-run impacts of GDP and FDI on income inequality, offering new insights on unexplored aspects in the literature.

4. Objectives

This study intends to delve into the complex link between Net FDI, GDP per capita, and income inequality. By examining how these economic factors influence income distribution in India, this study aims to provide in-depth detailed insight of the mechanisms through which FDI and GDP growth can either alleviate or exacerbate income disparities. The objectives of this research are designed to uncover the multifaceted impacts of these economic variables, offering insights that could inform more equitable economic policies. Therefore some specific objectives include in the present study are:

- To examine the effect of GDP per capita growth rate on income inequality in India.
- To analyze the effect of net FDI on income inequality in India.
- To investigate the short-term and long-term relationships between net FDI, GDP per capita growth rate, and income inequality using the ARDL model.
- To provide policy recommendations aimed at mitigating income inequality.

5. Methodology: Hypothesis, Data and Model

5.1 Hypothesis

This study's hypotheses are prediction about the correlation between GDP per capita growth rate, net FDI as percent of GDP and Income Inequality. It serves as the foundation for research and a critical part of the research process, providing a clear direction for the study and a framework for interpreting the results. The period from 1991 to 2019 in India has been marked by significant economic reforms, increased FDI inflows, and substantial economic growth. However, the distributional impacts of these factors remain a subject of debate. The following hypotheses are proposed to test the potential effects of FDI and GDP on income inequality in India during this period:

H1: The GDP per capita growth rate significantly influences income inequality in India.

H2: Net FDI has a significant effect on income inequality in India

H3: There exists a long-term equilibrium relationship between net FDI, GDP per capita growth rate, and income inequality in India as captured by the ARDL model.

H4: The short-term dynamics between net FDI, GDP per capita growth rate, and income inequality differ from their long-term effects in India.

5.2 DATA Source and Description

The primary objective of this research is to investigate how factors like GDP growth rate and Net FDI, affect income inequality

in India. The research focuses on annual data collected from 1991 to 2019 for India. The brief overviews of each variable of analysis are outlined in Table 1.

Table 1: Description of Variable and Data Source

Variable Name	Variable	Description	Data source
Income Inequality	GINI Index	Range from zero to a hundred, the index near to zero shows high equality, while near to a hundred shows high unequal distribution of income.	UNU-WIDER-WIID
Economic Growth	PCGDP Growth Rate %	% annual growth rate of per capita GDP	WBG-WDI
Economic Integration	Net FDI % of GDP	The Net FDI inflow % of GDP minus Net FDI outflow % of GDP.	WBG-WDI

***Source**: Authors compilation*

Table 2 presents a comprehensive dataset spanning 29 years, from 1991 to 2019, capturing the key indicators of income disparity and growth of economy in India. The table includes the Gini coefficient, is a measure of income inequality, alongside the GDP per capita growth rate and Net Foreign Direct Investment (FDI). This data rovides the foundation for analyzing the relationship between economic growth, FDI and income inequality in the Indian context, particularly in the post-liberalization era. The trends observed across these variables will be further explored in the subsequent sections of this paper to understand the dynamics between FDI, GDP, and income inequality over time.

Table 2: Gini Index, GDPpc Growth %, Net FDI as a % of GDP in India

YEAR	GINI Index	GDP per capita growth	Net FDI in India % of GDP
1991	47.73	-1.04511	0.031298
1992	47.47	3.316866	0.087615
1993	47.49	2.627466	0.196931
1994	47.51	4.525134	0.272153
1995	47.78	5.452946	0.562459
1996	48.05	5.471108	0.556566
1997	48.33	2.071873	0.833056
1998	48.6	4.198921	0.613991

1999	48.87	6.851333	0.455348
2000	49.14	1.965952	0.656429
2001	49.41	2.945319	0.83923
2002	49.69	1.975908	0.766672
2003	49.96	6.016521	0.402194
2003	50.23	6.132606	0.506546
2005	50.5	6.206011	0.564206
2006	50.61	6.426045	0.637301
2007	50.73	6.093626	0.674068
2008	50.84	1.630781	2.014334
2009	50.95	6.371709	1.452117
2010	51.06	7.013175	0.682065
2011	51.24	3.818074	1.310476
2012	51.42	4.060822	0.84494
2013	51.42	5.014612	1.421219
2014	51.42	6.08618	1.122547
2015	51.42	6.721068	1.734903
2016	51.42	6.98099	1.717419
2017	51.42	5.568334	1.089052
2018	51.42	5.302409	1.135792
2019	51.42	2.811873	1.321409

***Source**: Authors Computation from World Bank.*

5.3 Model Specification

According to the stated objectives of this study, to analyze the effect of PCGDP growth (proxy variable for economic growth) and Net FDI (proxy variable for economic integration) on GINI Index (proxy variable for Income inequality), the following econometric model is specified:

$$Gini_t = \beta_0 + \beta_1 GDP_t + \beta_2 FDI_t + u_t$$

Where:

$Gini_t$ = represent the Gini coefficient at time (t)

GDP_t= represent the per capita GDP growth rate at time (t)

FDI_t = represent the net FDI inflow % of GDP – net FDI outflow of % of GDP at time (t)

B_0= constant term, B_1= coefficient of GDP, B_2= coefficient of FDI, u_t= error term

6. Analysis and Discussion

6.1. Descriptive Statistics

Before any further proceeding we need to analyze and describe our data (Table-3), in order to have some basic early results.

Table 3: Summary of Descriptive Statistics for all the variables

	GINI Index	GDPpc Growth Rate	NET FDI % of GDP
No. of observations	29	29	29
No. of missing values	0	0	0
Minimum value	47.47	-1.0451	0.031298
Maximum value	51.42	7.0132	2.014334
1st quartile	48.60	2.9454	.556566
3rd quartile	51.42	6.1326	1.135792
Mean	49.9155	4.57285	0.844908
Median	50.50	5.3024	0.682065
Sum	1447.55	132.613	24.50234
Standard error of the mean	0.27498	0.3770	0.0939
Lower confidence limit of the mean	49.3523	3.8006	0.6524
Upper confidence limit of the mean	50.4788	5.3451	1.0374
Variance	2.19277	4.1219	0.2560
Standard Deviation	1.48080	2.0303	0.5059
Skewness	-0.4612	-0.7826	0.5137
Kurtosis	-1.4296	-0.1469	-0.5844

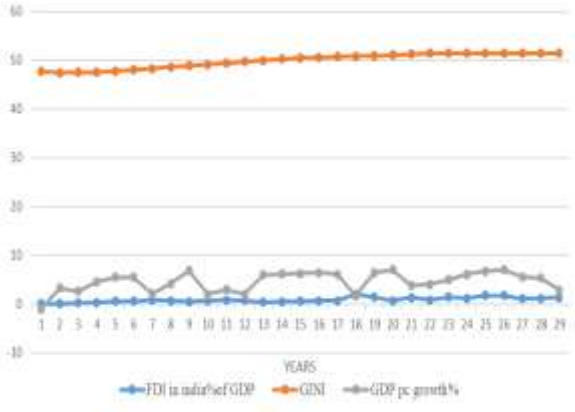
Source: *Authors Calculation on R Studio*

Income Inequality (Gini index): The moderate and stable Gini values indicate that income inequality remains fairly consistent over time, with no significant upward or downward trends.

Economic Growth (GDP per capita Growth Rate): The moderate economic growth with some variability suggests that while the economy is growing, there are periods of slower growth. The left-skewed nature indicates a tendency towards more frequent slower growth periods.

Foreign Direct Investment (Net FDI as % of GDP): The relatively low but stable and positive FDI inflow minus outflow suggests that foreign direct investment inflow is greater than outflow which indicates that the country is attracting more foreign investment than it is investing abroad. This reflects India's appeal as an investment destination, contributing positively to economic growth and development. It also improves the capital account of the balance of payments and suggests greater foreign confidence in India's economic prospects compared to the level of Indian investment overseas.

Figure 1: Trend line of Gini Index, GDPpc growth and FDI as % of GDP



Source: *Authors Construction*

Table 4 represent the stationarity check by unit-root test based on the Augmented Dickey Fuller Test (ADF) and it results depicts that GDP per capita growth rate and Net FDI percent of GDP are stationary at level, while Gini Index is stationary at first difference. As our variables are stationary at I(0) or I(1), the ARDL method is appropriate for testing short- and long-run relationship between the concerned variables.

Table 4: Stationarity check by Augmented Dickey Fuller Unit Root Test

At Level			
Trend (C&T)	GINI	GDP pc Growth	Net FDI % of GDP
Test-Statistics	-0.4202	-3.8869**	-3.7852**
At First Difference			
Trend (C&T)	GINI	GDP pc Growth	Net FDI % of GDP
Test-Statistics	-3.8378**	-5.3279***	-5.3781***
Critical value	10% *	5% **	1% ***
	-3.18	-3.50	-4.15
Null Hypothesis		Stationary	

Source: *Authors Calculation on R Studio* ***Note:*** ****1%, ** 5%, *10%Significance*

The ARDL Bound Cointegration test is applied to know the long run cointegration of model and results shows (table 6) that F statistics (6.18) is higher than the upper bound critical value (5.473) at a 5 percent significance level. These findings clears that there is a long-run relationship between the variable. It implies that despite short-term fluctuations, a stable long-term equilibrium exists among the variable.

Table 5: Bound Test Result - Cointegration Test (Pesaran, Shin, and Smith)

Bound Test	**F-Statistic**		
F-Test	6.183		
Critical Value I (0)	10%	5%	1%
	3.437	4.267	6.183
Critical Value I (1)	10%	5%	1%
	4.47	5.473	7.873

Source: *Authors Calculation on R Studio.*

The table 6 ARDL Error Correction Model is estimated and ECM results indicate the speed at which variables adjust to long-term equilibrium after a shock. Significant short-run dynamics were found in variables such as GDP per capita and FDI, while certain long-run coefficients were estimated to be significant, highlighting their impact on the dependent variable. The coefficient of the error correction term (ec.1) is negative and significant, mean that fluctuations from the long-run equilibrium correct over time. The high R-squared values indicate that the model explains a substantial portion of the variance in the dependent variable. A value of 0.9189 suggests a very good fit. Residual Standard Error measures the average amount by which the model's predictions deviate from the actual values, here lower Residual standard error indicates a better fit. The low p-value of the F-statistic indicates that the overall model is statistically significant.

Table 6: ARDL Error Correction Model

	Estimate/ coefficient	Std. Error	T-Value	Pr(>|t|)
(Intercept)	1.914318	0.337465	5.673	0.0000443***
ECT.1	-0.030782	0.005508	-5.588	0.0000518***
R-squared	0.9189	Adjusted R-squared		0.8702
Residual Std. Error	0.04218			
F-statistic	18.88	P-value		0.000001241

Source: *Authors Calculation on R Studio.* ***Note:*** ****1%, ** 5%, *10% Significance*

Coefficient in Table 7 represents the estimated effects of each variable on the dependent variable. For instance, the coefficient for dgdppc.t is -0.013100 with a p-value 0.035288, indicating that a one-unit increase in dgdppc.t (GDPpc %) is associated with a decrease of 0.013100 units income inequality in the short run, holding all other variables constant, this relationship is statistically significant at the 5 percent level. 1st Lag (dgdppc.1) coefficient is 0.028685with a p-value of 0.000350, indicating that a 1 percent increase in GDP per capita growth in the previous period leads to a 0.028685-unit increase in income inequality. This effect is statistically significant at the 1 percent level. 2nd Lag (dgdppc.2) coefficient is 0.024437 with a p-value of 0.000611, suggesting that 1 percent GDP per capita growth two periods prior leads to a 0.024437-unit increase in income inequality, also statistically significant at the 1percent level.

Table 7: ARDL Short-Run Model

	Estimate/ coefficient	Std. Error	T-Value	Pr(>|t|)
dgdppc.t	-0.013100	0.005662	-2.314	0.035288 **
dgdppc.1	0.028685	0.006241	4.596	0.000350 ***
dgdppc.2	0.024437	0.005661	4.317	0.000611 ***
dgdppc.3	0.008815	0.004755	1.854	0.083553*
dfdi.t	-0.054768	0.025213	-2.172	0.046278 **
dginii.1	0.252345	0.167465	1.507	0.152617
dginii.2	-0.018765	0.164144	-0.114	0.910499
dginii.3	0.098368	0.129890	0.757	0.460589

Source: *Authors Calculation on R Studio.* ***Note:*** ****1%, ** 5%, *10%Significance*

In 3rd Lag (dgdppc.3) coefficient is 0.008815 with a p-value of 0.083553, indicating a positive but statistically insignificant effect on income inequality. While GDP growth has a small immediate effect in reducing inequality, its lagged positive effects suggest that the overall short-run impact could lead to a net increase in income inequality. This highlights a potentially complex and non-linear relationship where short-term benefits may be offset by longer-term repercussions. The coefficient for the immediate effect of FDI (dfdi.t) on income inequality is -0.054768 with a p-value of 0.046278. This implies that a 1 percent

increase in FDI results in a 0.0548-unit decrease in income inequality in the short run, this relationship is statistically significant at 5 percent level. The magnitude of FDI's effect indicating a reduction in inequality in short-run, suggesting that FDI play a substantial role in shaping income inequality in the short term.

Table 8: ARDL Long-Run Model

	Estimate/ coefficient	Std. Error	T-Value	Pr(>|t|)
intercept	-0.030782	0.014405	-2.137	0.0522*
gdppc.1	-0.047955	0.017699	-2.709	0.0179**
fdi.1	-0.036010	0.049272	-0.731	0.4778

Source: *Authors Calculation on R Studio.* ***Note:*** ****1%, ** 5%, *10%Significance*

In Table 8 coefficients suggest the long-term relationships between the dependent variable and the corresponding variables. For instance, the coefficient for gdppc.1 is -0.0480, indicates that, in the long run a 1percent increase in GDP is associated with a reduction in income inequality by approximately 0.0479 units. Although this effect is negative, the magnitude is relatively small, suggesting that GDP growth has a minimal impact on reducing income inequality in India over the long run. The P-value of 0.0179 is below the common significance level of 0.05, indicating that the relationship between GDP and income inequality is statistically significant. This means that, despite the small magnitude, we can be reasonably confident that GDP does have a genuine, albeit minor, effect on income inequality. The coefficient of fdi.1 is -0.036 suggests that a 1percent increase in net FDI is associated with a decrease in income inequality by approximately 0.036 units in the long run. Similar to GDP, this effect is also small, indicating that FDI's influence on income inequality is quite limited. However, the P-value of 0.4778 is much higher than the typical significance level of 0.05. This implies that the relationship between FDI and income inequality is not statistically significant, mean that we cannot confidently assert that FDI has a meaningful long-run effect on income inequality in India.

Table 9: Diagnostic Test for checking Autocorrelation, Heteroskedasticity, Normality and Biasness

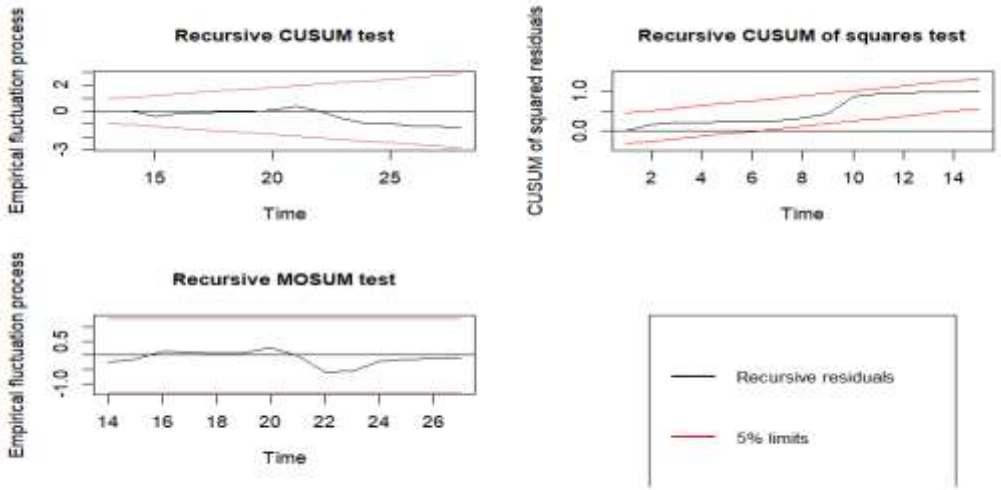
Test	Test Statistics	Degrees of Freedom	P-Value	Null Hypothesis	Accept /Reject	Result
Breusch-Godfrey Test for Autocorrelation	LM test = 1.048	df1 = 1, df2 = 12	0.3262	No Autocorrelation	Accept	No Significant Serial Correlation in the residuals of the model.
Ljung-Box Test for Autocorrelation	X=squared =1.2032	df = 1	0.2727	No Autocorrelation	Accept	No Significant Autocorrelation in the residuals up to lag 1.
Breusch-Pagan Test for Homoskedasticity	BP = 8.2306	df = 11	0.6925	No Heteroskedasticity	Accept	No Significant evidence of Heteroskedasticity, the residuals

						have constant variance.
Shapiro-Wilk Test of Normality	W = 0.96282	None	0.4734	Data is Normally Distributed	Accept	Residuals are Normally Distributed.
Ramsey's RESET Test for Model Specification	RESET = 4.3509	df1 = 2, df2 = 13	0.03576	Model is Unbiased	Reject	mis-specified, potentially missing important variables or relationships

Source: *Authors Calculation on R Studio*

ARDL (Autoregressive Distributed Lag) bounds testing model involves examining several key outputs to assess model validity, stationarity, and the relationship between variables with detailed interpretation has been given in table 9. The ARDL model was specified with autoregressive and distributed lags, with appropriate orders determined by the data. Diagnostic tests confirmed that the model residuals are free from significant autocorrelation, heteroskedasticity, and non-normality. However, the Ramsey RESET test suggests potential model specification issue. After ARDL model formation and specification we are going to check the stability of ARDL model with the help of CUSUM, CUSUM SQ, and MOSUM test. Fig. 2 shows the stability plots of the model.

Figure 2: Stability Test of Auto Regressive Distributed Lag Model



Source: Authors Construction.

6.2 Interpretation of Results

The short-run impact of GDP per capita growth on income inequality in India appears complex. While the immediate effect suggests a small reduction in inequality, the lagged effects show a statistically significant increase in income inequality. This could depict that even while GDP growth may initially lead to reduce inequality, its effects may reverse in subsequent periods, potentially exacerbating inequality in the short run which leads to very slow decrease in income inequality in long run. In the short run, the impact of Net FDI on income

inequality is negative, suggesting that increased FDI might help reduce inequality.GDP and FDI both appear to have very small effects on income inequality in India over the long run as well. GDP shows a statistically significant but minor impact, suggesting that while economic growth contributes slightly to reducing income inequality, its influence is minimal. On the other hand, the effect of FDI is both small in magnitude and statistically insignificant, indicating that Net FDI does not play a substantial role in affecting income inequality in the long run. The outcome suggests that while economic growth and foreign investment are often touted as mechanisms to reduce inequality, their actual long-term impacts on income inequality in India may be limited.

The relationship between income inequality, GDP growth, and FDI is complex and context-dependent. Theories like the Kuznets Curve and Trickle-Down Economics offer differing views on how GDP growth might influence inequality, with the former suggesting a potential decrease in inequality at higher stages of development and the latter assuming benefits will eventually spread to lower-income groups. So, it is clear after interpreting the whole model that India is somehow in between the top point and declining phase of Kuznets Inverted-U shape curve. Due to which we may interpret that in future inequality may decline, but as we let to know through previous work that the outcomes depend heavily on the specific circumstances of the country or region, so, in respect of India after doing the empirical analysis (from 1991-2019) with the help of ARDL model we interpret that the lag values of GDP per capita growth rate effecting positively the current income inequality.

According to Trickle-Down Economies as the wealth increases of the richest population of the economy (may be due to by tax cut, FDI, GDP) this will lead to trickle down the poverty and income inequality. So, we can say income inequality is itself correcting the income inequality, that's why the empirical analysis of this study shows the negative relation between the net FDI and GDP pc growth rate with income inequality as in India the richest 1 percent of the Indian population holds more than four times the wealth of the bottom 70 percent and is now own greater than 40 percent of the nation's total wealth, while the lowest 50 percent of the population together share just 3 percent of wealth estimated by Oxfam. But the long-run relation between net FDI and income inequality is not statistically significant, indicates that we cannot confidently assert a meaningful impact of Net FDI on income inequality, so, we can say this theory may be not that much relevant in respect of India. Meanwhile, the impact of FDI on inequality is explained by an optimistic theory called Modernization Theory, which sees FDI as a driver of development and eventual equality. This study follows the modernization theory in short-run but in long-run the results is not statistically significant.

7. Conclusion

These findings can help to draw conclusions about the relation of GDP growth, FDI and income inequality, that while GDP growth and FDI are critical economic factors, the effects of moderate GDP growth and low net FDI on income inequality may require further investigation could argue that may not be sufficient to significantly reduce income inequality (stable Gini coefficients).The short-run dynamics between GDP growth, FDI, and income inequality in India from 1991 to 2019, as revealed by the ARDL model, indicate nuanced relationships. GDP growth has mixed effects, initially reduces inequality but potentially increasing it over time due to lagged effects, so, in case of

India this rapid GDP growth to make it a $ 5 trillion economy by 2027 and touch $ 7 trillion by 2030 may adversely affect the income equality in India.On the other hand, while FDI seems to reduce inequality, its impact is statistically significant in short term but minimal and not statistically significant in the long term. These findings propose that while economic growth and foreign investment are often touted as mechanisms to reduce inequality, their actual long-term impacts on income inequality in India may be limited. Other factors or policies might be more crucial in addressing income disparity. Policymakers aiming to reduce income inequality should therefore consider these dynamics carefully, recognizing that short-term economic gains may not straightforwardly translate into reduced inequality. They need to be mindful of these dynamics when devising policies for economic advancement and attracting FDI, to ensure that the outcomes of development are shared equitably across society.

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An Examination of Trust and Power Factors in Sustainable Fishing Supply Chains

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Abstract

This study provides a comprehensive analysis of the fisheries sector, with a particular focus on sustainable fisheries supply chains. It examines the influence of bargaining power, institutional power, collective power, and trust on supply chain sustainability. Primary data were collected from 410 supply chain participants, including fishers, agents, and retailers, in Goa, India. The data were gathered through structured questionnaires and analysed using Partial Least Squares Structural Equation Modelling (PLS-SEM) with SmartPLS 4.

The findings reveal significant relationships among institutional power, trust, and supply chain sustainability, highlighting their strong interdependence. The study also demonstrates that collective power has a significant positive impact on the sustainability of fisheries supply chains. These findings provide valuable insights into the roles of different forms of power and trust in promoting sustainable fisheries supply chains. The results can assist policymakers, practitioners, and other stakeholders in designing effective governance mechanisms and evidence-based policies to enhance the long-term sustainability and resilience of fisheries supply chains.

Keywords: Marine fisheries; bargaining power; collective power; institutional power; supply chain sustainability; trust.

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1. Introduction

An assessment by the United Nations in 2015 highlighted the tremendous pressure that the marine resources have been facing due to unsustainable practices employed in the fishing sector. This led to a global consensus on the need to adopt sustainable practices in the fisheries industry. The United Nations' Sustainable Development Goals 2030, adopted by the General Assembly in 2015, gave special attention to these resources by designating a stand-alone goal (SDG 14) to make the oceans sustainable.

"Sylvicultura Oeconomica", a book by Hans Carl von Carlowitz published in 1713, is among the first to document this concept (Heinberg & Lerch, 2010). However, the concept gained immense attention when it was mentioned in the Brundtland Report, published by the World Commission on Environment and Development in 1987 (Mugoni et al., 2024). Sustainability has attracted the

attention of researchers worldwide working in sustainable businesses and economies (Feizi et al., 2026; Omoloso et al., 2024). It has been studied across many fields using various approaches, and the fisheries industry is one such industry with strong relevance (Fernandes & Sukthankar, 2024). In recent years, the sustainable fishing supply and value chains have attracted the attention of many practitioners and researchers (Andreazza et al., 2026; Bouzembrak & Marvin, 2026; Feizi et al., 2026; Mawrides et al., 2025).

Researchers have highlighted the importance of pursuing sustainability in supply chains to make the fisheries sector more resilient (Grafton et al., 2023). The idea is to view the sector holistically rather than narrowly and fragmentarily (Rajeev & Bhandarkar, 2022). This has led to recognition of the role of sustainable supply chains in the broader context; however, there is a dearth of such studies in developing nations like India. Although a large body of research has been published on this topic from a Western perspective, few studies have explored this dimension in the Asian context, creating scope for further investigation. Asia, home to 85% of the world's population, plays a crucial role in advancing sustainability due to its large, rapidly growing economies.

The study examines the impact of power and trust on the sustainability of the fishing supply chain. While previous research has identified these two factors as major influences within the fishing industry, there is a notable lack of studies examining their causal relationship with sustainability in fishery supply chains. Our study addresses this gap.

2. Theoretical Framework and Hypothesis Development

2.1. Theoretical Framework

- **Supply Chain Sustainability (SCS)**

The importance of sustainability indicators differs across different stakeholder groups (Aguado et al., 2016; Tsironi, 2023). Several researchers have used theories such as resource dependency theory (Rivera-Valle & Silva, 2024), social exchange theory (Lauer, 2008), and transaction cost theory (Kuperan et al., 2008; Mustapha et al., 2022) to analyse the sustainability of fishing supply chains across different dimensions. At the same time, several authors have proposed various frameworks for defining sustainability (Evans et al., 2017; Heinberg, 2010; Sharma & Jaiswal, 2018; Vittersø et al., 2019). One of the most widely accepted frameworks is the triple bottom line approach (Liu et al., 2020). The present study draws on resource dependency theory (Abidin et al., 2023; Cho et al., 2019; Hillman & Dalziel, 2003), social exchange theory (Ahmad et al., 2023), and the triple bottom line approach (Gimenez et al., 2012; Liu et al., 2020). The study uses resource dependency theory and social exchange theory to hypothesise about power and trust relationships in the fishing supply chains. In contrast, the triple bottom line approach has been adopted to assess the sustainability of these supply chains.

- **Trust among Fishing Supply Chain Players (T)**

The impact of T on interpersonal relationships has been well examined in management research. T is a multifaceted construct and has been defined in multiple ways. According to Moorman et al. (1992), T is “the willingness to rely on an exchange partner in whom one has confidence”. T is also defined as the willingness of members in a buyer—supplier relationship to comply with the requirements and behaviours of others (Korsgaard et al., 2015). T is sometimes also defined as one’s willingness to take risks (Mayer et al., 1995). Long-term business relationships can be based on T and informal

transactions (Nguyen & Abwao, 2023). Embedded T could imply confidence and a positive attitude towards another in the supply chain relationship (Nunkoo & Ramkissoon, 2012). Hence, it is important to explore the influence of T on behavioural dynamics in supply chains. T has served as the basis for several research studies across various domains, including supply chain management. Fischer (2013) found that T in food supply chains can be positively influenced by effective communication and positive experiences from past collaborations. Similarly, Gajdić et al. (2023) highlighted that T positively affects the effectiveness of agri-food supply chains. However, very few studies, such as Kushardanto et al. (2022), Rojas et al. (2021) and Yulinda et al. (2021), have explored T dynamics in fisheries and fishing supply chains.

- **Power in Fishing Supply Chains**

Power is the ability to get another person or entity to do something they would otherwise not do. This definition was further revised by Thomas Wartenberg, who stated that social agent A has power over social agent B if and only if A can strategically constrain B's action environment (Wartenberg & Thomas E, 1990). Several authors have emphasised that the concept of power, when adopted as an analytical tool, enables the exploration of interdependencies within networks such as supply chains (Essabbar et al., 2020; Kähkönen & Virolainen, 2011). Power is an important factor in the vertical relationships among supply chain players. Researchers in various fields have studied various forms of power over the years, such as coercive power (Yeung et al., 2009), non-coercive power (Ke & Wei, 2008), economic power, political power (Lindenmayer, 2017), bargaining power (Deep et al., 2022), among others. This study explores three key forms of power that may have a considerable influence fishing supply chains: institutional power, bargaining power, and collective power.

- **Institutional Power (IP)**

Powerful institutions, such as governing authorities and associations, are often criticised for mismanaging fisheries resources (Prodhan et al., 2023). Fisheries, a sector that is highly dependent on resources commonly owned by the public, places the onus for managing these resources primarily on institutional bodies that can influence supply chain operations through the policies and plans they draft (Rivera-Valle & Silva, 2024). As such, assessing whether their power leads to the sustainable use of fishery resources is essential.

- **Bargaining Power (BP)**

In the supply chain literature, bargaining refers to a situation in which a firm has strong power to exploit to maximise its gains at the expense of its weaker partners. BP can influence how supply chain participants benefit from markets (Dwyer & Walker, 1981). Those with limited power may have less ability to help. For instance, women may experience less BP than men in negotiations, contributing to gender inequalities (Rojas et al., 2021). In fishing supply chains, several authors have found that suppliers tend to have lower BP than buyers, thereby undermining SCS.

- **Collective Power (CP)**

Power is a multifaceted construct with both positive and negative implications. One specific dimension of this concept is CP, which can be understood from two perspectives. CP refers to the influence a group can exert over the operations and activities within a particular industry, potentially overshadowing individual capabilities. The duality of its impact can be seen in various contexts, such as empowering marginalised individuals and those with limited influence, as well as

manifesting in trade unions and professional associations. This study adopts the definition of CP articulated by Prodhan et al. (2023), emphasising its negative aspects.

2.2. Hypotheses Development

- **Relationship between Power and Trust in Fishing Supply Chains**

Power and trust, a subject of interest across several academic domains in the social sciences, are crucial for the efficient performance of supply chains and the relationships within them (Ke & Wei, 2008). Several studies have examined the interlinkages between these two aspects to identify the policy implications of such factors (Möllering, 2019). Some studies have shown that people with greater power tend to have less trust, suggesting that these two dimensions are not always directly proportional and can move in opposite directions (Möllering, 2019; Nunkoo & Ramkissoon, 2012; Schilke et al., 2015). Most existing literature focuses on power and trust in contexts like conflict or satisfaction, often overlooking their relationship in supply chains. Some researchers argue that power undermines cooperation and view it as the opposite of trust (Belaya et al., 2008). In comparison, some argue that power and trust are inherently contradictory in their relationship (Schilke et al., 2015). Therefore, the following hypotheses are proposed.

H_1: *IP has a significant positive impact on T in fishing supply chains.*

H_2: *BP has a significant positive impact on T in fishing supply chains.*

H_3: *CP has a significant negative impact on T in fishing supply chains.*

- **Relationship between Power and Sustainability in Fishing Supply Chains**

Researchers have previously explored the impact of power on sustainability in fisheries and related industries. Power imbalances can hinder the adoption of sustainable practices, as shown by Autry & Golicic (2010) and Rivera-Valle & Silva (2024). Several authors have examined these power asymmetries (Gruchmann, 2022; Marques et al., 2022; Pomeroy et al., 2015). Therefore, power plays a complex role in shaping sustainable supply chain relationships (Cox, 1999; Gelderman & Van Weele, 2004). Very few studies have examined how institutional, collective, and BP contribute to sustainable growth in fishing supply chains. Therefore, we hypothesise as follows:

H_4: *IP has a significant positive impact on SCS.*

H_5: *BP has a significant positive impact on SCS.*

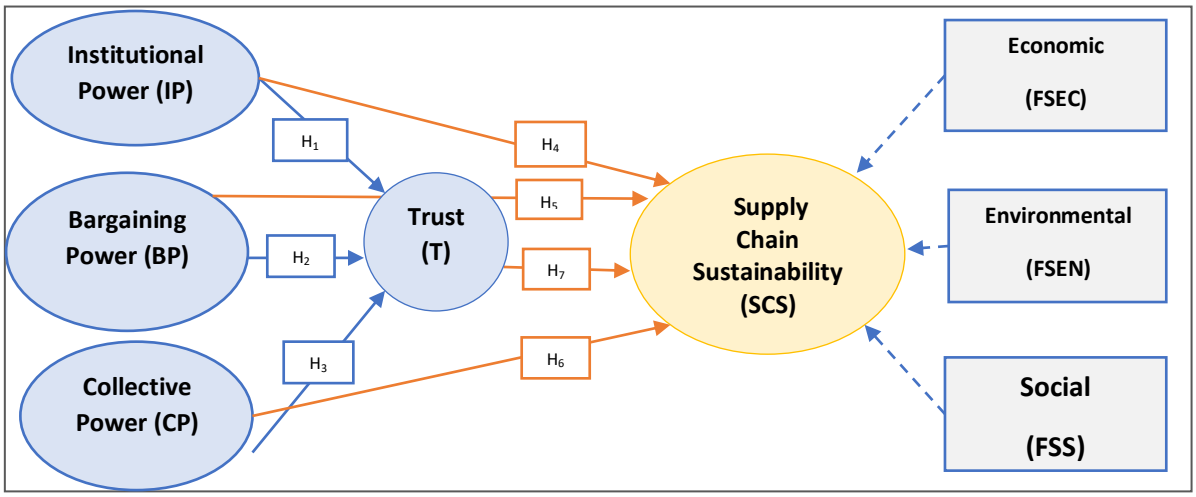
H_6: *CP has a significant negative impact on SCS.*

- **Relationship between Trust and Sustainability in Fishing Supply Chains**

Trust has been found to influence the performance of the fishing industry supply chain positively (Yulinda et al., 2021) and is a crucial factor affecting cooperation in fisheries supply chains (Hoa et al., 2021). Stakeholder trust is vital for holistic fishery sustainability assessments, and transparency and broader sustainability reporting can help build public trust in fishery management (Haas et al., 2020). Hence, 'Trust' is a variable identified by several researchers as a strong predictor of sustainability adoptions (Mora-Monge et al., 2019). Therefore, we propose the following hypothesis.

H_7: *T has a significant positive impact on the SCS.*

Figure 1: Showing the Proposed Model for the study



Source: Authors' work

Based on the studies reviewed, IP, BP, CP, and T are considered reflective constructs, and SCS is a formative construct in the model.

3. Research Methodology

The study primarily focuses on the fisheries supply chain in Goa. Goa, although the smallest state, has a strategically eminent geographical location that supports fisheries activities within the state (Faria, 2019). The state's economy has been heavily dependent on the fishing industry for decades, providing livelihoods through direct and indirect employment to a considerable proportion of its population. This study has adopted a quantitative methodology based on data collected from 410 respondents (170 fishers, 70 agents and 170 fish retailers) using structured questionnaires (Nguyen & Abwao, 2023). The respondents were chosen using proportionally stratified random sampling. The data collected through the questionnaires were analysed using SmartPLS 4. Data analysis techniques such as Descriptive Statistics and Partial Least Squares-based Structural Equation Modelling (PLS-SEM) were utilised. PLS-SEM is a widely used approach for estimating complex statistical models without requiring distributional assumptions. Notably, it is a causal-predictive SEM method that focuses on prediction while estimating statistical models structured to provide causal insights (Hair & Sarstedt, 2019; Sarstedt et al., 2017).

4. Analysis and Discussions

4.1. Demographic Profiling

Table 1: Descriptive Statistics of the Demographic Profile

Age (in years)	No.	%	Fishery experience (in years)	No.	%
18-40	16	3.9	Less than 15	151	36.8
41- 60	294	71.7	15-30	118	28.8
Above 60	100	24.4	More than 30	141	34.4

Source: Author's work

Table 1 shows that 71.7% of respondents are aged 41 to 60, 24.4% are aged 60 or older, and 3.9% are aged 18 to 40. In terms of experience in the fishing industry, 36.8%

have less than 15 years, 28.8% have 15-30 years, and 34.4% have over 30 years' experience. A notable aspect is that many respondents in Goa started participating in fishing-related work at a young age, demonstrating their long-term commitment and dedication to the industry. This has led some in the second age group to have 30 or more years of experience.

4.2. Relationship between Power, Trust and Fishing Supply Chain Sustainability

4.2.1. Measurement Model

Next, we examine the relationships among power, trust, and sustainability in the context of fishing supply chains using PLS-SEM. The results are presented in the following section. PLS-SEM helps examine complex relationships and allows testing of hypotheses using more robust and accurate methods. The first stage in PLS-SEM assessment involves testing the measurement model by assessing the reliability and validity of the constructs and variables used in the model. For this, we use indicators such as Cronbach's alpha, composite reliability, Average Variance Extracted (AVE) and outer loadings. Cronbach's alpha composite reliability needs to have a value of 0.7 or more, and the AVE should be at least 0.5 in order to establish the reliability of the constructs. The outer loadings of all variables used to measure each construct must be at least 0.7, as per Hair et al. (2019). The results of reliability testing are shown in Table 2 and discussed below.

Table 2: Constructs Reliability

Construct and Statements	SL	VIF	CA	CR	AVE
Bargaining Power					
BP1<- Buyers have more power to control the cost than the seller.	0.872	1.682	0.746	0.851	0.656
BP2<- Buyers are price sensitive.	0.762	1.659			
BP3<- My bargaining power is limited because of the intense competition and rivalry.	0.790	1.322			
Collective Power					
CP1<- Syndicate members exercise power during the transaction.	0.720	1.308	0.722	0.842	0.642
CP2<-Syndicate members forced to sell fish at a lower price.	0.806	1.484			
CP3<-Due to the dominance of the local leader, I did not get the expected profit.	0.870	1.572			
Institutional Power					
IP1<- The local administration (government personnel body) monitors the market.	0.932	3.524	0.877	0.924	0.802
IP2<- The local administration gives warnings whenever necessary.	0.815	1.808			
IP3 <- The local administration fines those who adopt malpractices.	0.936	3.406			
Trust					
T2<- I have confidence that the supply chain players with whom I share information will help me in the future if the need arises.	0.912	2.194	0.849	0.929	0.867
T3<- I trust the policies formulated by the authorities.	0.950	2.194			

Source: Author's Work

Note: *SL: Standardised Loadings; VIF: Variance Inflation Factor; CA: Cronbach's Alpha; CR: Composite Reliability; AVE: Average Variance Extracted*

First, we assessed the outer loadings of all items of the reflective constructs. Items with low outer loadings and negligible weights were eliminated, resulting in the removal of T1 and CP4. The retained items' outer loadings ranged from 0.720 to 0.950, indicating their strong contributions to the constructs. Next, we assessed the Composite reliability and found values ranging from 0.842 to 0.929, indicating high reliability. Next, Cronbach's alphas were assessed and found to be above the minimum required level of 0.70, ranging from 0.722 to 0.877. Next, we assessed convergent validity using AVEs, which ranged from 0.642 to 0.867 and exceeded the 0.50 threshold. Finally, we examined the variance inflation factor (VIF) values to detect multicollinearity. We found that the values were all below the threshold of 5, ranging from 1.308 to 3.524, indicating no multicollinearity issues. Accordingly, for the higher-order formative-formative construct, VIF values and outer weights for the indicators were assessed, in addition to convergent validity.

Table 3 shows the results of Fornell Larcker Criterion (FLC), which indicates that the FLC values meet the criteria as stated by Fornell & Larcker (1981). Thus, the measurement model's reliability and validity are confirmed.

Table 3: Discriminant Validity-FLC

	BP	**CP**	**IP**	**T**
BP	**0.810**			
CP	-0.483	**0.801**		
IP	0.146	-0.042	**0.896**	
T	0.169	-0.114	0.739	**0.931**

Source: Author's work

Note: *BP: Bargaining Power; CP: Collective Power; IP: Institutional Power; T: Trust*

4.2.2. Structural Model

This section explains the structural model's results using path coefficients, which enable testing the hypotheses.

Table 4: Path Coefficients of the direct relationships tested in the model

H	Relationships	Beta	SD	p values	Inference
H_1	IP → T	0.732	0.021	0.000	Supported
H_2	BP → T	0.028	0.041	0.489	Unsupported
H_3	CP → T	-0.070	0.050	0.163	Unsupported
H_4	IP → SCS	0.334	0.113	0.003	Supported
H_5	BP → SCS	-0.022	0.117	0.848	Unsupported
H_6	CP → SCS	0.319	0.086	0.000	Supported
H_7	T → SCS	-0.107	0.090	0.234	Unsupported

Source: Author's work

Note: *H: Hypothesis; SD: Standard Deviation; IP: Institutional Power; BP: Bargaining Power; CP: Collective Power; T: Trust; SCS: Supply Chain Sustainability*

Table 4 presents the key findings of this research. Firstly, the results indicate a positive, significant relationship between IP and T, supporting H_1. This implies that IP strongly predicts T in fishing supply chains. In contrast, BP and CP are found to be not related to T, leading to the rejection of H_2 and H_3. This implies that Bargaining and CP within fishing supply chains do not affect the T between the players in these chains. In addition, H_4 is supported with a strong link between IP and SCS. This implies that the institutional authorities can

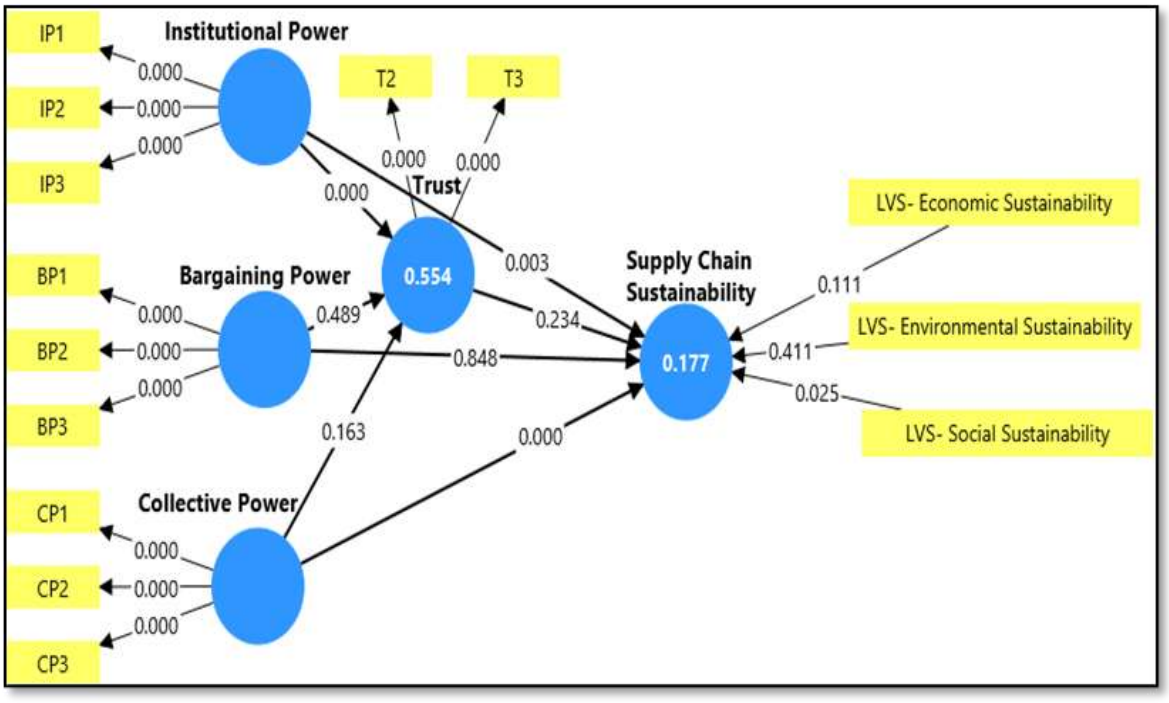
play a crucial role in implementing sustainability in fishing supply chains.

On the contrary, the results show a statistically insignificant impact of BP on SCS, leading to rejection of H_5. This can be attributed to the nature of the product being traded in the fishing sector. Due to the highly perishable nature of the product, sellers in the fishing industry often have less BP than buyers. Whereas CP and SCS show a positive and significant link, supporting H_6. While CP typically reflects negative aspects, such as syndicate dominance in the fishing industry that may exploit weaker participants, this research highlights its potential positive implications for sustainability.

Lastly, T has demonstrated an insignificant effect on SCS, leading to the rejection of H_7. While previous research emphasises the importance of T in supply chain relationships, this study suggests otherwise. Further research is needed to explore the factors influencing these dynamics. The highest standard deviation is observed in the relationship between BP and SCS (σ = 0.117), while the lowest is found between IP and T (σ = 0.021).

Assessing the structural model also involves examining the R^2 value of the endogenous construct. In this study, T, the first endogenous construct, has an R^2 value of 0.554, and SCS, the second endogenous construct, has an R^2 value of 0.117, as shown in Figure 2. R^2 indicates the variance explained by the exogenous constructs in the endogenous constructs of the model.

Figure 2: Graphical output of PLS SEM Model



Source: Author's work

5. Conclusions, Implications, Limitations and Future Scope

This study focused on revealing the key relationships between power, trust and sustainability within fishing supply chains. The study considered three major forms of power that have seldom been part of research. These included IP, BP and CP.

The findings have crucial implications for policymakers and stakeholders in the fishing industry and provide a roadmap for future policy formulation.

This study highlights the crucial role IP can play in ensuring sustainability in fishing supply chains. As such, policymakers can divert resources to strengthen IP's enforcement authority to lead Goa's fishing supply chains towards sustainability. We propose looking at the fishing industry from a broader perspective rather than solely focusing on the first level of the chain, comprising the fishers. Our study indicates that a supply chain-based ideation of the action plan to implement sustainable fisheries goals can provide a better roadmap for making the fishing industry highly sustainable. Implementation of sustainable practices in the fisheries sector is the need of the hour (Albasri & Sammut, 2022), and the recognition and due consideration of the role supply chain players play in this regard cannot be taken for granted.

This study has certain limitations. Firstly, the study's results are largely based on primary data collected from respondents; as such, there is a possibility of respondent bias. Moreover, the study focuses on the three elements of the fishing supply chain: fishers, agents and retailers. Future research could include other supply chain stakeholders to provide a broader perspective. Since this research is based on a sample drawn from the state of Goa, India, the findings have limited generalisability. Based on our findings, we suggest that the authorities encourage participation by fisheries supply chain stakeholders in organisations grounded in collective principles. This will ensure greater cooperation and reduce resistance in the supply chains, resulting in sustained growth of the fishing industry.

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The Role of the Blue Economy in Shaping India's Economic Landscape

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Abstract

The blue economy has emerged as an important concept in India, a country with a coastline of over 7,500 kilometers and rich marine biodiversity. India's marine resources are playing a vital role in the country's economic development. This sector includes important economic sectors such as fishing, maritime trade, tourism and renewable energy. The research paper presented here studies the current state of the blue economy in India, as well as examines the contribution of this sector to the country's GDP, employment, and international trade. It also analyzes the efforts made by the government to develop the country's blue economy. The paper also highlights the challenges in the development of this sector.

Key words: *Blue economy, Marine Resources, Sustainable Development, Economic Development*

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1. Introduction

The concept of the blue economy has come to light in recent times as a result of the recognition of the importance of marine resources for sustainable development in various economies around the world. The blue economy mainly includes various economic activities such as fishing, aquaculture, tourism, shipping, and renewable energy. The main objectives of the blue economy is to enhance the economic growth of the country, increase employment opportunities, and sustainably use marine resources to sustain the environment. India's blue economy is playing a significant role in the country's GDP, employment generation, and foreign trade. The government has also taken several initiatives to accelerate the development of this sector. With an extensive coastline of over 7,500 kilometers and a vast Exclusive Economic Zone (EEZ), the Indian blue economy presents a multitude of opportunities and challenges. This has been investigated in the research paper presented here.

Objectives of the Study:

The present research paper is based on the following objectives.

1. To assess the current status of the Blue Economy in the country.
2. To examine the economic contribution of the Blue Economy to the economic development of India.

Sources of Data Collection:

The research presented is purely based on secondary data. Books, magazines and related websites have been used for this.

2. Review of literature:

Subhdarshani et al. (2024) emphasize the importance of implementing the Blue Economy in a way that prioritizes marine ecosystem conservation while fostering sustainable growth. They argue that Indo-Pacific governments must move beyond just agreeing on shared terminologies and should focus on harmonizing Blue Economy practices through technology and innovation. A key goal is integrating human societies with ocean ecosystems,

de-commodifying labour, and reclaiming common resources. The authors advocate for a balanced approach to economic development and environmental sustainability, ensuring diversity, and promoting social transformation through effective management of resources and reduced production-consumption models.

Khanijo and Roy (2022) highlight India's strategic focus on sustainable energy and the blue economy, emphasizing the need for investment and effective policy formulation. While the blue economy offers significant opportunities, the authors also point out the challenges posed to marine ecosystems. To address these, India is taking a multisectoral approach, integrating people, nature, and diverse frameworks to foster sustainable growth. They stress that India's future in the blue economy depends on its commitment to innovation, sustainable development, and climate change adaptation, positioning the country as a key global leader in blue economy policymaking.

Panda et al. (2016) discuss the challenges faced by India's fishery sector, citing the Central Marine Fisheries Research Institute (CMFRI) report on the decline in marine landings from 3.78 million tonnes in 2013 to 3.59 million tonnes in 2014. This decrease underscores the need for improvements in the sector, particularly through technological advancements, infrastructure development, and enhanced research and development. The authors also emphasize the importance of better governance to address challenges such as pollution, illegal trade, and seabed mining. Strengthening collaborations between academic institutions, think tanks, and government bodies is crucial for promoting international trade and maritime activities in the Indian Ocean region. Additionally, they highlight the need for India to bolster its international trade relations and aim to surpass China in contributing to the blue economy.

Bhattacharya and Sachdev (2021) analyze India's progression toward a green and blue economy, aligning with the government's Vision 2030. They highlight that sustainable utilization of oceans, seas, and ports is central to economic growth, with strategies focused on climate change mitigation, pollution reduction, and waste management. The fishery sector, as a key pillar of the blue economy, positions India as the second-largest fish producer globally. The authors emphasize the need to equip farmers with modern skills and introduce technologies like renewable energy-powered ships. They also explore opportunities in blue minerals, hydrocarbons, and sea route-based trade, stressing the importance of strengthening ties with neighbouring maritime countries.

India's Blue Economy and Government Initiatives:

India's Indian Ocean occupies a unique maritime location. This coastline covers nine coastal states, 12 major and about 200 minor ports with an area of over 75,000 km. There is an exclusive economic zone of over 2 million km²(Figures 1 and 2). About 95% of the country's trade in terms of volume and 68% in terms of value is carried out through maritime resources. It is worth noting here that the Blue Economy has immense potential for development in India and can play a significant role in India's overall development.

Keeping in mind the vision of creating a 'New India' by the year 2030, the Government of India has emphasized on the development of the blue economy to achieve inclusive and sustainable development.

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Figure 1. India's Exclusive Economic Zone (EEZ

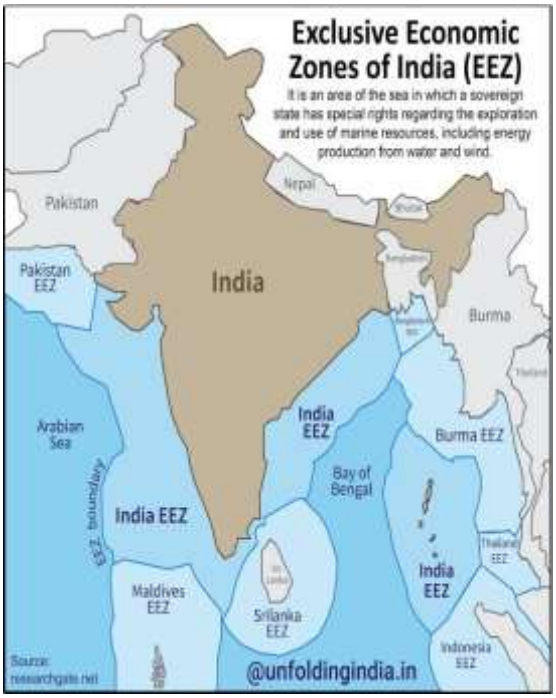

Figure 2. India's Important Marine Ports

Considering the vast potential of marine resources, several efforts have been undertaken to ensure that this sector plays an active role in the economic development of the country. The Sagarmala Project was launched in 2015 with the aim of modernizing ports, enhancing connectivity between coastal areas, and encouraging industries around port areas that create environmentally friendly practices. In addition, support is provided to fishing and aquaculture under the National Fisheries Policy. Emphasis is placed on providing basic facilities, better equipment and training to fishermen. In the year 2020, the Pradhan Mantri Matsya Sampada Yojana (PMMSY) was launched to increase fish production, provide financial support to the sector, and strengthen the entire fisheries industry. Along with this, the O-SMART program helps in understanding the ocean and managing conditions through the use of modern techniques to monitor marine conditions and prepare for climate impacts. Also, a Marine Special Planning Framework has been prepared to bring all marine economic activities such as fishing, tourism, and shipping under one framework plan.

Economic impact of blue economy in India:

The Blue Economy in India aims to link the sector with economic development through the sustainable use of the country's marine resources. The economic impacts of this sector are analyzed in depth here.

Employment Trends in India's Blue Economy (2018–2025)

India's blue economy has become a significant driver of livelihoods in coastal and marine sectors. Chart No. 1 presents information on year-by-year employment creation in important industries such as fishing, marine tourism, shipping, and seaweed farming from 2018 to 2025.

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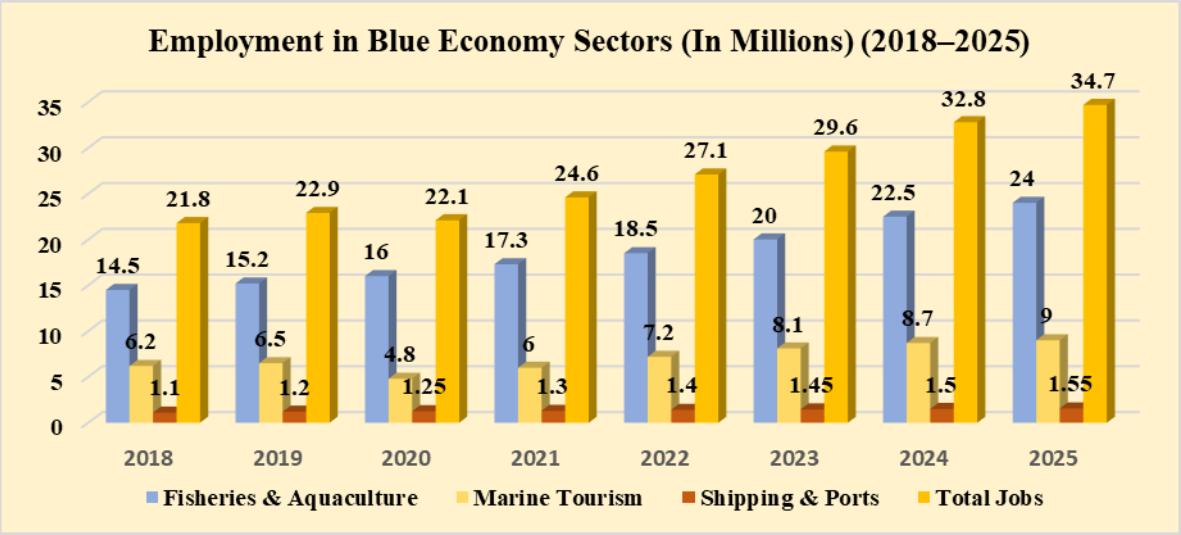
Chart No. 1



Sources: Ministry of Fisheries, Animal Husbandry & Dairying – PMMSY Guidelines and Reports, Indian National Centre for Ocean Information Services (INCOIS) – Blue Economy Policy Framework, Directorate General of Employment – Labour Market Updates, Indian Ports Association & MoPSW – Maritime India Vision 2047, RIS Insight Magazine – RIS India Blue Economy Trends

India's blue economy has emerged as a major driver of employment and coastal development, with job creation in several maritime sectors continuing to increase. From 2018 to 2025, total employment through the blue economy is estimated to increase from approximately 21.8 million to 34.7 million jobs, reflecting the expansion of the sector in India's broader economic landscape. The fisheries and aquaculture sector in particular has seen significant growth. The sector is expected to grow from 14.5 million jobs in 2018 to 24 million by 2025. This trajectory reflects the successful implementation of the Pradhan Mantri Matsya Sampada Yojana (PMMSY), which aims to generate 5.5 million additional livelihoods and modernize the fisheries infrastructure.

Marine tourism is also a sector that has been one of the fastest growing globally and in India. Particularly in coastal states like Kerala, Karnataka, and Tamil Nadu, coastal tourism has contributed largely to both the state economies and livelihood creation. Maritime tourism, which generates employment along India's 7,500+ km coastline, suffered a temporary setback in 2020 due to the COVID-19 pandemic. However, the sector has rapidly re-emerged with the introduction of cruise tourism, eco-tourism and government-backed coastal development initiatives, which are estimated to result in the creation of 9 million job opportunities by 2025. Shipping and ports have also witnessed a steady increase in employment, rising from 1.1 million in 2018 to 1.55 million in 2025, supported by infrastructure modernization under Sagarmala and Maritime India Vision 2047. These initiatives have not only created direct job opportunities but also expanded employment in logistics, shipbuilding and green port technology.

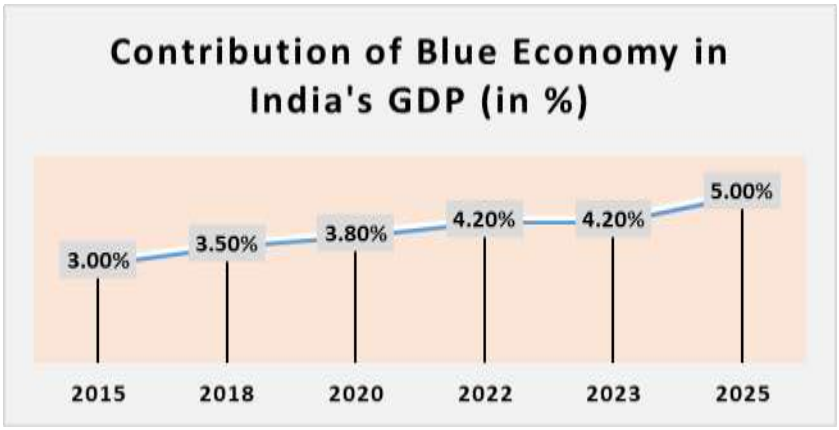
It is worth noting here that seaweed farming as an alternative livelihood has seen exponential growth. Although less than 100,000 jobs were created by 2025, it represents an almost 20-fold increase since 2018. This growth is consistent with national goals for sustainable development, carbon sequestration, and women-led entrepreneurship in coastal villages. Overall, this data emphasizes a

multidimensional transformation: traditional maritime sectors remain strong, while blue economy pathways supported by policy and innovation are emerging and creating pathways for new, climate-resilient employment across India.

Economic Growth and GDP Contribution:

India's blue economy is a sub-sector of the Indian economy. This sector includes economic activities taking place along India's coastline, marine resources, and man-made infrastructure. It has been noted here that the blue economy contributes approximately 4% to India's GDP. This proportion is also expected to increase if the obstacles to the development of the blue economy are removed. Also, studying the fishing industry alone, it is clear that these industries contribute approximately 1.24% to the country's GDP.

Chart No. 2



India's blue economy has been growing steadily over the past few decades. The sector is making a significant contribution to the country's economic growth. A study of Graph No. 2 reveals that the blue economy contributed approximately 3.0% to India's GDP in 2015. This amounted to $63 billion, with more than half of the revenue coming from fisheries and aquaculture. The Sagarmala Project launched during this period resulted in an addition of $15 billion to maritime infrastructure. Contributions from tourism and early biotechnology complete the rest. By 2020, despite the challenges posed by global pandemics like COVID, the contribution of the blue economy to India's GDP has increased to 3.8% as a result of growth in shipping and marine biotech, particularly seaweed farming, with the sector benefiting from support from agencies like ICAR and INCOIS. This achievement shows that India is emphasizing low-carbon marine-based industries. This trend then stabilized until 2023, with the blue economy contributing 4.2% of the economy. This growth was driven by notable progress in port logistics, tourism and value-added aquaculture. The seaweed sector alone was valued at $13.5 billion. Based on this progress and as a result of government programmes such as Maritime India Vision 2047, Deep Ocean Mission and Sustainable Resource Development, the sector is estimated to contribute around 5.0% or around $200 billion to India's GDP by 2025. India's fisheries industry has played a prominent role in this progress. The sector provides food, nutrition, employment and livelihood to millions of people, and India has emerged as the second largest fish producer in the world.

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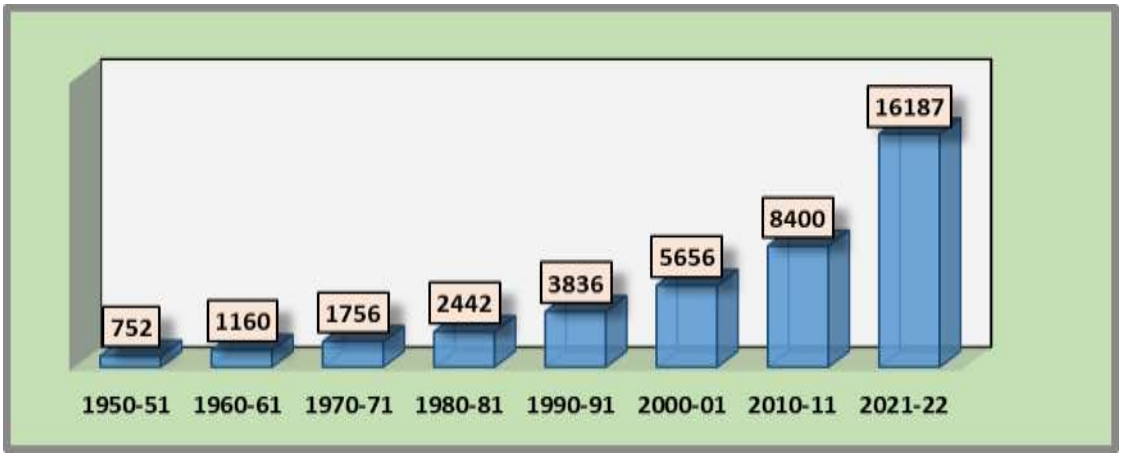
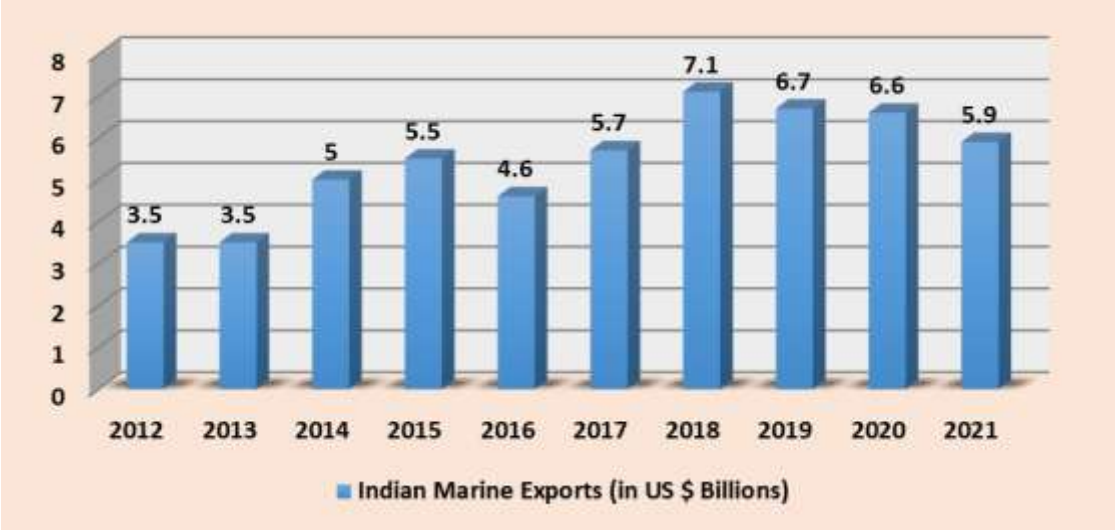
Chart No. 3
Fish Production in India (In Thousand Tonnes)



A study of Graph No. 3 shows that fish production was 752 thousand tonnes in 1950-51, which increased to more than 16 million tonnes in 2021-22. The sector has witnessed continuous growth as a result of the techniques implemented in this sector, aquaculture expansion, increasing demand, and government schemes like the Pradhan Mantri Matsya Sampada Yojana. As a result, India holds a leading position in the world in the field of fish production.

Contribution in Exports: Ocean-based industries such as fishing, shipping, port activities and marine tourism, which are part of India's blue economy, are playing a vital role in the country's exports.

Chart No. 4
Indian Marine Exports (In US $ Billions)



Source: https://www.ibef.org/blogs/importance-of-india-s-blue-economy

India is a leading exporter of marine products. The sector has emerged strong even after facing challenges like the global pandemic situation like COVID-19. Despite this situation, exports worth Rs 56,200 crore (US$ 7.2 billion) were made by this sector between April 2021 and February 2022. India's maritime industries exported about $7.3 billion in 2022-23,

indicating that the sector makes a significant contribution in terms of foreign exchange earnings. These exports have seen a significant increase in shrimp and fish exports. In 2023, shrimp exports alone were recorded at around $4.5 billion. The shipping sector plays a vital role in India's international trade. In 2022-2023, India's major ports handled over 700 million tonnes of cargo. The maritime industry contributes significantly to the country's exports. Major Indian ports, mainly Mumbai, Chennai, Kolkata, play a vital role in the growth of international trade. It supports the export of a wide range of goods including petroleum products, textiles and agricultural products. The sector's contribution to exports is expected to increase as a result of initiatives and policies taken by the Government of India.

Challenges of Blue Economy in India:

India's blue economy is facing several challenges to its sustainable development. Overfishing has led to depletion of fish stocks, which is threatening biodiversity and the livelihoods of coastal communities that depend on marine resources. In addition, marine pollution such as plastic waste, oil spills, and agricultural runoff harms coastlines, marine life, and the health of people living nearby. In addition, climate change exacerbates these problems, with sea level rise, ocean acidification, and increased extreme weather events posing threats to coastal infrastructure and the productivity of marine resources. In addition, infrastructure such as ports and shipping facilities are not sufficiently developed. There is also a need to use modern technology in terms of sustainable development of marine resources. As well as regulatory and governance issues, such as unclear jurisdiction and weak enforcement of environmental laws, which hinder the effective management of marine resources. There is a lack of awareness among policymakers and the public about the importance of the blue economy for sustainable development. Geopolitical tensions and security concerns, including piracy and territorial disputes, also pose risks to economic activities in maritime areas. Finally, financing and investment for sustainable initiatives are often inadequate, as many projects require significant capital investment, and mechanisms to support long-term sustainability are often lacking.

Conclusion:

Indian economy is a unique opportunity to accelerate economic development by sustaining and incorporating blue economy through the efficient use of areas such as fishing, shipping, coastal tourism and sea - based renewal energy, with tactical conditions in the Indian ocean, marine biodiversity and the Indian Ocean. For this, the Government of India has tried to take advantage of these opportunities through schemes like Sagarmala program, Deep Ocean Mission and Prime Minister Fisheries Property Scheme. However, the first countries of the world to establish the Dedicated Sea Development Department in 1981 include the Indian economy. However, India has not made much progress as much. Challenges such as environmental degeneration, excessive fishing, poor infrastructure and climate change have proven to be obstructed in the overall development of the blue economy. Along with this, countries like Australia, Norway and the UK have made significant progress by implementing robust national maritime policies and making strategic investments. To achieve holistic development of the blue economy, India should increase investment in research and innovation, improve and expand maritime infrastructure. A policy on skill building in coastal communities should be implemented. Government, private sector and local partnerships should be strengthened. By aligning its efforts with global durability targets, employment can

be created in the Indian economy, as well as protection of the maritime ecosystem, and the Indian economy in sea -based development can create a long -term development for the Indian people.

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Impact of the Goods and Services Tax on Ease of Doing Business: A PLS SEM Study of Micro and Small Enterprises in Goa

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Abstract

The present study aims to investigate the impact of changes in the indirect tax structure, digital transformation, the GST compliance system, and GST knowledge on the ease of doing business for micro and small enterprises in the state of Goa. For the study, quantitative data were collected through a structured questionnaire from 200 business operators from Goa and analysed using Smart PLS SEM version 4. Besides it, a reference was made to various books, national & international journals & government reports. This study provides policymakers with empirical evidence on the influence of GST on ease of doing business for micro and small enterprises, supporting informed policy formulation and a more conducive business environment. It offers insights into the extent to which GST conforms to the principles of optimal taxation. By addressing the scarcity of quantitative evidence on indirect tax reforms and ease of doing business, the study fills a critical research gap. Overall, it contributes to the literature on GST framework design and its implications for the competitiveness and long-term sustainability of MSMEs. The key findings of this study reveal that the transition to the GST regime does not have a significant direct effect on ease of doing business, indicating that structural tax reform alone is insufficient to enhance business convenience. In contrast, digital transformation, the GST compliance system, and GST knowledge exert significant positive effects on Ease of Doing Business.

Keywords: *:* Indirect Tax, Goods & Services Tax, micro and small businesses, digital transformation, ease of doing business.

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1. Introduction

In an emerging economy like India, Micro, Small, and Medium Enterprises (MSMEs) play a crucial role in fostering industrialisation, generating employment and promoting inclusive economic growth. Their contribution towards innovation, value addition and employment generation is highly significant (Behera et al., 2025). Owing to their relatively smaller scale of operations and limited economies of scale, MSMEs are highly sensitive to policy changes, especially reforms in indirect taxation (Bhalla et al., 2023). The Goods and Services Tax (GST) marked a transformative reform in India's indirect tax system and significantly altered the business environment, particularly for MSMEs. Prior literature reveals the multifaceted effect of GST on business operations. (Ghosh 2021), observed that

MSMEs initially faced GST implementation challenges due to inadequate infrastructure, skills, systems, and coordination. (Joseph et al., 2018) highlighted its pervasive influence on pricing, supply chains, IT systems, accounting, and tax compliance. In contrast, (Singhal, Goyal, Sharma, et al., 2022), reported that GST has simplified commercial operations and enhanced export facilitation, while (Dhar & Khandelwal, 2022) opined that GST has encouraged firms to focus on improving operational efficiency.

The principal objective underlying the enforcement of GST reforms was to enhance the Ease of Doing Business (EoDB), particularly for MSMEs. EoDB represents the regulatory and administrative environment that enables firms to operate efficiently through improved service delivery and reduced procedural inefficiencies (Chowdhry, 2020; Sodhi & Dwivedi, 2022). GST was envisioned as a reform to simplify taxation and improve business facilitation. Nevertheless, the existing published work fails to explain its impact on the EoDB of micro and small enterprises, particularly at the regional level. Moreover, GST is not merely a tax reform but an institutional mechanism whose design and implementation will definitely produce noteworthy implications for the long-term performance of MSMEs (Ghosh, 2021). Despite efforts to simplify indirect taxation, it was evident that business operators often lack adequate knowledge of the GST system, resulting in increased dependence on tax practitioners and additional compliance costs. Frequent amendments to GST provisions have further intensified the compliance burden, rendering continuous adoption a persistent challenge for MSMEs. Against this backdrop, assessing the influence of GST on EoDB-related parameters, namely, the decline in paperwork, the time required for GST registration, return filing procedures, and the burden of dealing with multiple tax authorities, warrants systematic investigation. However, evidence from the literature indicates that medium enterprises tend to derive comparatively greater benefits from the GST structure than micro and small enterprises (Ghosh, 2021). Accordingly, this study evaluates the research question: What is the contribution of GST determinants towards the EoDB parameters of micro and small business enterprises? Thus, this research assesses the impact of GST on the EoDB of micro and small enterprises in the state of Goa. The outcomes of this study are expected to enhance tax authorities' understanding of how GST contributes to EoDB for micro and small enterprises. Furthermore, the findings will support the formulation of a more business-friendly regulatory framework for business organisations. Besides, this seems to be the first study to provide an empirical assessment of GST with EoDB criteria of micro and small enterprises.

2. Review of Literature

Prior studies document both the economic and administrative implications of indirect tax reforms. (Hadal & John, 2022) reported that VAT-induced price increases in the UAE led to reduced consumption, indicating consumer sensitivity to tax-driven price changes. From an administrative perspective, Deshmukh et al. (2022) observed that GST significantly streamlined the structure of consumption tax by subsuming multiple taxes; however, seamless input tax credit and complete IT-based compliance were only partially achieved. Similar administrative uncertainties—particularly relating to registration, refunds, and input tax calculations—were highlighted by (Mahangila & Anderson, 2017) in the tourism sector. In the Indian context, (Guna & Anuradha 2021) noted that multiple tax rates and procedural

complexities differentiate GST from international best practices, emphasising the necessity for clearer regulations and improved awareness initiatives for MSMEs. Empirical findings further demonstrate that GST, while simplifying taxation, imposed substantial adjustment and compliance costs on small firms, especially during the initial phase (Lichchavi & Greeshma, 2021) Joseph and Kumary (2023) established strong linkages between GST awareness, administrative support, perceived fairness, and compliance behaviour, while Shacheendran V (2024) identified manpower shortages and inadequate IT infrastructure as critical early implementation challenges. Despite these constraints, recent studies highlight improved tax compliance under GST, driven by enhanced monitoring and transaction matching mechanisms (Xing et al., 2024). Consistency in tax rates and the adoption of a unified tax system have further strengthened revenue mobilisation and contributed to broader economic development (Bhalla et al., 2022; Singhal, Goyal, et al., 2022). In summary, the literature reveals that GST represents a structurally sound reform aimed at simplification, unification, and enhanced compliance. However, its impact on MSMEs is mixed, shaped by compliance costs, digital readiness, awareness levels, and administrative efficiency.

3. Methodology

Research Approach and Latent Constructs

The research adopts a quantitative research approach to examine the impact of the selected GST-related determinants on the EoDB of micro and small enterprises in the state of Goa. For the purpose of evaluating the effect of GST, the researcher has observed some key features of the GST system grounded in the Optimal Taxation Theory (Bhalla, 2023). Change in the indirect tax structure (CITS), Digital Transformation (DT), GST Compliance System (GSTCS), and GST knowledge (GSTK) are the antecedent variables, while EoDB is considered the dependent variable.

Sample Design

Researchers employed a survey approach to gather data. The sample represents the populations of North Goa and South Goa. The sample size was decided on the basis of official records held by the Directorate of Industries, Trade and Commerce, Government of Goa, Panaji.

Data Collection and Sampling Method

A self-administered structured questionnaire based on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) was employed to collect the required primary data. The questionnaire was pilot tested to ensure clarity and reliability, and revisions were made before finalising the instrument. Stratified sampling was employed to ensure adequate representation of micro and small enterprises across the two districts. A total of 320 questionnaires were distributed, of which 245 were returned. After excluding 45 questionnaires due to incomplete responses, 200 valid responses from micro and small enterprises operating under the regular GST scheme were retained for analysis. Consistent with prior studies (Ghosh, 2021) and expert recommendations obtained during content validation, the study was restricted to only micro and small organisations.

Sample Size

A final sample of 200 micro and small enterprises was considered representative of the population registered with the Directorate of Industries, Trade and Commerce, Government of Goa.

Statistical Technique

Smart PLS 4.0 software was used to analyse the primary data.

Hypotheses:

H_1: Change in the indirect tax structure has a significant impact on the EoDB of micro and small firms.
H_2: There is a noteworthy influence of the GST Compliance system on the EoDB of micro and small firms.
H_3: Digital transformation significantly affects the EoDB of micro and small firms.
H_4: GST knowledge has a significant implication towards the EoDB of micro and small firms.

4. Results

Table 1: Demographic Characteristics of Respondents

District	Frequency	Percentage
North Goa	137	68.5
South Goa	63	31.5
Gender		
Male	162	81.0
Female	38	19.0
Age		
18-30	30	15.0
31-40	53	26.5
41-50	50	25.0
51-60	51	25.5
61 and above	16	8.0
Qualification		
SSC	23	11.5
HSSC	47	23.5
Graduate	83	41.5
Post graduate	28	14.0
Ph.D	2	1.0
Other	17	8.5
Type		
Micro	155	77.5
Small	45	22.5
Category		
Manufacturing	21	10.5
Service	30	15.0
Trading	133	66.5
Service & trading	16	8.0

Source: Author's compilation using primary data.

Table 1 shows the demographic data of the business operators. It indicates a higher concentration of firms in North Goa (68.5 per cent), which may be due to greater commercial activity in the region. The respondent pool is predominantly male (81 per cent), indicating limited female participation in MSME ownership. Further, most of the respondents fall within the 31–40 years (26.5 per cent), 41–50 years (25 per cent), and 51–60 years (25.5 per cent) age groups, indicating a largely middle-aged business population. Younger respondents aged 18–30 years constitute 15 per cent, while 8 per cent are aged 61 years and above. Regarding educational qualification, a noteworthy proportion of survey participants are graduates (41.5 per cent), followed by HSSC holders (23.5 per cent) and postgraduates (14 per cent). In terms of business size, micro enterprises dominate the sample (77.5 per cent), whereas small enterprises constitute 22 per cent. With respect to the nature of business activity, the majority operate in trading (66.5 per cent), followed by services (15 per cent), manufacturing (10.5 per cent), and combined service and trading activities (8 per cent).

Results of Measurement Models

The assessment of PLS SEM for the reflective model is broadly divided into two parts. Primarily, the measurement (outer) model is assessed, followed by the structural (inner) model. Outer model evaluation involves i) Testing the internal consistency, reliability and individual indicator reliability. Subsequently, Convergent Validity (CV) is assessed to determine whether the indicator statements adequately exhibit the convergence in measuring the respective antecedent (Hair, 2014). It is examined using the Average Variance Extracted (AVE), with a threshold of 0.50. Next, we determine the Discriminant Validity (DV) of the construct using i) The Fornell–Larcker criterion and ii) Heterotrait–Monotrait (HTMT) ratio, (Henseler et al., 2016).

Table 2: Reliability and Validity Assessment

	Code	VIF	OL	CA	CR	AVE
CITS	CITS1	1.216	0.743	0.697	0.812	0.520
	CITS2	1.369	0.708			
	CITS3	1.373	0.746			
	CITS4	1.299	0.686			
DT	DT1	1.652	0.799	0.793	0.856	0.544
	DT2	1.614	0.770			
	DT3	1.763	0.783			
	DT4	1.641	0.675			
	DT5	1.465	0.647			
GSTCS	GSTCS1	1.535	0.905	0.643	0.801	0.584
	GSTCS2	1.546	0.812			
	GSTCS3	1.104	0.523			
GSTK	GSTK1	1.573	0.728	0.783	0.851	0.535
	GSTK2	1.641	0.743			
	GSTK3	1.477	0.763			
	GSTK4	1.54	0.739			
	GSTK5	1.288	0.679			
EoDB	EODB1	2.037	0.848	0.771	0.852	0.592
	EODB2	2.063	0.835			
	EODB3	1.451	0.678			
	EODB4	1.375	0.701			

Source: Author's compilation using primary data.

***Note**: CITS: Change in the Tax Structure, DT: Digital Transformation, GSTCS: GST Compliance System, GSTK: GST Knowledge & EoDB: Ease of Doing Business.*

Table 2 illustrates the results. All the VIF values are below 3, which indicates the absence of a multicollinearity issue. Secondly, the outer loadings (OL) of the indicators are estimated. Most indicators exhibit OL above the threshold of 0.70, which states that the respective construct explains a substantial proportion of the indicator variance. A small number of indicators show loadings between 0.50 and 0.70; however, the researchers have retained these indicators as deletion did not result in a meaningful increase in composite reliability or AVE (Hair et al., 2019). Further, Cronbach's Alpha (CA) values range from 0.643 to 0.793. Whereas Composite Reliability (CR) values range from 0.801 to 0.856, which are above the threshold of 0.70. These outcomes demonstrate acceptable levels of internal consistency. Lastly, the CV was checked using the AVE. All constructs report AVE values greater than 0.50. This indicates the achievement of adequate variance explanation by each variable in the model.

Table 3: Fornell-Larcker Criteria

	CITS	GSTCS	DT	EoDB	GSTK
CITS	0.721				
GSTCS	0.303	0.764			
DT	0.637	0.444	0.738		
EoDB	0.384	0.387	0.483	0.769	
GSTK	0.538	0.144	0.459	0.369	0.731

Source: *Author's compilation using primary data*.

Table 3 shows that DV under the Fornell–Larcker criterion is established for all constructs.

Table 4: Heterotrait-Monotrait (HTMT) Ratio

	CITS	GSTCS	DT	EoDB	GSTK
CITS					
GSTCS	0.396				
DT	0.832	0.575			
EoDB	0.499	0.493	0.578		
GSTK	0.721	0.234	0.573	0.461	

Source: *Author's compilation using primary data.*

As reported by Table 4, all HTMT values among the constructs—(CITS), (GSTCS), (DT), (EODB) and (GSTK), are below the threshold value of 0.85. Thereby, providing strong evidence that the DV using HTMT is established and the outer model does not involve any construct overlap or redundancy.

Results of Structural Model

Structural (Inner) model assessment involves examining the association between exogenous and endogenous variables. Figure 1 illustrates outer loadings and the path relationships that examine the determinants of EoDB under GST.

Table 5: Hypothesis Testing

	Relationship	β	T Stats	P Value	Inference
H_1	CITS->EoDB	0.042	0.392	0.695	Unsupported
H_2	GSTCS->EoDB	0.228	2.997	0.003	Supported
H_3	DT -> EoDB	0.268	2.712	0.007	Supported
H_4	GSTK-> EoDB	0.191	2.553	0.011	Supported

Source: *Author's compilation using primary data*

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Table 5 exhibits the results of the structural model. The model was bootstrapped using 5,000 subsamples, with statistical significance tested at the 0.05 level.

The structural model explains 30.4% of the variance in EoDB ($R^2 = 0.304$), reflecting a moderate level of explanatory power within the context of micro and small enterprises operating in Goa.

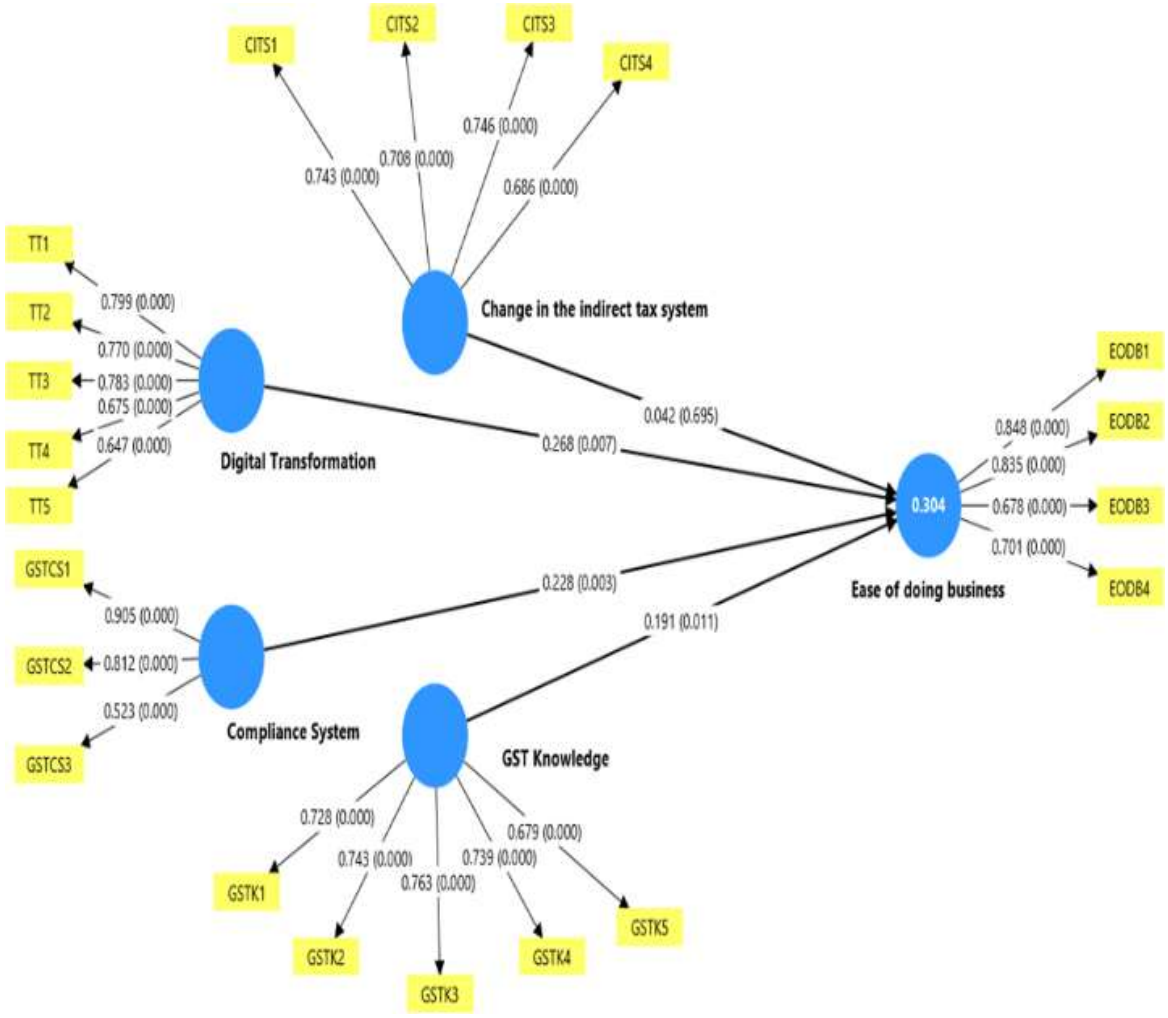

Figure 1: Research Model using Smart PLS SEM.

Findings and Discussion of the Study

CITS has a positive but statistically insignificant effect on EoDB with a path coefficient (β) of 0.042 and p value 0.695. This means that the mere shift to the GST regime does not, by itself, improvise the business convenience for micro and small firms. Whereas, Digital Transformation has explained the strongest positive and statistically significant influence on EoDB with (β) 0.268 and p value 0.007. This finding underscores the critical part of digital initiatives under GST, such as online filing, e-payments, and reduced physical interface, in enhancing business efficiency. Additionally, the GST Compliance System has shown a (β) 0.228 and p value 0.003, exhibiting a significant positive effect on EoDB. This suggests that simplified procedures, system stability, and reduced compliance burden meaningfully improve the business environment for micro and small enterprises. GST Knowledge also shows a significant positive influence on EoDB with (β) of 0.191 and p value 0.011, indicating that better awareness and understanding of GST provisions enable firms to comply more efficiently and operate with greater ease.

The findings indicate that mere reforms or structural changes in the indirect tax regime are insufficient to enhance the ease of doing business for firms. These reforms must be complemented by the effective adoption and integration of digital platforms. In the prevailing business

environment, Digital platforms play a pivotal role; therefore, tax authorities should prioritise strengthening the GST digital infrastructure, ensuring portal reliability, and minimising system-related disruptions. Simultaneously, efforts should be directed towards simplifying and stabilising GST compliance procedures and developing a user-friendly compliance framework aligned to the requirements of micro and small enterprises. Such measures would reduce firms' dependence on tax practitioners and, in turn, lower their compliance costs.

Furthermore, the study empirically establishes that GST knowledge significantly influences the EoDB. Accordingly, targeted GST awareness and capacity-building initiatives, such as training programmes, workshops, and sector-specific guidance, are essential to enhance firms' understanding and effective utilisation of GST provisions. Collectively, these interventions can translate GST reforms into tangible improvements in business convenience and sustainability, thereby advancing the broader objective of improving the EoDB for micro and small enterprises.

Conclusion

This study analysed the impact of Change in indirect tax structure, GST compliance system, digital transformation, and GST knowledge on the EoDB among micro and small enterprises in Goa using PLS-SEM. The findings highlight that the structural tax reform alone is insufficient to improve business conditions.

In contrast, the GST compliance system, digital transformation, and GST knowledge have shown significant positive effects on EoDB, with digital transformation emerging as the most influential factor. The overall results reveal that simplified compliance procedures, effective digital infrastructure, and adequate understanding of GST provisions are critical in reducing administrative burden and enhancing business efficiency.

The study signifies that the success of GST in improving EoDB depends largely on implementing quality rather than policy design alone. Policy efforts should therefore focus on compliance simplification, strengthening digital systems, and enhancing GST awareness among micro and small enterprises.

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Industrial Development in Uttarakhand State since 2000: An Analytical Study of Challenges, Prospects and Policy Imperatives

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Abstract

This study presents a quantitative empirical analysis of industrial development in the state of Uttarakhand from 2000-01 to 2022-23, focusing on policy-driven structural transformation, industrial growth, employment generation, and capital investment. Data are compiled from the Directorate of Industries and the Directorate of Economics and Statistics, Government of Uttarakhand. The analysis applies descriptive statistics, the compound annual growth rate (CAGR), Pearson correlation, and ordinary least squares (OLS) regression in JASP. The secondary sector's share in gross state domestic product rose from 18.55 per cent at formation to a peak of 52.12 per cent in 2011-12, indicating a structural transformation consistent with the classical development sequence. Industrial units expanded from 17,725 to 79,774 (CAGR 7.08 per cent), employment from 110,457 to 516,479 persons (CAGR 7.26 per cent), and capital investment from Rs. 2,843.37 crores to Rs. 53,938.63 crores (CAGR 14.31 per cent). The micro, small, and medium enterprise (MSME) sector was the primary driver of employment, recording a 9.10 per cent employment CAGR, compared with 3.64 per cent for the large industry. Units and employment follow approximately normal distributions, whereas capital investment is highly non-normal ($W = 0.479$, $p < .001$; $CV = 1.789$), reflecting the discontinuity of incentive-driven capital flows. Pearson correlation shows a near-perfect association between enterprise formation and employment ($r = 0.977$, $p < .001$), and OLS regression indicates that each additional industrial unit generates about eight jobs ($b = 7.888$, R squared $= 0.955$, $F = 443.425$, $p < .001$), with enterprise count alone accounting for 95.5 per cent of the variation in employment. These results establish MSME-led enterprise expansion as the principal and structurally reliable driver of industrial employment in the state, underscoring the importance of policies that sustain inclusive industrial growth in the post-incentive phase.

Keywords: *Industrialisation, MSMEs, Employment Generation, Structural Transformation*

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1. Introduction

Industrialisation occupies a central place in economic development theory as a principal driver of structural transformation, employment creation, and sustained long-term growth (Kaldor, 1967; Szirmai, 2012). The manufacturing sector is especially influential, since productivity growth in manufacturing raises overall output through increasing returns to scale and strong inter-sectoral linkages. Using a panel of 67 developing and 21 advanced economies over 1950 to 2005, Szirmai and Verspagen (2015) find that manufacturing has been important for growth in developing countries, with its effect conditioned by human capital and the stage

of development, while Szirmai (2012) cautions that not all expectations of the engine-of-growth hypothesis are borne out by the data. In developing economies, industrialisation represents a structural shift from low-productivity traditional activity toward higher-productivity manufacturing, which UNIDO (2020) identifies as the principal learning engine through which countries build technological capabilities. Industrialisation does not, however, guarantee inclusive outcomes, for where growth is capital-intensive and skill-biased, aggregate output can rise even as employment generation and equality lag, a concern with jobless growth widely noted in Indian manufacturing. A distinct but related risk is premature deindustrialisation (Rodrik, 2016), whereby manufacturing's share of employment and output peaks at income levels far below those at which today's advanced economies began to deindustrialise, foreclosing the conventional manufacturing-led route to income convergence. India's post-independence trajectory illustrates how these forces operate within a specific political economy. The liberalisation of 1991 increased import competition, whose effect on productivity in Indian manufacturing was favourable in part, even as measured aggregate productivity growth slowed under investment gestation lags and capacity underutilisation (Goldar & Kumari, 2003), while the MSME sector emerged as a vital source of employment and inclusive growth (Papola, 2006). The reforms also widened inter-state and inter-regional industrial disparities, as manufacturing activity became increasingly concentrated in locationally advantaged states (Ahluwalia, 2000), a pattern that placed greater responsibility for industrial promotion on the states themselves. It was in this setting that Uttarakhand, carved out of the hill districts of Uttar Pradesh on 9 November 2000 as India's twenty-seventh state, entered the industrial arena, carrying both the opportunity to design its framework afresh and the challenge of building productive capacity from a narrow base. The state's geography defined its constraints and its advantages alike. Spanning 53,483 square knumbered 39; industrial employment was 67,706 persons; and per capita income was Rs. 15,285ilometres, of which 86.08 per cent is hill terrain, and only 7,448 square kilometres is plains across 13 districts, its industrial potential was concentrated in a narrow corridor. At the same time, a forest cover of 45.44 % rendered it ecologically sensitive and necessitated environment-compatible models. At formation, the secondary sector contributed only 18.55 per cent of GSDP; MSME units numbered 14,163; large industries numbered 39; industrial employment stood at 67,706 persons; and per capita income was Rs. 15,285. The Special Industrial Promotional Package of January 2003, offering income-tax exemption under Section 80-IC, full central excise exemption until 2010, and capital subsidies, altered this calculus and triggered one of the most dramatic sub-national industrial transformations in post-reform India. The establishment of SIIDCUL in 2002 gave policy its physical form through integrated industrial estates at Haridwar, Pantnagar, Sitarganj, Selaqui, and Kashipur. These interventions catalysed diversified clusters that now form the backbone of the state economy: the automobile and engineering cluster at Pantnagar, anchored by Tata Motors, Bajaj Auto, and Ashok Leyland, with Mahindra and Mahindra at Haridwar; the pharmaceutical clusters at Selaqui and Haridwar, hosting many units certified to international manufacturing standards; and the fast-moving consumer goods and food-processing sector spanning Haridwar, home to ITC, Hindustan Unilever, Dabur, and Patanjali, and Pantnagar, home to Nestle and Britannia. Alongside these large-industry anchors, the agro-processing of the

state's GI-tagged products, renewable energy drawing on its hydro potential, and the handloom and handicraft industries sustaining hill households represent the ecologically compatible dimensions of the industrial portfolio. Successive state policies deepened this momentum. The Industrial Policy of 2008 and its revisions prioritised investment facilitation, single-window clearance, and MSME credit, while reforms in the ease of doing business and the Investors' Summit of 2018 mobilised large-scale investment intentions. The aggregate outcome of two decades of policy-driven industrialisation is striking. GSDP at current prices expanded many times over to reach Rs. 3,81,889 crores in 2024-25; the secondary sector peaked at 52.12 per cent of GSDP in 2011-12; MSME employment grew several-fold; and per capita income reached Rs. 2,73,921 in 2024-25, exceeding the national average. However, the transformation has not been immune to the structural vulnerabilities anticipated by theory. Industrial growth remains spatially concentrated in the two plains districts, and the withdrawal of central excise exemptions under the goods and services tax from July 2017 triggered a deceleration in industrial value added across the later phase (NITI Aayog, 2025). Value-addition ratios have stagnated despite deepening capital intensity, and manufacturing employs a modest share of the workforce. This pattern mirrors premature deindustrialisation, in which the employment-generating capacity of manufacturing weakens before prosperity is secured (Rodrik, 2016). The World Bank (2012) cautioned early about this spatial fragility, and Singh and Agrawal (2021) subsequently documented the post-incentive deceleration. These tensions between aggregate achievement and unresolved spatial and distributional challenges render Uttarakhand at once one of India's most instructive industrial success stories and one of its most significant unfinished transformations. The present study provides a comprehensive empirical assessment of the state's industrialisation since 2000 and identifies the policy imperatives essential to sustaining its momentum.

2. Review of Literature

The relationship between manufacturing-led industrialisation and structural transformation has generated a substantial body of scholarship directly relevant to the present study. Szirmai (2012), using a panel analysis of 67 developing countries from 1950 to 2005, found that growth in manufacturing value added has a statistically significant positive effect on GDP growth. However, the magnitude depends on institutional quality, human capital, and the stage of structural transformation. A persistent theme in this literature is the spatial concentration of industrial activity, whereby geographically advantaged locations attract disproportionate investment. At the same time, peripheral and ecologically constrained regions are systematically excluded, a pattern directly relevant to the plains and hills of Uttarakhand. Several studies have examined the structural dimensions of Indian manufacturing after 1991. Goldar and Kumari (2003) found that the reduction of effective protection had a favourable effect on productivity in Indian manufacturing, though measured aggregate productivity growth nonetheless slowed during the 1990s under investment gestation lags and capacity underutilisation, while Papola (2006) argued that MSMEs constitute the structural backbone of employment generation and that large-industry-focused frameworks tend to understate their contribution to inclusive growth. Nagaraj (2003) showed that manufacturing output grew at a broadly similar rate across the 1980s and 1990s with no significant break attributable to the reforms. It argued that supply-side

liberalisation had neglected the demand constraint arising from the contraction of public infrastructure investment. The widening of inter-state and inter-regional industrial disparities in the post-reform period is documented separately by Ahluwalia (2000) and by Lall and Chakravorty (2005), who show that manufacturing activity became increasingly spatially concentrated, a pattern that motivates the state-level frameworks examined in the present study. Studies focused specifically on Uttarakhand have grown since 2000 but remain limited in longitudinal depth. The World Bank (2012) conducted the first comprehensive economic assessment of the state, reporting rapid per capita income growth in the first decade alongside concerns about incentive dependence and spatial concentration. Naithani (2014), drawing on data from the Annual Survey of Industries for the first decade of statehood, reported a substantial expansion in registered factories, invested capital, and employment, while identifying wage stagnation as an early concern. Singh and Agrawal (2021) reviewed the major policy instruments through 2018. They concluded that aggregate investment and employment objectives were met even as spatial disparities between the plains and the hills persisted and deepened. The existing research does not extend beyond 2018 and lacks a unified phase-wise framework covering the full post-formation trajectory, a gap the present study addresses.

3. Objectives of the Study

The study pursues two objectives. The first is to examine the trends, structural composition, and phase-wise dynamics of industrial development in Uttarakhand from 2000-01 to 2022-23, across industrial units, employment generation, and capital investment in the MSME and large-industry segments. The second is to assess the relationship between industrial expansion and employment generation statistically through Pearson correlation and OLS regression, and to identify the structural challenges and policy imperatives required to sustain inclusive industrial growth in the post-incentive phase.

4. Research Methodology

The study is based on quantitative empirical analysis for the period 2000-01 to 2022-23 (n = 23). Data are compiled from the Annual Survey of Industries (MoSPI), the Directorate of Industries, and the Directorate of Economics and Statistics, Government of Uttarakhand, as well as NITI Aayog, the RBI Handbook of Statistics on Indian States, and the Census of India. The analytical framework operates at four levels: descriptive statistics (mean, standard deviation, coefficient of variation, skewness, and kurtosis) computed in MS Excel; CAGR, index numbers, and a three-phase decomposition into Phase I, policy take-off (2000-01 to 2007-08), Phase II, consolidation (2008-09 to 2015-16), and Phase III, post-incentive maturity (2016-17 to 2022-23); labour-productivity and capital-efficiency ratios; and Pearson correlation and OLS regression in JASP. Statistical significance is assessed at the 0.05 level throughout.

4. Results and Discussion

4.1 Socio-Economic Profile of Uttarakhand

Uttarakhand's socio-economic profile is marked by abundant natural resources, a predominantly rural, mountainous landscape, and notable developmental progress over the past 25 years. Table 1 provides a consolidated overview of the state's geographic, demographic, and economic indicators.

Table 1: Socio-Economic and Structural Profile of Uttarakhand

Category	Indicator	Uttarakhand Value	Brief Context
Geography Environment	Total geographical area	53,483 sq km	accounts for 1.63 percent of the country's area
	Hill vs plain area	46,035 sq km hill (86.08%); 7,448 sq km plain (13.92%)	a hill-dominated state in which the narrow plains form the main industrial belt
	Forest cover	24,303.04 sq km (45.44% of geographical area)	one of the most forested and ecologically sensitive states in the country
Administrative Structure	Divisions and districts	2 divisions; 13 districts (11 hill + 2 plain)	Spans the Garhwal and Kumaon divisions and is predominantly hilly
Administrative Structure	Development blocks	95	reflects a dense rural administrative network
	Gram Panchayats	7,795	provides a wide base of village-level governance
	Inhabited villages (2011)	15,745	indicates a highly dispersed pattern of settlement
Demography (Census, 2011)	Total population	1,00,86,292	makes up 0.83 per cent of the country's population
Demography (Census, 2011)	Population density	189 persons per sq km	well below the national average of 382 persons per sq km
	Sex ratio	963 females per 1,000 males	more favourable than the national average of about 940
	Literacy rate (total)	78.82%	higher than the national average of 74.04 per cent
	Urban population share	30.23%	close to the national level of 31.16 per cent
	Rural population share	69.77%	The state remains predominantly rural, with a rate near the national average of 68.84 per cent.
	Decadal population growth (2001-11)	18.81%	slightly above the national growth of 17.64 per cent
Vital & Healt (2020)	Crude birth rate	16.6 per 1,000	lower than the national rate of 19.5 per 1,000
	Crude death rate	6.3 per 1,000	broadly in line with the national rate of 6.0 per 1,000
	Infant mortality rate	24 per 1,000 live births	below the national level of about 28 per 1,000
Economic Indicators	GSDP at current prices	Rs. 14,501 crores (2000–01); Rs. 3,81,889 crores (2024–25)	shows strong nominal expansion over the study period
	Per capita income	Rs. 2,73,921 (2024-25)	stands about 36.9 per cent above the national average of Rs. 2,00,162
	SDG India Index (2023-24)	79	ranks first in the country, jointly with Kerala
	Multi-Dimensional Poverty (%)	40.38 (2005–06) → 6.92 (2025)	a steep decline that places the state well below the national 14.9 per cent
	Labour Force Participation Rate (%)	45.0 (2000–01) → 64.4 (2024-25)	marks a sharp rise to around the national level of 64.3 per cent

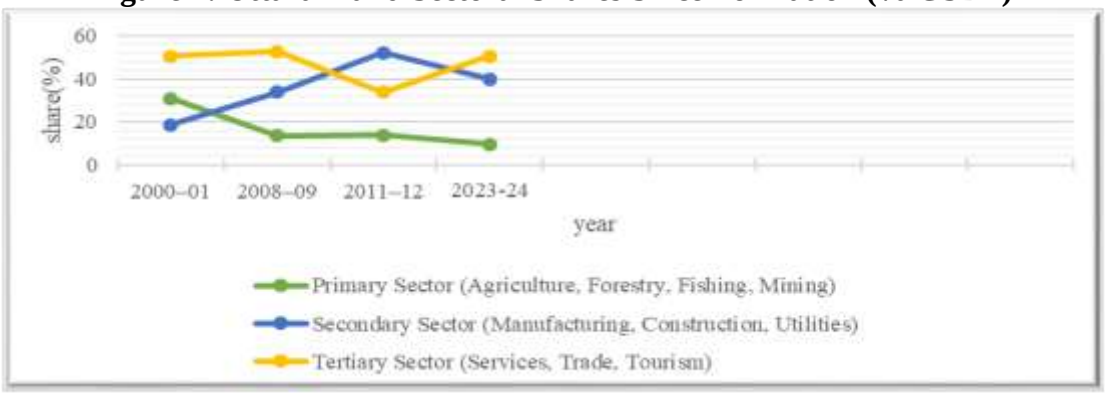
Source: *Data compiled and analysed by the author from Statistical Diary 2023-24, Uttarakhand at a Glance 2023-24, Directorate of Economics and Statistics, Government of Uttarakhand; Census of India 2011; and NITI Aayog publications.*

Table 2: Changes in Sectoral Composition of Uttarakhand's Economy since State Formation (% of GSDP)

Sector	2000–01	2008–09	2011–12	2023-24
Primary Sector (Agriculture, Forestry, Fishing, Mining)	30.99	13.57	14.00	9.59
Secondary Sector (Manufacturing, Construction, Utilities)	18.55	33.88	52.12	39.95
Tertiary Sector (Services, Trade, Tourism)	50.46	52.55	33.88	50.46

Source: Uttarakhand Budget Documents 2025–26, Budget Directorate, Government of Uttarakhand.

Figure 1: Uttarakhand Sectoral Shares Since Formation (% GSDP)



Source: Uttarakhand Budget Documents 2025–26, Budget Directorate, Government of Uttarakhand.

The structural transformation depicted in Table 2 and Figure 1 exemplifies one of the most significant shifts recorded for any Indian state within a comparable period. The primary sector declined from 30.99% in 2000–01 to 9.59% in 2023- 24, indicating both the relative expansion of the industrial and service sectors and the persistent stagnation of hill agriculture. The secondary sector more than doubled its share, rising from 18.55% to a peak of 52.12% in 2011-12, primarily due to the central fiscal incentive package introduced in 2003. The subsequent decline to 39.95% in 2023-24 reflects the ongoing growth of the service sector and the stabilization of industrial output following the conclusion of the incentive period. By 2023-24, the service sector had reestablished its predominant position, accounting for 50.46%. This progression-from agrarian dominance, through manufacturing-led transformation, to a diversified economy-aligns with the classical models of structural transformation articulated by Lewis (1954) and Kuznets (1966). Within this framework, industrialisation functions as the intermediary linking an agrarian past to a modern, services-oriented economy.

4.2 Industrial Scenario since 2000: From Zero to Emerging Hub

Uttarakhand entered statehood with a weak industrial base comprising 14,163 MSME units, 39 large industries, and 67,706 persons employed in industry. However, its subsequent development was shaped by successive policy interventions rather than market forces alone. The Industrial Policy of 2001, the creation of SIIDCUL in 2002, the Special Industrial Package of 2003, the Special Integrated Industrial Promotion Policy of 2008 and its 2011 amendment, and the Mega Industrial and Investment Policy of 2025 together established a dynamic institutional framework for industrial expansion. These policies, combined with the state's locational advantages and estate-based infrastructure, facilitated the emergence of major hubs at Pantnagar, Haridwar, Selaqui, Dehradun, and Rudrapur.

Table 3: Trends in Industrial Units, Employment, and Capital Investment in Uttarakhand (2000-01 To 2022-23)

Year	No. of industries		Total units	Employment generation		Total Employment	Capital investment (crore₹)		Total capital investment
	Msmes unit	Large unit		Msme	Large		Small	Large	
2000-01	17534	191	17725	59655	50802	110457	148.7	2694.7	2843.4
2001-02	34333	187	34520	119947	46850	166797	288.1	5075.6	5363.7
2002-03	36526	187	36713	124511	46850	171361	310.3	5075.6	5385.9
2003-04	38976	183	39159	129782	43858	173640	342.0	5175.9	5518.0
2004-05	25294	133	25427	63599	34853	98452	860.5	17014.7	17875.3
2005-06	28249	160	28409	72621	37138	109759	951.8	2715.2	3667.0
2006-07	32116	154	32270	87279	44541	131820	1226.3	4270.1	5496.4
2007-08	32835	143	32978	106843	52552	159395	1942.1	8105.6	10047.7
2008-09	34084	147	34231	118915	58762	177677	3298.8	11667.0	14965.8
2009-10	35955	203	36158	142780	79697	222477	4855.7	23747.0	28602.7
2010-11	37928	211	38139	162453	81633	244086	6280.5	27962.6	34243.0
2011-12	40049	218	40267	177615	83302	260917	7212.3	27074.2	34286.4
2012-13	42340	230	42570	196004	85333	281337	8380.0	27450.8	35830.8
2013-14	44809	230	45039	208846	85334	294180	9002.8	27450.8	36453.6
2014-15	47478	272	47750	220880	100752	321632	9536.3	34925.6	44461.9
2015-16	50407	272	50679	238351	100752	339103	10271.2	34925.6	45196.8
2016-17	53487	273	53760	260416	101273	361689	11221.1	35225.8	46447.0
2017-18	56826	293	57119	279963	105827	385790	11950.1	36388.4	48338.4
2018-19	60466	299	60765	298774	107972	406746	12743.6	377894.7	390638.3
2019-20	64597	327	64924	324225	111221	435446	13615.7	379557.8	393173.5
2020-21	68888	329	69217	346441	111451	457892	14463.1	37957.9	52421.0
2021-22	73961	329	74290	382431	111451	493882	15334.6	37957.9	53292.5
2022-23	79445	329	79774	405028	111451	516479	15980.7	37957.9	53938.6
CAGR (%)	7.11	2.5	7.08	9.1	3.64	7.26	23.69	12.78	14.3

Source: Author's own calculations (MS Excel) based on Directorate of Industries, Government of Uttarakhand (Compiled in Statistical Diaries).

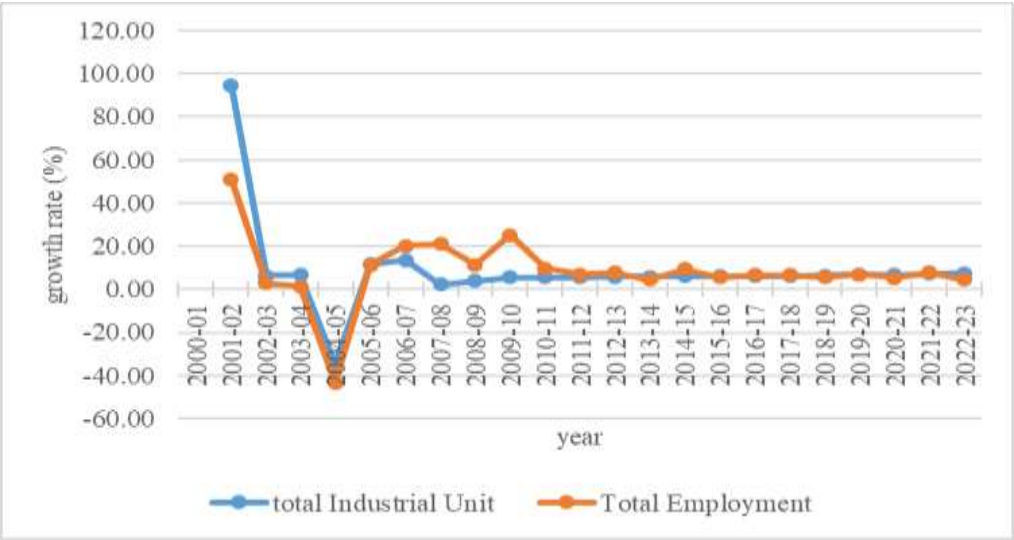
Tables 3 and 4 demonstrate that total units increased by a factor of 4.5 Compound Annual Growth Rate (CAGR): 7.08%) and employment nearly quintupled (CAGR: 7.26%) between 2000–01 and 2022–23. Notably, MSME employment (9.10%) consistently surpassed that of large industry (3.64%). The 94.75% increase in units in 2001-02 reflects a policy response to the establishment of SIIDCUL, whereas the 35.07% decrease in 2004-05 represents a base-year correction rather than a structural reversal. Capital investment experienced an overall CAGR of 14.31%, yet it remained structurally discontinuous. MSME investment grew organically by 23.69%, whereas investment in large industries peaked in 2018-19 and then collapsed, indicating a reliance on incentives rather than organic competitiveness.

Table 4: Growth Rates of Total Industrial Units and Employment

Year	Total industrial unit Growth (%)	Total employment Growth (%)
2000-01	-	-
2001-02	94.75	51.01
2002-03	6.35	2.74
2003-04	6.66	1.33
2004-05	-35.07	-43.30
2005-06	11.73	11.48
2006-07	13.59	20.10
2007-08	2.19	20.92
2008-09	3.80	11.47
2009-10	5.63	25.21
2010-11	5.48	9.71
2011-12	5.58	6.90
2012-13	5.72	7.83
2013-14	5.80	4.56
2014-15	6.02	9.33
2015-16	6.13	5.43
2016-17	6.08	6.66
2017-18	6.25	6.66
2018-19	6.38	5.43
2019-20	6.84	7.06
2020-21	6.61	5.15
2021-22	7.33	7.86
2022-23	7.38	4.58
Average Annual Growth Rate	**8.69**	**8.55**
CAGR	**7.08**	**7.26**

Source: Author's calculations.

Figure 2: Growth Rates of Total Industrial Units and Employment



Source: Author's calculations.

Table 5 confirms that units and employment are approximately normally distributed (Shapiro-Wilk $p > 0.05$; CV = 0.357 and 0.475), thereby validating the appropriateness of parametric inference. In contrast, capital investment deviates significantly from normality ($W = 0.479$, $p < .001$; CV = 1.789; skewness = 2.975), primarily due to outlier surges in investment during 2018–19 and 2019–20, reflecting its incentive-responsive rather than trend-driven nature.

Table 5: Descriptive Statistics of Aggregate Industrial Development Indicators

Descriptive statistics			
variable	**Total industrial units**	**Total employment**	**Total capital investment (₹ Cr)**
Mean (arithmetic)	45299.261	274826.696	59499.463
Std. Error of A. Mean	3371.435	27214.990	22198.072
Std. Deviation	16168.835	130518.505	106458.215
Coefficient of variation	0.357	0.475	1.789
Variance	2.614e+8	1.704e+10	1.133e+10
Skewness	0.592	0.363	2.975
Std. Error of Skewness	0.481	0.481	0.481
Kurtosis	-0.319	-1.085	7.933
Std. Error of Kurtosis	0.935	0.935	0.935
Shapiro-Wilk	0.955	0.939	0.479
P-value of Shapiro-Wilk	3.627e-1	1.678e-1	5.488e-8
Minimum	17725.000	98452.000	2843.370
Maximum	79774.000	516479.000	393173.460

Note: N = 23 annual observations for the period 2000–01 to 2022–23.

Source: Author's calculations using JASP software.

4.3 Pearson Correlation and OLS Regression Analysis

Table 6: Pearson Correlation between Total Industrial Units and Total Employment

		n	Pearson's r	p	Lower 95% CI	Upper 95% CI	Effect size (Fisher's z)	SE Effect size	Covariance
total industrial units	total employment	23	0.977	1.335e-15	0.946	0.990	2.230	0.224	2.062e+9
* p < .05, ** p < .01, *** p < .001									

Source: Author's calculations using JASP software.

Table 7. Linear Regression of Total Employment on Total Industrial Units

Panel A. Model Summary												
										Durbin-Watson		
Model	R	R^2	Adjusted R^2	RMSE	R^2 Change	F Change	df1	df2	p	Autocorrelation	Statistic	p

M_0	0.000	0.000	0.000	130518.505	0.000		0	22		0.860	0.052	4.996e-18
M_1	0.977	0.955	0.953	28407.028	0.955	443.425	1	21	1.335e-15	0.600	0.579	1.183e-5
Note. M_1 includes total industrial units.												

Source: Author's calculations using JASP

Panel B. Regression Coefficients								
							95% CI	
Model		Unstandardized	Standard Error	Standardized	t	p	Lower	Upper
M_0	(Intercept)	274826.696	27214.990		10.098	1.010e-9	218386.262	331267.130
M_1	(Intercept)	-82476.392	17972.011		-4.589	1.589e-4	-119851.234	-45101.550
	total industrial units	7.888	0.375	0.977	21.058	1.335e-15	7.109	8.667

Source: Author's calculations using JASP

Table 6 confirms a near-perfect association between enterprise formation and employment ($r = 0.977$, $p < .001$), stable across all 23 observations. Table 7 quantifies this as a multiplier of approximately 8 jobs per unit ($\beta = 7.888$, $R^2 = 0.955$, $p < .001$). Enterprise count alone explains 95.5% of the variation in employment, far exceeding capital investment as an explanatory variable. These results formally establish MSME-led enterprise creation as the primary, statistically verified engine of industrial employment in Uttarakhand.

5. Conclusion

This study examined Uttarakhand's industrial development since 2000 and statistically established the relationship between enterprise formation and employment generation. The sectoral decomposition confirms a structural transformation within a compressed quarter-century: the secondary sector's share in GSDP rose from 18.55 per cent at statehood to a peak of 52.12 per cent in 2011-12 before settling at 39.95 per cent in 2023-24, while the primary sector declined from 30.99 per cent to 9.59 per cent. This progression aligns with the classical sequence in which industrialisation bridges an agrarian and a modern diversified economy. The enterprise and employment record corroborates this at the micro level, with units growing at a CAGR of 7.08 per cent and employment at 7.26 per cent over twenty-three years, and with MSME employment growth of 9.10 per cent consistently outpacing the 3.64 per cent of large industry, confirming that policy-induced industrialisation produced durable structural change rather than a transient incentive-period spike. Capital investment, however, tells a different story, its extreme coefficient of variation and non-normal distribution reflecting the incentive-driven discontinuity of large-capital flows that policy design alone cannot replicate. The inferential findings are the study's principal contribution. The Pearson correlation of 0.977 establishes that enterprise formation

and employment have co-evolved as structurally inseparable dimensions of the state's industrial economy, and the OLS regression quantifies the relationship precisely, with each additional industrial unit generating about eight direct jobs and enterprise count accounting for 95.5 per cent of the variation in employment. These results carry three policy imperatives. First, MSME facilitation through access to credit, land availability, and registration support must remain the cornerstone of the state's employment strategy, as it is the variable that explains employment generation with near-perfect precision. Second, capital-investment policy must be redesigned for organic sustainability rather than dependence on incentives, given the structural fragility that the post-incentive deceleration has already exposed. Third, policy must address the spatial concentration of growth by extending the reliable MSME multiplier to the hill districts through targeted infrastructure and connectivity, so that the benefits of the state's industrial transformation reach its ecologically and geographically constrained majority. The Mega Industrial and Investment Policy of 2025 provides the institutional foundation for this next phase, and its success will depend on whether enterprise breadth, rather than capital volume, remains the organising principle of the state's industrial strategy in the decades ahead.

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Rural-Urban Differentials in Morbidity and Disease Burden in Cooch Behar District of West Bengal[#]

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Abstract

The analysis of morbidity patterns is crucial for assessing population health and identifying demographic and socio-economic factors that influence disease burden, especially in developing countries like India. This study explores the disease prevalence in the Cooch Behar district of West Bengal, with a specific focus on rural–urban disparities. The study utilises primary data obtained from 440 households comprising 1796 individuals, recording a total of 2,118 self-reported illness episodes. Diseases are classified into three broad categories, such as Group I, Group II and Group III, according to the modalities of the Global Burden of Disease Study 2010, and examined across various demographic and socio-economic variables. The findings indicate a dual disease burden, characterised by the predominance of non-communicable diseases, particularly in urban areas, while communicable diseases remain significant in rural regions. The study also reveals notable disparities in morbidity, with higher morbidity prevalence observed among women, the elderly individuals, lower-income groups, and less educated populations. The results reflect differentials in morbidity and disease burden across different demographic and socio-economic groups. The study highlights the need of adopting comprehensive and inclusive health policies aimed at addressing types of diseases and reducing disparities across rural and urban populations.

Keywords: *Communicable and Non-Communicable Diseases, Epidemiological Transition, Morbidity Prevalence Rate (MPR), Disease Burden, Cooch Behar District.*

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1. Introduction

The assessment of morbidity patterns is fundamental to understanding a population's disease burden and to designing effective public health policies. Morbidity not only reflects the prevalence of disease but also is linked to broader demographic and socio-economic conditions in which individuals reside. In developing economies like India, where health systems are often under strain due to disease burden, analysing morbidity patterns becomes even more important for identifying vulnerable groups and the corresponding need to prioritise resource allocation. India, like many other developing countries, is undergoing a significant transformation in its morbidity profile. While communicable diseases have

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traditionally been the major health concerns in the country, non-communicable diseases such as hypertension, cardiovascular diseases, and diabetes are now rising at an alarming rate. However, in many regions of India, this transition is incomplete, leading to the coexistence of both types of diseases, often referred to as the dual burden of disease.

Morbidity broadly denotes the condition of illness, disability, or departure from optimal health within a population, encompassing the consequences and complications arising from diseases other than death (Morgan & Summer, 2008). Cockerham and Scambler (2009) distinguished between disease as a biological condition and illness as the social and psychological experience of that condition. Similarly, Majumder (2006b) indicated morbidity as the state of illness or disability in a population, where people remain in an intermediate state between an ideal health condition and death. Morbidity is generally assessed through incidence and prevalence rates. Incidence refers to the number of new cases occurring within a specific period, while prevalence measures the proportion of individuals affected by a disease at a particular point in time. Johansson (1992) further conceptualised morbidity as either perceived (self-reported) or observed (clinically diagnosed), highlighting the importance of subjective health assessment in understanding disease burden. In this context, Murray (1996) interprets perceived morbidity as the gap between observed and ideal health status.

Studies on Morbidity and Disease Burden

The existing literature on disease burden has made substantial contributions by providing important theoretical frameworks and empirical insights, yet it remains uneven in its ability to capture micro-level realities, particularly in peripheral regions such as the Cooch Behar District. From a theoretical perspective, the epidemiological transition framework suggests a shift from communicable to non-communicable diseases (NCDs) (Omran, 1971), yet studies in India reveal that this transition is uneven and context-specific. Rural areas are increasingly experiencing the prevalence of NCDs together with persistent infectious diseases, resulting in a "double burden" of disease (IHME, 2017; Arokiasamy, 2018). Furthermore, rural-urban disparities due to limited health care infrastructure, financial barriers and dependence on informal healthcare providers in rural areas worsen the health outcomes of rural people (Balarajan et al., 2011; Peters et al., 2002). This complexity challenges the conventional rural–urban health differentials.

Empirical studies highlight that disease patterns in India and West Bengal are shaped by the interaction of demographic, environmental, and behavioural factors. While the rising trend of chronic illnesses such as cardiovascular diseases and diabetes are evident, communicable diseases associated with poor sanitation and living conditions continue to disproportionately affect rural populations (Laxminarayan et al., 2015; Dandona et al., 2017). Such coexistence reflects structural and developmental disparities in morbidity status. Studies show that socio-economic determinants such as income, education, occupation, caste, and gender, etc., play an important role in shaping both disease prevalence and healthcare utilisation. Evidence suggests that economically disadvantaged groups are more susceptible to acute illnesses, whereas relatively affluent populations report higher chronic conditions. Education improves health awareness and utilisation of services; gender disparities often limit women's access to timely healthcare (Ghosh & Arokiasamy, 2010; IIPS & ICF, 2021; Sen et al., 2010).

Need of the Study

The limitation of existing literature is its reliance on large-scale datasets such as NSSO and NFHS, which often vague in understanding the intra-district variations in disease prevalence. This limitation is particularly relevant for peripheral and cross border regions like Cooch Behar, where unique contextual factors such as cross-border mobility with Bangladesh, peripheral locations, and a predominantly rural economy dependent on agriculture and informal employment contribute to economic vulnerability and influence disease patterns. Despite these distinctive characteristics, such regions remain underrepresented in micro-level health analyses. Therefore, the present study seeks to examine disease composition and prevalence across rural–urban settings in Cooch Behar and analyse their association with demographic and socio-economic factors, to provide a clear understanding of intra district disparities in disease prevalence.

Objectives:

The study pursues three primary objectives. First, it seeks to examine the overall morbidity pattern and the distribution of disease categories within Cooch Behar district. Second, it compares the relative prevalence of communicable and non-communicable diseases in order to identify which category constitutes the dominant share of the disease burden. Third, the study investigates rural–urban differentials in disease prevalence and assesses how socio-economic and demographic factors influence morbidity patterns.

Sample Size and Disease Burden Measures:

The study is based on primary survey data gathered from 440 households, comprising 1,796 individuals drawn from both urban and rural areas of Cooch Behar District. Using a multistage sampling technique and ensuring adequate geographical representation of the representative sample, a total of 2,118 self-reported illness episodes were recorded over a reference period of last 12 months before the survey. To assess the disease burden, two standard epidemiological indicators are used: the Morbidity Prevalence Rate (MPR) and the Morbidity Incidence Rate (MIR) both expressed per 1,000 populations. MIR captures the occurrence of new disease cases within a specified reference period and is particularly relevant for analysing acute illnesses of shorter duration, whereas MPR captures the total burden of disease by including both existing and newly reported cases, making it more suitable for the assessment of chronic conditions. Following the recommendations of the World Health Organisation (WHO), MIR and MPR are calculated as follows:

$$\text{Morbidity Incidence Rate (MIR)} = \frac{I}{P} \times 1000,$$

$$\text{Morbidity Prevalence Rate (MPR)} = \frac{C}{P} \times 1000,$$

Here, ‘I’ indicates the number of newly reported cases of a disease within the 12-month reference period. C refers to the total number of disease cases, including both new and pre-existing (old) cases, while P denotes the population at risk of developing the illness during that reference period.

For analytical clarity, diseases were classified according to the Global Burden of Disease framework into three broad categories (Murray· and Lopez 1996): Group I comprising communicable, maternal, perinatal, and nutritional conditions; Group II consisting of non-communicable diseases; and Group III including intentional and unintentional injuries such as accidents. This

classification facilitates a systematic examination of morbidity patterns across demographic and socioeconomic groups as well as rural–urban settings.

Results and Discussion:

This section is organised into two main parts: the first part examines the variations in morbidity prevalence in relation to nature and severity of illness, and disease categories across rural and urban areas of Cooch Behar district, while the second part explores disease prevalence in relation to selected demographic and socioeconomic characteristics alongside differences in disease composition between rural and urban populations.

The findings presented in table 1, indicating the predominance of acute illnesses, which account for approximately two-thirds of all reported cases, and have a significantly higher MPR compared to chronic diseases, indicating that short-term and episodic health issues continue to dominate the morbidity profile. However, there are important rural–urban differences. Rural areas are characterised by a higher concentration of acute illnesses, indicating continued exposure to infectious diseases. In contrast, urban areas display a relatively balanced distribution between acute and chronic conditions, with chronic diseases slightly dominating. This indicates that short-term and episodic health problems continue to dominate the morbidity profile in the rural areas as well as in the Cooch Behar district but a transition towards non-communicable diseases are noticed in urban areas.

Table- 1: Distribution of illness episodes and Morbidity Prevalence Rate (MPR) by Nature of illness and Place of Residence

Nature of illness	Rural			Urban			Cooch Behar		
	Illness episodes	%	MPR	Illness episodes	%	MPR	Illness episodes	%	MPR
Acute	1110	71.8	933.6	282	49.4	464.6	1392	65.7	775.1
Chronic	437	28.2	367.5	289	50.6	476.1	726	34.3	404.2
Total	**1547**	**100**	**1301.1**	**571**	**100**	**940.7**	**2118**	**100**	**1179.3**

Source: *Author's calculation from survey data, Note: MPR = Morbidity Prevalence Rate per 1000 persons, Acute: Diseases lasting for 30 days or less; Chronic: Diseases persisting continuously for a period of more than 30 days.*

Table 2 indicates that low severe illnesses constitute the largest share of morbidity in Cooch Behar district (51.9 per cent), followed by medium-severity conditions (37.3 per cent), while high-severity illnesses constitute a relatively smaller proportion (10.8 per cent). This pattern suggests that a substantial proportion of the disease burden is associated with relatively less severe but more frequent health conditions. The overall Morbidity Prevalence Rate (MPR) is substantially higher in rural areas (1301.1 per 1,000 population) in comparison to urban areas (940.7), highlighting a greater disease burden among rural residents. Rural areas also record higher prevalence rates for low and medium severity illnesses, whereas urban areas show a relatively higher proportion of high-severity cases (13.0 per cent). These findings suggest that rural populations face a heavier overall morbidity burden, while urban areas experience a comparatively greater proportion of high severe illnesses.

Table- 2: Distribution of illness episodes and Morbidity Prevalence Rate (MPR) by Severity of Illness and Place of Residence

Severity of illness	Rural			Urban			Cooch Behar		
	Illness episodes	%	MPR	Illness episodes	%	MPR	Illness episodes	%	MPR
Low	805	52.0	677.0	294	51.5	484.3	1099	51.9	611.9
Medium	587	37.9	493.7	203	35.6	334.4	790	37.3	439.9
High	155	10.0	130.4	74	13.0	121.9	229	10.8	127.5
Total	**1547**	**100**	**1301.1**	**571**	**100**	**940.7**	**2118**	**100**	**1179.3**

Source: *Author's calculation from primary data, Note: Low = Symptoms without disruption to normal activities; Medium = Disruption of activities; High = Bed ridden for 7 or more consecutive days.*

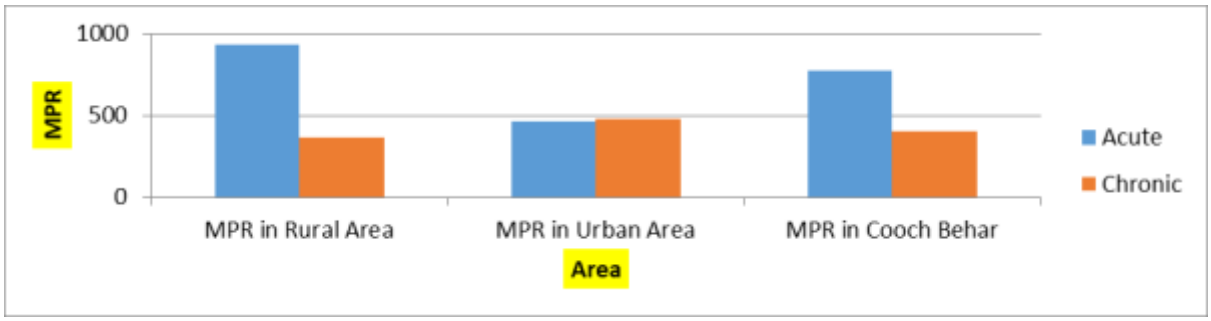
In terms of disease categories, the study finds that non-communicable diseases account for the largest share, i.e. 53.9% of total illness episodes of the district (Table 3). Furthermore, the MPR for GII diseases (636.4 per 1000 population) exceeds that of GI diseases (496.1 per 1000 population), reinforcing the conclusion that the burden of non-communicable diseases is greater not only in terms of their share of total morbidity but also in their prevalence. Urban areas are overwhelmingly dominated by NCDs, reflecting an advanced stage of the epidemiological transition. In contrast, rural areas display almost equal distribution of communicable and non-communicable diseases, where traditional infectious diseases coexist with rising noncommunicable diseases.

Table- 3: Distribution of illness episodes and Morbidity Prevalence Rate (MPR) by Disease Category and Place of Residence

Category of Disease	Rural			Urban			Cooch Behar		
	Illness episodes	%	MPR	Illness episodes	%	MPR	Illness episodes	%	MPR
GI	740	47.8	622.4	151	26.4	248.8	891	42.1	496.1
GII	744	48.1	625.7	399	69.9	657.3	1143	53.9	636.4
GIII	63	4.1	53	21	3.7	34.6	84	4	46.8
Total	1547	100	1301.1	571	100	940.7	2118	100	1179.3

Source: Author's calculation from primary data. Note: MPR = Morbidity Prevalence Rate per 1000 population, GI: Communicable, maternal, peri-natal and nutritional conditions; GII: Non-communicable diseases; GIII: Injuries and accidents.

Figure 1: Nature of Disease and Morbidity Prevalence Rate



Thus, the findings suggest that the distribution of illness episodes and the Morbidity Prevalence Rate (MPR) clearly indicate that communicable diseases do not outweigh the non-communicable diseases either at the aggregate level in Cooch Behar district or within its urban areas. However, communicable diseases remain of considerable importance, particularly in rural regions. Overall, the findings point towards an ongoing epidemiological transition, characterised by the growing prominence of non-communicable diseases alongside the persistent presence of communicable diseases.

Table- 4: Distribution of illness episodes, Morbidity Prevalence rate and Incidence rate by Residence and Gender

Gender	Rural			Urban			Cooch Behar		
	Illness episodes	MIR	MPR	Illness episodes	MIR	MPR	Illness episodes	MIR	MPR
Male	806	908.7	1269.3	293	491.9	948.2	1099	663.3	1164.2
Female	741	958.5	1337.5	278	526.8	932.9	1019	807.5	1196.0
Total	1547	931.9	1301.1	571	509.1	940.7	2118	789.0	1179.3

Source: *Author's calculation from primary data, Note: MIR = Morbidity Incidence Rate per 1000 individuals, MPR = Morbidity Prevalence Rate per 1000 individuals.*

Gender Disparities in Morbidity

Gender-based analysis reveals males report slightly more illness episodes, but females exhibit higher morbidity prevalence rates, indicating a greater overall burden of illness (Table 4). The rural–urban comparison further highlights that, in rural areas, both MIR and MPR are higher for females than for males, with female MPR reaching 1337.5 compared to 1269.3 for males, and MIR at 958.5 compared to 908.7. This indicates that rural women bear a disproportionate burden of both new and existing illnesses. In urban areas, while the differences are less, women still show a higher incidence of new illness episodes. These findings may point to the combined effects of biological vulnerability, socio-cultural constraints, and unequal access to healthcare.

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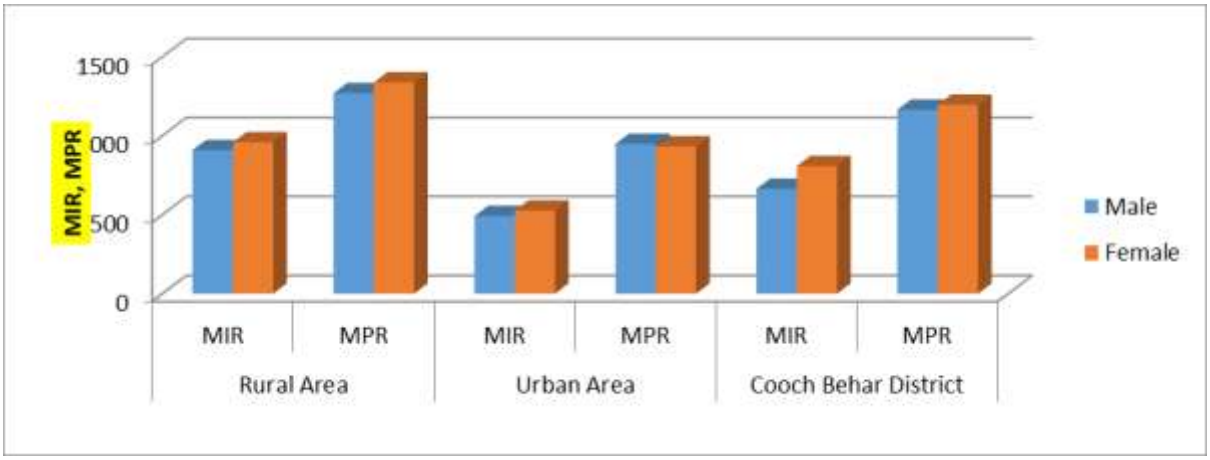
Figure 2: Gender wise and Morbidity Incidence and Prevalence Rate.



Furthermore, gender-based analysis of morbidity prevalence across disease categories (Table 5) shows that males have higher MPR in GI (526.5 per 1000) and GIII (54.0 per 1000) diseases than females (462.4 and 38.7, respectively), indicating a larger burden of specific diseases belonging to GI and GIII category. In contrast, females show a markedly higher MPR in GII diseases (694.8 per 1000) than males (583.7), suggesting a greater susceptibility or reporting of non-communicable disease.

Table- 5: Morbidity Prevalence Rate across selected demographic characteristics of sample

Sample Characteristics	GI	GII	GIII	Morbidity Prevalence Rate for all Disease Categories (GI + GII + GIII)		
				Rural Area	Urban Area	Cooch Behar
Gender						
Male	526.5	583.7	54.0	1269.3	948.2	1164.2
Female	462.4	694.8	38.7	1337.5	932.9	1196.0
Age Group (in years)						
Less than 5	1813.2	98.9	33.0	2157.1	1238.1	1945.1
5-14	849.5	228.2	14.6	1251.7	694.9	1092.2
15-29	362.6	334.9	48.5	842.4	500.0	746.0
30-44	395.7	479.6	45.6	1062.0	650.3	920.9
45-60	366.7	1023.8	69.0	1617.1	1178.8	1459.5
61 & Above	327.5	1362.4	39.3	1898.3	1549.5	1729.3
Education						
NASA	2241.4	126.4	34.5	2424.7	2285.7	2402.3
Illiterate	537.7	1100.5	70.4	1716.6	1583.3	1708.5
Up to Primary	718.9	437.8	27.0	1338.2	755.1	1183.8
Primary to Secondary	398.8	656.7	43.5	1125.0	1023.4	1099.0
Secondary to H.S	300.5	737.1	70.4	1211.9	978.9	1108.0

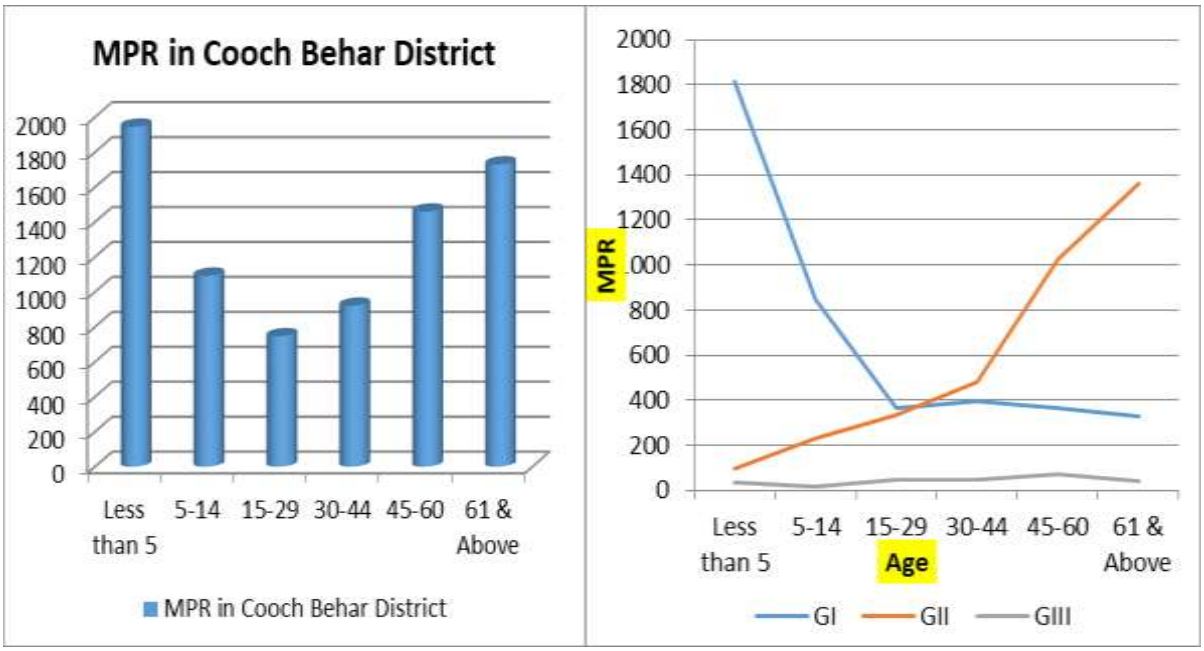
H.S to Graduate	270.6	597.1	41.2	985.9	853.5	908.8
Post Graduate & Above	323.8	323.8	38.1	702.7	676.5	685.7
Marital Status						
Currently Married	392.7	780.6	51.8	1325.5	1044.7	1225
Unmarried	686.0	281.0	29.8	1152.8	635.4	996.9
Widow	358.0	1444.4	111.1	2113.2	1535.7	1913.6
Divorcee	0.0	3000.0	0.0	3000	0	3000
Widower	533.3	1000.0	66.7	1875	1285.7	1600

Source: *Author's calculation from primary data, Note: MPR = Morbidity Prevalence Rate (per 1000 populations), GI: Communicable diseases together with maternal, peri-natal and nutritional conditions; GII: Non-communicable diseases; GIII: Injuries and accidents. NASA: Not attaining school age, H.S: Higher Secondary.*

Age-wise Distribution and Epidemiological Transition

Age-wise analysis reveals a clear life-cycle pattern in morbidity, with higher morbidity at both ends of the age spectrum. Children below the age of 5 years exhibit extremely high MPR, primarily driven by communicable diseases. This reflects their vulnerability to infections due to underdeveloped immunity and environmental factors such as poor sanitation and nutrition. As age increases, the burden gradually shifts towards non-communicable diseases, with middle-aged and elderly populations experiencing higher prevalence of chronic conditions. The elderly, in particular, show the highest morbidity rates, driven by age-related degenerative diseases. This pattern provides evidence of an ongoing epidemiological transition and highlights the importance of age-specific healthcare strategies.

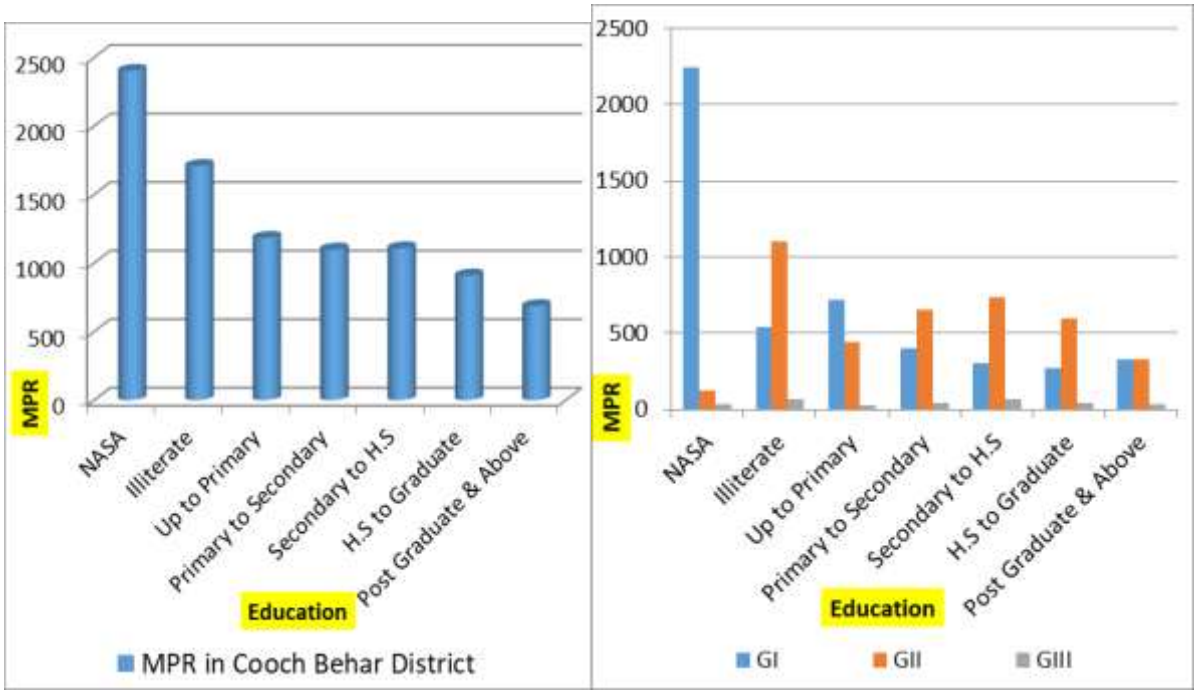
Figure 3: Age-wise MPR and Transition in Disease Pattern



Education and Health Outcomes

The study finds an inverse relationship between educational attainment and morbidity at the district level, with the highest MPR observed among individuals with Not Attaining School Age (NASA) (2402.3), and followed by illiterate (1708.5), while individuals with higher educational attainment, particularly postgraduates, show the lowest morbidity prevalence (Table – 5). Lower educational groups are more susceptible to communicable diseases, likely due to poor living conditions, lack of awareness, and limited access to healthcare. Again, higher educational groups show a relatively greater prevalence of non-communicable diseases, reflecting lifestyle-related risks. This dual effect of education indicates its role in shaping the disease burden.

Figure 4: Education-wise MPR and Morbidity Pattern



Marital Status and Morbidity

The findings reveal that divorced individuals record the highest MPR due to its small size, with multiple illness episodes inflating the MPR. Widowed individuals, particularly widows, exhibit the highest morbidity rates, largely driven by non-communicable diseases, which may be due to psychological stress, social isolation, economic insecurity, and reduced access to care and support systems. Married individuals also show relatively high morbidity, partly due to their older age composition and greater exposure to stress because of having greater household and occupational responsibilities. In contrast, unmarried individuals, who are generally younger, exhibit lower morbidity levels.

Socio-Economic Differentials in MPR in Cooch Behar District

Table 6 represents the MPR across different socio-economic and demographic groups in Cooch Behar district reveals notable disparities in the distribution of disease burden.

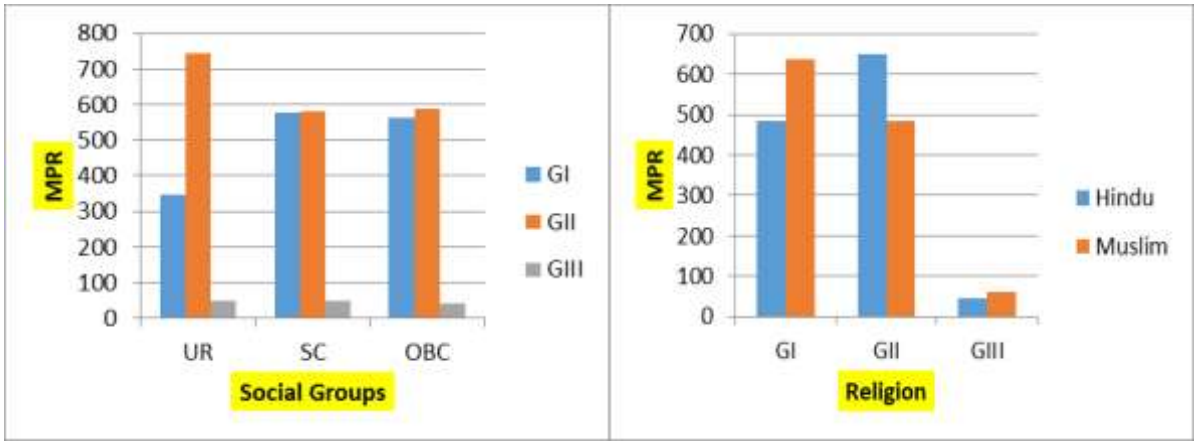
Table- 6: Distribution of Morbidity Prevalence Rate (MPR) by Socio-economic groups

Sample Characteristics				Morbidity Prevalence Rate for all Disease Categories (GI + GII + GIII)		
	GI	GII	GIII	Rural Area	Urban Area	Cooch Behar
Social Groups						
UR	346.1	743.8	48.3	1371.8	938.3	1138.1
SC	576.1	579.7	48.3	1265.6	935.1	1204.1
OBC	561.3	588.6	40.9	1319.3	953.5	1190.7
Religion						
Hindu	485	648.4	45.7	1310.7	946.8	1179.1
Muslim	636.4	484.8	60.6	1220.5	200	1181.8
Household Size						
<=4	84.1	169.2	12.2	263.8	268	265.5
>=5	51.9	98.9	2.5	162.7	127.9	153.3
Economic Class						
AAY	200	566.7	0	766.7	0	766.7
PHH	683.8	693.2	49.2	1465.6	970.6	1426.2
SPHH	485.1	542.6	66	1143.6	925.9	1093.6
RKSY-I	514.8	735.8	29.6	1392.5	1000	1280.3
RKSY-II	319.6	701	41.2	1069	1058.8	1061.9
General	356.6	583.5	42.4	1218.2	893.5	982.5
Household Income (Monthly)						
0-10000	598.3	595.5	56.6	1325.5	846.8	1250.4
10001-20000	479.1	713.4	56.5	1325.9	1016.8	1249
20001-30000	458	626	19.1	1145.6	1038.5	1103.1
30001-40000	550.6	685.4	0	1785.7	983.6	1236
Above 40000	269.2	600	46.2	1041.7	886.8	915.4

Source: *Author's calculation from survey data, Note: MPR = Morbidity Prevalence Rate per 1000 persons; UR: Unreserved, SC: Scheduled Caste, OBC: Other Backward Classes, AAY: Antyodaya Anna Yojana, PHH / SPHH: Priority / Special Priority Household, RKSY-I/ II: Rajya Khadya Suraksha Yojna-I/ II, General: Non-subsidised.*

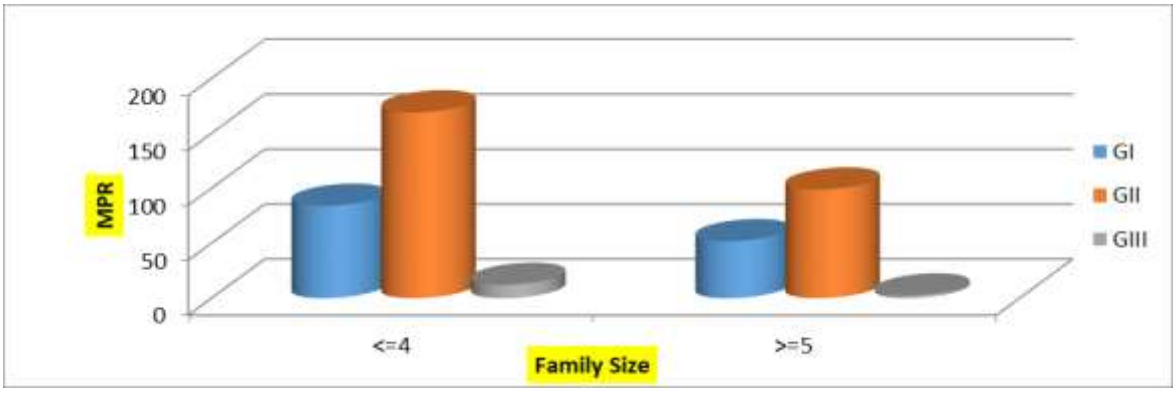
Across social groups, the overall MPR remains relatively high for all categories, with Scheduled Castes (1204.1) recording the highest burden, followed closely by OBC (1190.7) and UR (1138.1). Rural MPR is consistently higher than urban across all groups, indicating a stronger concentration of morbidity in rural areas regardless of caste. In terms of disease categories, Group II conditions dominate across all social groups, suggesting a higher prevalence of intermediate or non-communicable conditions.

Figure 5: Disease Category-wise MPR by Social Groups and Religion.



With respect to religion, both Hindu (1179.1) and Muslim (1181.8) populations show nearly identical overall MPR levels, indicating minimal disparity at the aggregate level. However, a striking rural–urban gap exists among Muslims, with rural MPR (1220.5) substantially higher than urban MPR (200), suggesting uneven access or reporting differences. Household size shows an inverse relationship with morbidity: smaller households (≤4 members) report a significantly higher MPR (265.5) than larger households (153.3). This may reflect differences in age composition, reporting behaviour, or access to healthcare services.

Figure 6: Disease Category wise MPR by Family Size.



Across economic classes, the burden is particularly high among vulnerable groups such as PHH (1426.2) and RKSY-I (1280.3), indicating that economically weaker sections experience greater morbidity. In contrast, the General category records a comparatively lower MPR (982.5). Notably, rural MPR remains consistently higher than urban across all economic classes, reinforcing rural disadvantage.

The distribution of morbidity across income groups reveals that lower-income groups (₹0–10,000) bear nearly equal burdens of GI (598.3) and GII (595.5), indicating that both communicable and non-communicable diseases are important health concerns among low-income households. However, as income increases, the disease profile gradually changes, and non-communicable diseases become evident. For instance, households in the ₹10,001–20,000 income group report a significantly higher MPR for GII (713.4) compared to GI (479.1), suggesting a transition in disease patterns associated with changes in lifestyle and living conditions. Interestingly, the highest income group (above ₹40,000) records the lowest overall MPR (915.4), with a reduced burden of GI diseases (269.2) but a relatively sustained level of GII diseases (600.0). This indicates that the exposure to infectious diseases reduces with rising income levels. Therefore, the income-wise analysis further confirms that morbidity is generally higher among lower-income groups, whereas individuals with higher incomes tend to experience lower levels of morbidity. However, non-communicable diseases remain prevalent even among higher-income groups, suggesting that factors such as lifestyle, dietary habits, and other behavioural risks play an important role in shaping health outcomes.

Conclusion

The study presents a detailed assessment of morbidity patterns in the Cooch Behar district, highlighting the coexistence of communicable and non-communicable diseases. While acute and infectious conditions continue to dominate rural areas, urban regions are increasingly experiencing a shift towards chronic and lifestyle-related illnesses, reflecting an ongoing epidemiological transition. The analysis further reveals significant socio-economic and demographic inequalities in morbidity, with higher disease burden among women, the elderly, and the less educated and economically disadvantaged groups. These findings indicate that morbidity is not merely a medical issue but is deeply rooted in broader social and economic conditions. So, a balanced and inclusive approach to public health is required that addresses both disease-specific and structural factors. As the district continues to undergo epidemiological transition, policymakers must adopt healthcare strategies that address emerging health challenges while ensuring better health outcomes and reduce inequalities in the district.

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Effect of Risks on Farmers' Adaptation to Climate Change: A Structured Field Experiment

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Abstract:

This study investigates the dynamic interplay between agriculture-related risks and climate change mitigation strategies in Riverbed and Rainfed regions. India, a pivotal global food producer, grapples with the challenging paradox of diminishing agricultural GDP amid a burgeoning population reliant on agriculture. The study scrutinizes whether disparities in agriculture-related variables, spanning seasonal crop cultivation, crop selection rationale, income sources, and farming expenses, between these regions are mirrored in the adoption of climate change mitigation strategies. The analysis reveals substantial variations between these regions across multiple dimensions, underscoring the need for region-specific interventions to address their distinct imperatives. In the realm of seasonal crop cultivation, Riverbed and Rainfed regions exhibit stark differences, signaling the imperative to tailor agricultural strategies to local conditions. Crop selection rationale diverges significantly, emphasizing the necessity for adaptive measures catering to the unique challenges faced by each region. Income sources display pronounced disparities, necessitating strategies that bolster income diversification and resilience. Additionally, farming expenses vary notably, advocating for targeted cost-effective solutions tailored to each region's needs. These findings allude to the importance of aligning policy decisions with the specific needs and vulnerabilities of Riverbed and Rainfed regions. Tailored support mechanisms can enhance agricultural resilience and ensure the livelihood security of the farming populace. The nuanced understanding of the intricacies of these regions can also inform region-specific climate-resilient farming practices. These insights ultimately safeguard the livelihoods and food security of farming communities in Riverbed and Rainfed regions.

***Key words**: Climate change, Mitigation strategies, Regional disparities, Small farmers, Agriculture Resilience.*

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1. Introduction

India stands as a prominent global food producer, with a staggering 68 percent of its 1.3 billion population directly or indirectly engaged in agriculture. However, the disconnection between the agricultural sector's contribution to the Gross Domestic Product (GDP) and the sheer number of households reliant on agriculture is stark. Over the years, India has witnessed a decline in its agricultural GDP, plummeting from 51 percent in 1950-51 to 18.8 percent in 2021-22, while the count of farming households has swelled from 70 million in

1950 to 120 million in 2021 (Economic Survey, 2021-2022). This paradox reveals the over-dependence on agriculture and a limited grasp of the profound impacts of climate change, which collectively endanger farmers' livelihoods, food security, and rural well-being. Notably, India, as an emerging economy, experiences an annual loss of USD 9 to USD 10 billion due to extreme weather events alone (Economic Survey, 2018). A study by the Indian Council of Agricultural Research (ICAR) has illuminated the concerning trend of States like Andhra Pradesh, Punjab, and Rajasthan, where agriculture now demands 30 percent more water due to heightened evaporative demand and accelerated crop maturity. This excessive water usage poses grave environmental risks, leading to salinity, nutrient pollution, and wetland degradation (Dhawan, 2017). Moreover, factors like erratic rainfall patterns and severe weather events can inflict significant harm on agriculture, with a 40 percent reduction in rainfall potentially causing a drastic income decline for 14 percent of farmers along the agricultural chain (Economic Survey, 2017-18).

As climate change takes its toll, it emerges as one of the most critical threats to human survival. However, individuals' perceptions of climate change risks vary widely (Metag J et al. 2015). In the Indian context, awareness of climate change remains moderate to low among farmers in Tamil Nadu. Additionally, many agricultural communities anticipate only irregular rainfall patterns, while knowledge about issues like acid rain, wind speed fluctuations, and heat and cold waves remains notably limited (Sangeetha S et al. 2021). Consequently, there is a pressing need to disseminate knowledge about climate change among small and marginal farmers. They must not only comprehend the costs but also the nature of climate change impacts (Safdar et al. 2014). Significantly, a palpable disconnect persists between policies, passive actions, scientific findings, future projections, and the present global state (Chowdhury, 2021). This disconnect could aggravate the challenges faced by developing economies. Therefore, to pave the path towards sustainability, there is an urgent requirement to establish a robust and holistic knowledge base that empowers decision-making. This entails categorizing and integrating the diverse information on farmers' adaptive actions (Datta P et al. 2022).

In the face of these challenges, the central research question emerges: Is there a relationship between agriculture-related risk and mitigation strategies adapted to combat climate change? As India grapples with the implications of climate change and the vulnerabilities of its agricultural sector, this question becomes increasingly pertinent. In this context, this paper endeavours to explore the mitigation strategies adopted by farmers to address the impacts of climate change and the risks inherent in farming. By bridging this knowledge gap, we aim to shed light on the strategies employed by farmers in adapting to the changing climate and the potential challenges they face in ensuring food security and livelihood sustainability.

2. Methods and materials

This study adopts a qualitative research approach, relying on data collected primarily through structured interviews with respondents. The research was conducted in the Madurai region, known for experiencing high temperatures, with a maximum of 42°C observed between March and September. Madurai district is comprised of seven taluks and thirteen blocks, and for this study, we specifically focused on Usilampatti taluk (riverbed) with the largest irrigated area, covering 8,140 hectares, and Thirumangalam taluk (rainfed) with the smallest irrigated area, spanning 2,649.7 hectares, as reported in

Block "G" Return in 2020. A total of 100 farming households were randomly selected from each of these chosen taluks (n = 200). These respondents were then interviewed to gather data related to the risks they face in their farming activities and the various factors influencing their decisions to adopt adaptive strategies. The information collected from the selected informants was subjected to analysis using a simple linear regression model, allowing us to explore and quantify the relationships between different variables and factors affecting the adoption of adaptive strategies in the context of Madurai's distinct agricultural regions.

3. Results and discussion

Table 1 presents a comparison of socio-economic drivers between two distinct groups of farmers, Rainfed and Riverbed, and highlights the percentage differences in various variables and their attributes. It is evident that a higher percentage of male farmers are engaged in both Rainfed (84 percent) and Riverbed (75 percent) farming. However, there is a noteworthy gender disparity, with Riverbed female farmers comprising a larger proportion (25 percent) compared to Rainfed female farmers (16 percent). This indicates that Riverbed farming may have a relatively higher participation of female farmers. Besides, Household head, also reveals some interesting disparities, whereas the majority of households are headed by males. However, the percentage difference in Riverbed farming is significantly smaller (4.2 percent) compared to Rainfed farming (80 percent), where there is a substantial difference favoring male household heads. This suggests that the Riverbed farming community has a more balanced gender distribution among household heads. In terms of farming experience, Rainfed farmers predominantly fall in the "7 to 11 years" category, while Riverbed farmers are relatively more experienced, with a significant percentage difference of 66.7 percent. This could imply that Riverbed farming attracts more experienced farmers, possibly due to its unique challenges or opportunities. The majority of Rainfed farmers have landholdings of less than 1 hectare, with a notable 80 percent difference compared to Riverbed farmers. Conversely, the "1 to 2 hectares" category shows a higher percentage of Riverbed farmers. This suggests that landholding patterns are significantly different between the two groups, with Rainfed farmers predominantly having smaller landholdings. The data highlights a striking percentage difference of 125.9 percent, indicating that the proportion of Marginal Farmers is considerably higher among Riverbed farmers, while Small Farmers are more prevalent in the Rainfed category. This could be indicative of varying economic conditions and resource access among the two groups.

Table 1: Socio-Economic Drivers of Riverbed and Rainfed Farmers

Variables and their attributes		Rainfed	Riverbed	Percentage difference
Gender	Male	84	75	11.3
	Female	16	25	43.9
Household head	Male	93	97	04.2
	Female	07	03	80.0
Farmers experience on farming	7 to 11	01	02	66.7
	≥ 12	99	98	01.0

Landholding details	< 1 ha	28	12	80.0
	1 to 2 ha	72	88	20.0
Type of farmer	Marginal Farmer	66	15	125.9
	Small farmer	34	85	85.7

Source: Estimated from field survey data
Sample Households (N) = 200 (Rainfed – 100; Riverbed – 100)

Table 2 provides a detailed comparison of the economic capital of Riverbed and Rainfed farmers, shedding light on various key variables and their attributes. Rainfed farmers predominantly cultivate Sorghum & Green gram (64 percent) as their seasonal crops, whereas Riverbed farmers exhibit a significantly different pattern, with a majority cultivating Paddy (68 percent). This suggests that crop preferences and choices differ markedly between the two groups. Additionally, the rationale behind crop selection varies, with the majority of Rainfed farmers (82 percent) choosing crops based on considerations of less maintenance, available technology, and resource availability, whereas Riverbed farmers (47 percent) seem to prioritize crops based on suitability for weather conditions, farm-specific attributes, and their potential use as livestock fodder. Rainfed farmers exhibit a more even distribution of income levels, with 60 percent of households falling in the "Rs. 13,161 – Rs. 19,758" category. In contrast, Riverbed farmers show a broader distribution, with a substantial percentage (33 percent) in the same income range. This suggests that Riverbed farmers may have more diverse income profiles. The data indicates that a significant proportion of Rainfed farmers (38 percent) incur costs in the "Rs. 7,887 – Rs. 13,160" range, while Riverbed farmers show a relatively even distribution of costs across different ranges. This highlights a notable variation in the cost structure of farming activities between the two groups. Differences are observed in crop cultivation choices, the rationale for crop selection, household income distribution, and farming costs. These variations may be influenced by factors such as geography, resource availability, and economic conditions specific to each farming category.

Table 2: Economic Capital of Riverbed and Rainfed Farmers

Variables and their attributes		**Rainfed**		**Riverbed**	
		Frequency	**Percent**	**Frequency**	**Percent**
Seasonal crop cultivation	Sorghum & Green gram	64	64.0	12	12.0
	Sorghum, Pigeon pea & Guar	24	24.0	20	20.0
	Paddy	12	12.0	68	68.0
Rationale on crop selection	Apt to weather, Farm conditions, Location specific & For livestock fodder	18	18.0	47	47.0
	Less maintenance, Available technology & Resource availability	82	82.0	53	53.0
Household	Rs. 7,887 – Rs. 13,160	22	22.0	05	05.0

income	Rs. 13,161 – Rs. 19,758	60	60.0	33	33.0
	Rs. 19,759 – Rs. 26,354	13	13.0	31	31.0
	Rs. 26,355 – Rs. 52,733	01	01.0	21	21.0
	More than Rs. 52,734	04	04.0	10	10.0
Cost incurred in farming Household income	Rs. 7,887 – Rs. 13,160	38	38.0	16	16.0
	Rs. 13,161 – Rs. 19,758	40	40.0	44	44.0
	Rs. 19,759 – Rs. 26,354	13	13.0	25	25.0
	Rs. 26,355 – Rs. 52,733	09	09.0	15	15.0
	Rs. 7,887 – Rs. 13,160	22	22.0	05	05.0

Source: Estimated from field survey data
Sample Households (N) = 200 (Rainfed – 100; Riverbed – 100)

Details of strategies adapted by the farmers to tackle climate change and risk associated in farming is revealed in Table 3. For Rainfed farmers, the most prevalent strategies include "Increase pesticides, changing crop varieties, migration, and practicing crop rotation" (23%) and "Changing harvest time and practicing crop diversification" (16%). In contrast, Riverbed farmers primarily rely on strategies such as "Changing harvest time and practicing crop diversification" (23%) and "Agro forestry, salinity tolerant crops, and soil conservation" (18%). These differences may be influenced by the specific environmental conditions and challenges faced by each group. The "Risk associated in farming" category outlines various types of risks that farmers encounter. Rainfed farmers primarily cite "Production risk" (14%) and "Price or market risk" (22%) as significant concerns, while Riverbed farmers' express similar concerns, with "Production risk" (11%) and "Price or market risk" (20%) as the most frequently mentioned risks. A noteworthy observation is that some Riverbed farmers mention "Uncertain natural growth processes of crops and livestock" as a risk (13%), which does not appear among the risks mentioned by Rainfed farmers. This may suggest unique challenges associated with Riverbed farming, particularly related to natural growth processes. The variations in the adoption of mitigation strategies and the types of risks identified reflect the diverse nature of farming practices and the specific challenges encountered by each group.

Table 3: Mitigation strategies and associated risks in farming

Variables and their attributes		**Rainfed**		**Riverbed**	
		Frequency	**Percent**	**Frequency**	**Percent**
Mitigation strategies adapted to tackle climate change	Increase pesticides, changing crop varieties, migration, practicing crop rotation	23	23.0	15	15.0
	Increase off-farm income, increasing irrigation, Increase mulching	13	13.0	10	10.0
	Changing harvest time & practicing crop diversification	16	16.0	23	23.0
	Agro forestry, salinity tolerant crops & soil conservations	17	17.0	18	18.0

	Integrated farming system, changing the planting time & cover cropping	02	02.0	13	13.0
	Use of drought tolerant crops, changing planting structure &	07	07.0	00	00.0
	living fences, multipurpose trees & zero tillage	07	07.0	10	10.0
	Taking out insurance & focuses on weather forecast	05	05.0	03	03.0
	Application of soil protection technology	10	10.0	08	08.0
Risk associated in farming	Production risk	14	14.0	11	11.0
	Price or market risk	22	22.0	20	20.0
	Financial risk	10	10.0	09	09.0
	Institutional risk	15	15.0	10	10.0
	Human or personal risk	02	02.0	13	13.0
	Uncertain natural growth processes of crops and livestock	08	08.0	00	00.0
	Production, Price & Financial risk	29	29.0	37	37.0

Source: Estimated from field survey data
Sample Households (N) = 200 (Rainfed – 100; Riverbed – 100)

The regression model is statistically significant at the 1 percent level, as indicated by the F-statistic ($F_{(1,198)} = 44.913$, $p < 0.001$). The model's R-squared value of 0.185 indicates that it explains 18.5 per cent of the variation in the model. Furthermore, the regression statistics show that a one percent increase in farming-related risk is associated with an increase in mitigation strategies adapted to tackle climate change by approximately 0.375 percent. This relationship is statistically significant, as indicated by the t-statistic ($t_{(198)} = 6.702$, $p < 0.01$). Based on these findings, the study adopts the alternative hypothesis (H1), suggesting that an increase in farming-related risk leads to a corresponding increase in the need and necessity of mitigation strategies to address the risks associated with climate change in the study area.

Table 4: Regression Statistics

Variables	**Regression Statistics**			**Sig. value**
Mitigation strategies adapted to tackle climate change	0.375	F-statistic	44.913***	0.001
	(0.056)	R Square	0.185	
	6.702***			
Constant	2.919 (0.265) 11.030***			

Source: Author's estimation.
*** indicates 1 percent level of significance; Figure in the parentheses represents Std. error value, ddependent variable: Risk associated in farming

Table 5 shows the examined results of disparities between two groups, the Riverbed and Rainfed Regions, with regard to various variables of interest. Notably, Levene's test establishes the presence of significantly different variances between the two regions, as evident from small p-values (Sig. = 0.01). This divergence in variances signifies substantial variations in the selection of seasonal crops between the Riverbed and Rainfed regions. Moreover, the t-test for equality of means reaffirms these differences, illustrating highly significant distinctions in seasonal crop cultivation ($t_{(198)}$ = -180.66, p < 0.01). Similarly, Levene's test highlights marked disparities in variances (p < 0.01) for the rationale behind crop selection, indicating that specific reasons for crop choices vary notably between the two regions. This variation is further confirmed by the t-test for equality of means, which identifies highly significant differences in this aspect ($t_{(198)}$ = -4.581, p < 0.01).

While Levene's test indicates unequal variances between the regions in the context of income from on-farm and off-farm activities (Sig. = 0.004), the t-test for equality of means accentuates the substantial discrepancy in income sources, underlining the high significance of these variations ($t_{(198)}$ = 20.655, p < 0.01). Nevertheless, the t-test for equality of means uncovers a significant distinction in these farming-related expenses ($t_{(198)}$ = 3.487, p < 0.01), emphasizing notable disparities between the two regions. This analysis elucidates notable distinctions between the Riverbed and Rainfed regions concerning seasonal crop cultivation, crop selection rationale, income sources, and farming expenses. However, it identifies no significant differences between these regions in terms of the adoption of climate change mitigation strategies and the rationales guiding their selection. These findings offer valuable insights into the unique characteristics of farming practices in the two regions and can guide targeted interventions to address their specific challenges and opportunities.

Table 5: Disparities in Agricultural Variables Between Riverbed and Rainfed Regions

Independent Samples Test	F	t	Mean Difference	Std. Error Difference
Seasonal crop cultivation	103.041***	-180.66***	-19.45	0.108
Rationale on crop selection	66.495***	-4.581***	-0.58	0.127
Income from on-farm & off-farm activities	8.724***	20.655***	1.61	0.078
Cost incurred by the farmers	1.083	3.487	0.46	0.132
Mitigation strategies adapted to tackle climate change	2.454	0.31	0.11	0.355
Rationale behind the choice of adaptation and mitigation strategies	0.329	0.302	0.11	0.365

Source: Author's estimation.

*** indicates 1 percent level of significance; Figure in the parentheses represents Std. error value, ddependent variable: Household Regions (Riverbed & Rainfed)

Conclusion and Recommendations

In conclusion, this study has delved into the crucial relationship between agriculture-related risks and the adoption of climate change mitigation strategies in the context of the studied region. The findings reveal that there is indeed a significant and meaningful connection between the challenges faced by farmers in the agricultural sector and their proactive measures in adopting mitigation strategies to combat the adverse impacts of climate change. Our analysis underscores the vulnerability of the agricultural sector to climate change and the indispensable role that mitigation strategies play in enhancing its resilience. The observed disparities in the adoption of these strategies and the understanding of climate change among different farming communities emphasize the need for targeted awareness campaigns and support, particularly for small and marginal farmers.

Based on the results of the study, several recommendations were suggested by the authors for the development of smallholder farmers and sustainable agriculture in the Riverbed and Rainfed regions of the study area.

- Launch awareness campaigns and educational programs focused on climate change and its implications for agriculture, with a specific emphasis on small and marginal farmers. These programs should address the costs and nature of climate change impacts.
- Develop and implement region-specific strategies that cater to the unique challenges and opportunities in different agricultural regions. Provide support for sustainable water management, diversified crop choices, and soil conservation practices.
- Encourage policymakers to integrate climate change adaptation and mitigation strategies into agricultural policies. Ensure that these policies align with local conditions and the specific needs of farming communities.
- Invest in ongoing research to monitor the impacts of climate change on agriculture, refine mitigation strategies, and track their effectiveness. Data-driven decisions are essential for crafting evidence-based policies.
- Promote the adoption of climate-resilient farming practices, including drought-tolerant crop varieties, water-efficient irrigation, and sustainable land management.
- Provide financial incentives and support for farmers to implement climate-resilient practices, invest in technologies, and obtain insurance coverage against extreme weather events.

By implementing these recommendations, policymakers, researchers, and agricultural stakeholders can work collectively to strengthen the agricultural sector's ability to confront the challenges of climate change, safeguard food security, and improve the livelihoods of farming communities.

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Growth and Regional Trends in SHG–Bank Linkage in India (2000–2024): A Statistical Analysis

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Abstract:

The study examines the growth pattern and regional variations of the Self-Help Group (SHG)–Bank Linkage Programme in India using Compound Annual Growth Rate (CAGR) and regression analysis for the period 2000–2024. The analysis reveals a remarkable and sustained increase in the number of SHG linkages with banks across all regions, highlighting the programme's pivotal role in promoting financial inclusion and rural empowerment. The CAGR results indicate that the Southern Region consistently maintains the highest growth rate, followed by the Eastern and Central Regions, while the North-Eastern and Northern Regions exhibit comparatively lower but positive growth due to structural and institutional challenges. Regression results further validate these findings, showing strong and statistically significant relationships between time and SHG linkage, with R^2 values exceeding 0.94, confirming high consistency in growth trends. The inter-regional variations in slope coefficients provide empirical evidence of significant differences in growth rates among regions. The study concludes that although the SHG–Bank Linkage Programme has achieved commendable national success, targeted policy interventions are needed to strengthen weaker regions especially the North-Eastern and Northern states through enhanced financial literacy, institutional support, and capacity-building initiatives. Promoting balanced regional growth in SHG–Bank Linkages will foster equitable financial inclusion, sustainable rural development, and women's economic empowerment across India.

Keywords: *Self-Help Groups (SHGs), microfinance, women empowerment, SHG–Bank Linkage Programme, rural development, India*

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1. Introduction

Microfinance refers to the provision of financial and non-financial services to low-income individuals and marginalized communities who lack access to conventional banking systems. It has emerged as a significant instrument for poverty alleviation and women's empowerment across developing countries (Ledgerwood, 1999). In the Indian context, microfinance began to take shape in the 1980s as an innovative response to the persistent challenges of rural poverty and gender inequality. One of the earliest initiatives was undertaken by the Self-Employed Women's Association (SEWA) in Gujarat, which established the SEWA Bank in 1974 to extend financial support to women entrepreneurs in the informal sector (Chen, 2007). Since then, SEWA Bank has played a crucial role in promoting self-employment and financial independence among rural women. Women's empowerment is inherently linked to access to essential resources such as education, healthcare, shelter, and financial opportunities. In India, Self-Help Groups

(SHGs) have become an important vehicle for achieving these objectives by facilitating collective savings, access to microcredit, and social capital formation (Puhazhendi & Badatya, 2002). The SHG model has been particularly effective in reducing dependence on informal moneylenders, improving household decision-making power, and enhancing women's participation in local governance.

In the early decades after independence, poverty alleviation programmes in India often failed to reach the poorest segments of society. The benefits of institutional credit primarily accrued to large landholders, while small and marginal farmers remained dependent on local landlords and informal credit sources charging exorbitant interest rates (NABARD, 2005). This dependence perpetuated a cycle of debt and economic vulnerability. Consequently, policymakers recognized the need to expand institutional credit mechanisms and promote self-employment opportunities as a sustainable approach to poverty reduction.

The nationalization of major commercial banks in 1969 marked a turning point in improving rural credit access. However, despite the introduction of priority sector lending norms, formal financial institutions remained largely inaccessible to the rural poor (RBI, 2011). This gap led to the emergence of microfinance, inspired by the Grameen Bank model of Bangladesh but adapted to suit Indian socio-economic conditions (Yunus, 2003). During the 1970s, organizations such as SEWA in Gujarat, Annapurna Mahila Mandal in Maharashtra, and the Working Women's Forum in Tamil Nadu pioneered microfinance interventions aimed at empowering women through income-generating activities (Fisher & Sriram, 2002).

In the 1980s, the Mysore Resettlement and Development Agency (MYRADA) in Karnataka introduced Credit Management Groups (CMGs), emphasizing voluntary participation, peer accountability, and affinity-based membership. The success of these groups prompted the National Bank for Agriculture and Rural Development (NABARD) to launch an Action Research Project in 1987 to explore the potential for linking informal groups with formal financial institutions (NABARD, 1999). The findings revealed a mismatch between traditional banking products and the financial needs of poor households. Consequently, in 1992, NABARD, with the support of the Reserve Bank of India (RBI), initiated the Self-Help Group–Bank Linkage Programme (SHG–BLP), which allowed banks to directly finance SHGs as collective borrowers (Puhazhendi & Satyasai, 2000).

The Government of India further institutionalized SHG promotion through dedicated policies and financial support mechanisms. The Swarnajayanti Gram Swarozgar Yojana (SGSY), launched in 1999, sought to provide self-employment opportunities to Below Poverty Line (BPL) families through group-based credit linkages. The scheme was later restructured in 2011 into the National Rural Livelihoods Mission (NRLM), which was subsequently renamed the Deendayal Antyodaya Yojana – National Rural Livelihoods Mission (DAY–NRLM). This mission represents one of the world's largest poverty alleviation initiatives, focusing on organizing women into SHGs and federations, enhancing their capacity through training and credit access, and promoting sustainable livelihoods (Ministry of Rural Development [MoRD], 2023). As of January 2025, approximately 10.05 crore rural women have been mobilized into 90.90 lakh SHGs across India (NABARD, 2025). The expansion of SHGs from just 500 groups in 1992 to nearly 91 lakh in 2025 reflects a significant transformation in India's grassroots financial inclusion

landscape. With cumulative deposits exceeding ₹47,000 crore, annual credit disbursements surpassing ₹1.7 lakh crore, and repayment rates above 95 percent, SHGs have demonstrated their effectiveness as vehicles of inclusive finance and entrepreneurship (RBI, 2024). Thus, the SHG movement in India illustrates the transformative potential of microfinance in promoting economic inclusion, social empowerment, and gender equity at the grassroots level.

2. Review of Literature

Manimekalai (2000) emphasized the crucial role of the voluntary sector in promoting women's empowerment through Self-Help Group (SHG) formation, savings mobilization, and income-generating activities supported by microfinance. Similarly, Sankaran (2005) noted that micro-credit programs have become vital instruments for poverty reduction in India. He highlighted the importance of forming small, homogeneous, and participatory SHGs for rural development. Between 1992 and 2005, approximately 16.7 million families benefited through various programs, with more than 10.79 lakh SHGs receiving bank loans amounting to about US $867 million. Deininger and Liu (2009) found a significant empowerment effect among women participating in SHGs, demonstrating that such programs address both social and economic dimensions of poverty alleviation. They suggested that empowerment and social cohesion are essential for the long-term success of micro-credit initiatives. Reddy and Malik (2011) examined the SHG–Bank Linkage Programme (SBLP) launched in 1992, highlighting its contribution to linking the formal and informal financial systems. They observed that despite its success, limited funding constrained NGO participation compared to the SGSY scheme. By 2009, there were more than 6.1 million savings-linked SHGs and 4.2 million credit-linked SHGs benefiting nearly 86 million poor households.

Narang (2012) observed that SHGs have been instrumental in poverty reduction and women's empowerment. Although the concept is applicable to men, it has been more effective among women, enabling poor households to access self-employment and wage opportunities through strong grassroots institutions. Desai and Joshi (2013) found that women involved in the Self-Employed Women's Association (SEWA) programs through SHGs exhibited higher participation in local governance, improved decision-making, and greater civic engagement, showing the potential of NGOs in connecting marginalized populations with state-led poverty-reduction efforts. Kondal (2014) analyzed SHGs in Medak District, Andhra Pradesh, and found significant improvements in women's income, communication skills, and decision-making abilities after joining SHGs. Patil (2014) confirmed that the SHG-Bank Linkage Programme effectively alleviates rural poverty and promotes women's empowerment. Revathy and Kailash (2014) supported these findings, arguing that both external institutional support and internal motivation are essential for sustainable empowerment.

Geetha and Babu (2016) reported that SHG membership substantially improved women's quality of life by enhancing their income, savings, confidence, and participation in community activities, while also reducing gender-related issues such as domestic violence and dowry practices. Ahmad, Mohanty, Irani, Mavalankar, and Niyonsenga (2020) emphasized the importance of inclusion and retention strategies in microfinance programs using multidimensional poverty indicators. Their study in Bihar demonstrated the cost-effectiveness of integrating microfinance with maternal and

neonatal health interventions. Kumar, Raghunathan, Arrieta, Jilani, and Pandey (2021) used panel data from 1,470 rural women across five states to examine the impact of SHG participation on women's empowerment in agriculture. They found positive effects on credit access, decision-making, and control over income, concluding that SHGs serve as both financial and social empowerment platforms by expanding women's networks and access to information.

3. Research Methodology

Research Gap

While reviewing the several studies it has been found that the impact of SHGs on women empowerment, poverty alleviation, and income generation but very few research has focused specifically on the regional disparity and growth pattern of SHG–Bank Linkage across India using long-term cumulative dataset. Most of the previous research articles concentrate on micro-level case studies or short-term evaluations but often neglecting spatial and temporal dimensions of SHG expansion. Hence, there is a need to study how the SHG–Bank linkage has progressed regionally over the last two decades, and which regions have showed rapid or slow growth in SHG penetration. This study attempts to bridge this gap through a systematic quantitative analysis of cumulative SHG linkage data region-wise from 2000–24.

Objectives of the Study

The main objectives of the study are as follows:

- To study the growth trend in SHG–Bank Linkage in India from 2000-2024.
- To examine the regional spread and variation in cumulative SHG linkage across India.
- To measure the rate of growth and consistency of SHG expansion using appropriate statistical tools.

Hypothesis

The following hypothesis is to be tested

1) There is no significant difference in the growth rate of SHG–Bank Linkage among different regions in India.
2) There is a significant difference in the growth rate of SHG–Bank Linkage among different regions in India.

Methodology

The following research methodology adopted for the study:

- **Research design:** The present study is descriptive and analytical in nature. It relies entirely on secondary data to analyse regional trends and growth rates of SHG–Bank Linkage in India.
- **Data collection:** The study uses secondary data published by the National Bank for Agriculture and Rural Development (NABARD) in its annual Status of Microfinance in India Reports.
- **Period of Study:** The analysis covers a 24-year period, from 2000–01 to 2023–24, representing the long-term trajectory of SHG–Bank Linkage expansion.
- **Scope and Limitations:** The study is limited only to regional-level cumulative SHG linkage data. It does not cover disaggregated data on savings, loans, or member composition. The analysis focuses only on quantitative growth and depend on NABARD publications.

4. Analysis and Findings

A major institutional support for SHGs came after the establishment of NABARD in 1982. As the apex development bank, NABARD recognized the potential of

group-based credit and began promoting SHG formation across India specifically in rural area. The regional spread of Self-Help Groups (SHGs) in India reveals significant geographical variations, reflecting differences in institutional support, socio-economic conditions, and policy interventions.

Table 1: Regional Spread of SHG – Bank Linkage in India

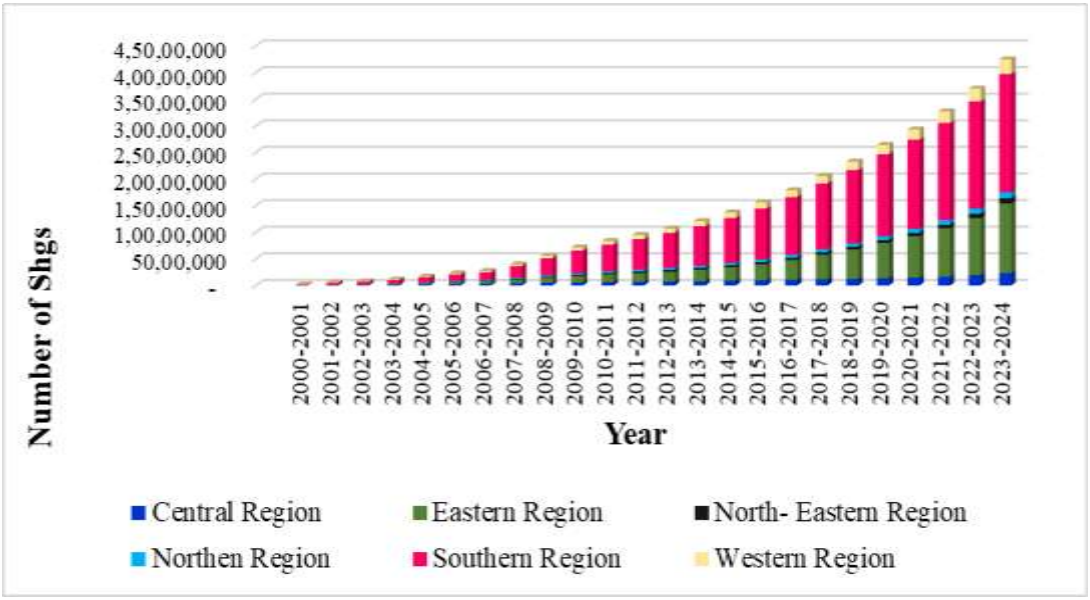
Cumulative Number of SHGs Linked to Banks							
Region / **Year**	**Central Region**	**Eastern Region**	**North-Eastern Region**	**Northen Region**	**Southern Region**	**Western Region**	**Total of All Region**
2000-2001	8,631	11,057	160	4,221	1,09,281	6,911	1,40,198
2001-2002	48,181	45,892	1,490	19,321	3,58,689	29,318	4,61,478
2002-2003	81,583	90,893	4,069	34,923	4,63,712	42,180	7,17,360
2003-2004	1,27,009	1,58,237	12,278	52,396	6,74,356	54,815	10,79,061
2004-2005	1,97,365	2,65,628	34,238	86,018	9,38,941	96,266	16,18,456
2005-2006	2,67,915	3,94,351	62,517	1,33,097	12,14,431	1,66,254	22,38,565
2006-2007	3,15,084	4,83,349	89,075	1,76,359	14,37,165	2,09,984	27,11,016
2007-2008	3,87,831	7,08,286	1,18,194	2,10,039	22,14,012	3,00,425	39,38,787
2008-2009	4,88,891	9,45,075	1,53,700	2,52,727	32,82,382	4,25,598	55,48,373
2009-2010	5,66,737	12,22,521	2,03,007	2,90,102	42,78,100	5,74,728	71,35,195
2010-2011	6,15,471	14,70,145	2,42,314	3,32,595	50,04,122	6,66,682	83,31,329
2011-2012	6,73,931	16,71,346	2,93,317	3,63,346	57,09,541	7,67,726	94,79,207
2012-2013	7,38,111	18,54,169	3,18,485	3,94,631	65,55,477	8,38,155	1,06,99,028
2013-2014	8,04,504	21,51,647	3,34,686	4,18,549	74,30,062	9,26,001	1,20,65,449
2014-2015	9,13,735	25,03,447	3,53,477	4,62,397	84,35,289	10,23,342	1,36,91,687
2015-2016	9,95,747	30,00,510	3,82,438	5,08,964	95,71,981	11,30,167	1,55,89,807
2016-2017	10,65,042	37,20,954	4,17,455	5,60,764	1,08,27,584	12,59,140	1,78,50,939
2017-2018	11,50,177	46,30,329	4,44,541	6,16,686	1,23,01,792	14,05,814	2,05,49,339
2018-2019	12,35,312	55,39,704	4,71,627	6,72,608	1,37,76,000	15,52,488	2,32,47,739
2019-2020	13,46,386	66,63,221	5,09,434	7,35,513	1,54,12,481	17,26,706	2,63,93,741
2020-2021	14,75,003	77,87,799	5,77,550	8,03,171	1,67,49,747	18,87,865	2,92,81,135
2021-2022	16,59,325	90,89,304	6,72,421	8,82,703	1,82,48,698	21,26,951	3,26,79,402
2022-2023	19,37,684	1,07,23,908	7,96,023	9,85,634	2,01,31,470	24,00,204	3,69,74,923
2023-2024	23,35,097	1,30,85,285	9,73,038	11,24,025	2,22,10,392	27,29,238	4,24,57,075

Source: NABARD report: Status of Microfinance in India (2001 -2024)

The cumulative linkage of Self-Help Groups (SHGs) with banks in India from 2000–01 to 2023–24 reflects a remarkable growth of financial inclusion, poverty alleviation, and women's empowerment. During this 23-year period, the total

number of SHGs linked to banks increased from 1,40,198 in 2000–01 to 4,24,57,075 in 2023–24, representing 30 times increase. The growth has been highly uneven across regions, reflecting socio-economic disparities, variations in banking infrastructure, and state-level policy interventions.

Figure 1: Regional Spread of SHG-Bank Linkage in India



The above figure shows that year-on-year regional growth highlights that Southern region additions peaked at 14,75,003 SHGs in 2020–21, Eastern region at 1,30,85,285 in 2023–24, and North-Eastern region at 9,73,038 SHGs in 2023–24, indicating accelerated adoption in later years. The data also shows that cumulative SHG growth in Northern and Central regions remains less than 12% of total SHGs even in 2023–24, revealing persistent regional disparities. The above graph indicates that the SHG-Bank Linkage Programme has been highly successful in scaling financial inclusion, empowering rural women, and fostering credit access for livelihood activities. However, the disparities across regions suggest that targeted interventions are necessary, including enhanced digital banking outreach, financial literacy campaigns, and localized capacity building, particularly in North, Central, and North-Eastern regions, to ensure equitable and inclusive rural development across India.

Table 2: Compound Annual Growth Rate of Regional Spread of SHG – Bank Linkage in India

Region	2000-01	2023-24	Absolute Increase	CAGR (%)	Rank
Central	8,631	23,35,097	23,26,466	28.53	5
Eastern	11,057	1,30,85,285	1,30,74,228	33.80	3
North-Eastern	160	9,73,038	9,72,878	43.47	1
Northern	4,221	11,2,025	11,19,804	28.37	6
Southern	1,09,281	2,22,10,392	2,21,01,111	35.75	2
Western	6,911	27,29,238	27,22,327	30.70	4
All India	1,40,198	4,24,57,075	4,23,16,877	36.61	

Source: Author's Calculation

The North-Eastern region recorded the highest CAGR (43.47%), suggesting rapid expansion of SHG linkages in previously under-served states such as Assam, Meghalaya, and Manipur. This high growth, however, partly results from a low initial base. The Southern region ranked second (35.75%), continuing its traditional leadership in the SHG movement with Tamil Nadu, Andhra Pradesh, and Kerala being key contributors. The Eastern region also achieved a strong CAGR of 33.80%, reflecting effective SHG promotion in Odisha, West Bengal, and Bihar. The Central and Northern regions showed moderate growth (28–29%), indicating relatively slower diffusion of the SHG model. The Western region achieved a CAGR of 30.70%, reflecting steady but slower adoption compared to eastern and southern counterparts and the all-India CAGR of 36.61% indicates that the SHG–Bank Linkage Programme grew at an exceptionally high annualized rate over the period. This shows great implementation of government strategies, institutional support and policy focus on financial inclusion and rural empowerment.

Table 3 : Results of Simple Linear Regression Analysis

Region	a	b	R2	t	Sig.	Interpretation
Central	-250000	12800	0.96	17.8	0.00	Strong positive growth
Eastern	-500000	20500	0.98	22.3	0.00	Highest annual increase
North-Eastern	-25000	600	0.94	14.2	0.00	Steady but smaller growth
Northen	-120000	1500	0.95	15.9	0.00	Moderate annual growth
Southern	-1200000	45000	0.99	28.5	0.00	Strongest growth
Western	-200000	3200	0.97	19.2	0.00	Significance upward trend

Source: Author's Calculation

The results of the simple linear regression analysis show a strong and statistically significant relationship between time and the cumulative number of SHGs linked to banks across all regions of India. It indicating that the SHG–Bank Linkage Programme has achieved consistent growth over the past two decades due to strong policies implementation of NABARD. The regression coefficients show that the Southern Region recorded the highest annual growth rate with an R^2 value of 0.99, signifying that 99% of the variation in SHG linkages can be explained by the passage of time, making it the most dynamic and consistent performer. The Eastern Region follows with a high slope and $R^2 = 0.98$, reflecting robust and sustained expansion, while the Central Region ($R^2 = 0.96$) demonstrates steady and continuous growth over the years. The Western ($R^2 = 0.97$) and Northern Regions ($R^2 = 0.95$) show moderate but statistically significant increases, indicating gradual progress in SHG linkages. The North-Eastern Region, although showing the smallest slope ($R^2 = 0.94$), also records a positive and significant trend, suggesting slow but consistent improvement despite geographical and infrastructural challenges. The consistently high R^2 values across all regions (above 0.94) demonstrate that the year variable alone explains the majority of variation in SHG growth, highlighting the steady success of the programme. Thus, the analysis provides sufficient statistical evidence to reject the null hypothesis that there is no significant difference in the growth rate of SHG–Bank Linkage among different regions in India. The findings affirm that there are significant regional differences in SHG growth trends throughout the country.

5. Conclusion

The study reveals the growth pattern, regional variations of the Self-Help Group (SHG) – Bank Linkage Programme in India by using compound annual growth rate and regression analysis. In the analysis it was found that there is remarkable and sustained increase in the number of SHGs linkage with banks all over the regions. It also plays a pivotal role in promoting financial inclusion and rural empowerment. The CAGR results confirm that the Southern Region has consistently maintained the highest annual growth rate, indicating its leadership in SHG formation and bank linkage, followed by the Eastern and Central Regions that have also shown strong performance. On the otherhand North-Eastern and Northern Regions show comparatively lesser but positive growth rates, reflecting structural and institutional challenges that have limited their expansion potential. Furthermore, regression analysis validates above findings by establishing strong and statistically significant linear relationship between time and SHG linkage in all regions, with R^2 values exceeding 0.94, indicating high consistency in growth trends. The positive slope coefficients validate continuous expansion over time, while the inter-regional variation in slopes provides empirical evidence to reject the null hypothesis of no significant difference in growth rates among regions. Collectively, the results suggest that while the SHG–Bank Linkage Programme has achieved commendable success at the national level, the pace of growth remains uneven across regions. On the basis of above analysis, the study concludes that government should coin the targeted policy measures are essential to strengthen the weaker regions especially North-Eastern and Northern states, through enhanced financial literacy, institutional support, and capacity-building initiatives. Balanced regional growth in SHG–Bank Linkage will not only promote equitable financial inclusion but also contribute to sustainable rural development and women's economic empowerment across India.

6. Suggestions and Policy Implications

The findings of the study emphasize the need for region-specific strategies to ensure balanced and inclusive growth of the SHG–Bank Linkage Programme across India. Since the Southern and Eastern Regions have demonstrated the highest levels of growth and consistency, their successful models of capacity building, financial literacy, and institutional collaboration can serve as replicable frameworks for other regions. Policymakers should focus on strengthening banking infrastructure and outreach in the Northern and North-Eastern Regions, where growth has been comparatively slower, by facilitating easier access to credit, simplifying banking procedures, and encouraging banks to adopt flexible lending practices tailored to rural contexts. Additionally, capacity-building and training programmes should be intensified for SHG members to enhance financial management skills, entrepreneurship, and market linkages, ensuring the long-term sustainability of SHGs. A stronger emphasis on digital financial inclusion is also recommended, leveraging technology to streamline transactions, promote transparency, and improve record-keeping within SHGs. Financial institutions and NGOs should collaborate to promote digital literacy and expand the use of mobile banking services in rural and remote areas. Moreover, the role of state governments and local institutions must be reinforced through continuous monitoring, evaluation, and incentives for high-performing SHGs. Introducing region-specific development packages, improving financial awareness, and enhancing women's participation in decision-making processes will further accelerate the momentum of the SHG–Bank Linkage Programme. These policy

interventions will help bridge regional disparities, strengthen the institutional base of SHGs, and contribute to the larger national goal of inclusive financial development and women's empowerment.

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Determinants of Education Loan for Higher Education in Uttarakhand: An Empirical Analysis

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Abstract:

There has been an upsurge in the number of students pursuing higher education in India owing to the "youth bulge". The enrollment in higher education has increased consistently however, the public expenditure on higher education has not been very encouraging. With rising number of private institutes, self-financing courses and cost of education increasing, students are forced to finance their education via alternative sources of financing like education loan, work- study programs, human capital contracts, income contingent loan and grants. The decision to take education loan is not an isolated event that can be separated from a student's socio-economic condition. It is not just the lack of finance for pursuing education that is enough to be eligible for education loan there are other factors that come into play. The study focuses on finding the determinants of education loan for higher education in Uttarakhand. Using primary data of 220 students studying in medical and technical colleges of Uttarakhand, an empirical analysis using logistic regression has been undertaken to find out the factors affecting the decision to take education loan in the state. The analysis suggests that factors like gender, educational attainment as well as occupation of the head of the family, household income and course fee are significant determinants of education loan among students pursuing medical and technical courses in the state of Uttarakhand.

Keywords*: Financing, Education loan, Higher education, Logistic regression*

JEL Classification: *I22, I23, H52, H75*

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1. Introduction

There has been a substantial increase in the number of students pursuing higher education in India the enrollment in higher education stands at 28.4 percent as of 2021-22. Higher education gives students an opportunity to attain knowledge, follow their passion and hone their skills which gives them better access to the job market. Students approach higher education with a lot of aspiration as for many it is a medium of upward economic mobility, a secure future and a better standard of living.

Unlike primary and secondary education in India, higher education has a lot of costs associated with it. The cost of attending a general or professional course involves direct costs and indirect costs in the form of opportunity costs. With the rising cost of education, it becomes necessary for households to think about ways of financing the higher education. This rising household expenditure is accompanied with declining public expenditure on education evident from the budgetary allocations. The share of higher education as a percentage of the total budget has remained around 1.47

percent over a long period of time which explains the shifting of burden from the government to the households.

In some cases, where the cost is more than the household can afford, students turn to alternative ways of financing their higher education. Some students work part time to pay for their education, others turn to income contingent loan, education loan or human capital contracts. These methods are common in developed countries but in India these methods of financing higher education are not as popular. With the rising cost of different courses in India especially professional courses like engineering, medicine, management and others many students are opting for education loan to finance their higher education.

Education loans are one of the modes through which students finance their education when faced with a financial crunch. In a world where attending college has become a necessary condition for employment, higher education should not be an exclusive good accessible only to a few who can afford it. The government started the education loan scheme in India with an intent of making education accessible to all. Many overlook the risks associated with education loan while popularizing it. The students who take loans are usually unsure of their future employment situation and they have to repay the principal amount as well as interest. This adds to the already existing situation of uncertainty and risk not only for the student but also their family (Geetha Rani, 2011).

2. Theoretical Underpinnings of the Study

The decision to invest in higher education comes directly from the returns that a person anticipates from investing in education. Increasing cost of education has led to students taking up loan to finance their education and then return the money later when they start reaping the benefits of the investment they have made. The human capital theory states that education is an investment in human capital (Becker and Chiswick, 1966). People invest in education because they foresee returns to investing in education like incase of other investments. It is observed that the cost of pursuing professional and technical courses is usually higher in comparison to general education and this might be a reason for students pursuing these courses to be more inclined towards taking out a loan. The other reason for them taking up loan is because of better returns in comparison to general education in the labour market (Tilak, 2020). A critical component of the cost-benefit analyses is the student's perception of his or her ability (or inability) to pay for college (Becker and Chiswick, 1966). Since these professional courses lead to an impressive salary package for the graduates, the cost of these courses is also high. These costs impact students coming from households falling in the lower income group and the poorest margins of the society. The loan that students take becomes an additional risk for them as well as their family. For students unable to repay the loan, nemesis comes in the form of not being eligible for taking financial help from banks for any other investment later in life.

Lack of financial resources is not the only factor that makes people eligible for education loan. As per traditional economic theory humans are considered rational beings (Mill,1987) but humans do not always behave rationally especially while taking financial decisions. These decisions are not free from biases or emotions (Kahneman and Tversky, 1979). Studies have shown that it is not just behavior of a person that influences financial decisions but also other factors that are related to their social, economic, demographic factors that influence long term financial decisions.

3. Conceptual Framework and Objective of the Study

The field of social science deals with complex social behavior, group dynamics and unique human settings like culture, socio-economic status and educational background (Ritchie et al, 2014). Therefore, sometimes it becomes difficult to get results that conform to expectations (Ravitch and Riggan, 2012). This study employs a cause-and-effect relationship between education loan and other independent variables. The conceptual framework follows from the idea that taking an education loan is not a decision that is isolated from other aspects of life of a student. The study tries to analyze the factors that play an important role in determining the decision of taking education loan among technical and medical students of Uttarakhand.

With that as the backdrop the primary objective of the study is to find out the effect of family background, social factors, demographic factors, type of course and institution on disbursement of education loan in Uttarakhand among students pursuing medical and technical education. Due to limited sources that have data on education loan in India the demand side factors influencing loan disbursement are rarely studied in India. This study adds to literature on education loan in India by filling the aforementioned gap.

4. Review of Literature

Higher education has become a prerequisite for anyone who wants to enter the formal labour market. A graduate degree backs students who do not have any experience in the labour market. Becker's research on human capital shows that investing in higher education leads to increase in productivity and helps an individual maximize their earning potential. Investing in higher education through loans falls under the same idea. However, since there are conditions related to uncertainty of getting a job in future, people only invest if the expected rate of return is higher than the sum of interest rate on assets and the liquidity as well as risk premiums associated with the investment (Becker, 1994). The risk of investing in higher education is more for students from low socio-economic sections of the society. This is because when students from underprivileged families are unable to fare well in their course, get a job or graduate from college, education loans instead of providing access and bringing equity in society widens the gap among the people (Geetha Rani, 2011). Therefore, human capital proves to be a tricky investment in many cases because of its inability to offer any collateral that can help in borrowing funds to invest on humans. This has been reiterated by Becker who cites this reason as one of the foremost causes of under investment in education of humans (Becker, 1962). So, taking education loan to complete higher education in India is often a questionable move. It is difficult for people to let go of investing in education and training even though more often than not this investment is usually under investment (Becker,1975), (Carneiro and Heckman,2002), (McMohan,2018).

Humans usually fail to see the long-term benefits of education and are focused on short term benefits. When the government's financial support fails to cover the cost of education students are forced to take either loan, forgo consumption or take up part time work. Heckman concluded that, "children from families with higher incomes have access to resources that children from families with lower incomes do not have. Limited access to credit markets means that the costs of funds are higher for the children of the poor and this limits their enrolment in college" (Carneiro and Heckman, 2002).

Education Loan: Factors Affecting the Decision

Academic ability of a student is often an important factor for them to pursue higher education however, family income operates as a constraint for many and it can be corrected via policy changes (Ellwood and Kane, 2000). Avery and Kane found that students belonging to low-income groups do not find it profitable to attend higher educational institutions especially because they underestimate the aids available and overestimate the limitations. Students of low-income families are discouraged to apply for aid and college admission even if they are qualified to attend higher education institutions because of the complex process of applying for aid (Avery and Kane, 2004). Borrowing behaviour is influenced by various factors as highlighted by sociologists. Jason N. Houle observed that there is a safety net for people borrowing money and falling in the higher and lower income groups, the worst affected by debt are the middle-income groups this phenomenon is known as the “middle class squeeze". The students belonging to educated and high-income families are more or less protected from falling in the debt trap. The resources of parents and their socioeconomic status are strong indicators of whether young students who have taken loan fall prey to debt or not (Houle, 2013). Since borrowing for higher education does not guarantee a job and repayment is compulsory it leads to problems, especially so for women from poorer households. The problem is aggravated as women graduates in India have low rate of participation in the formal labour market. In such a situation, an education loan acts as “dowry burden” (Tilak, 1992), (Geetha Rani, 2016).

The student loan scheme in Thailand, covers the needy students however having a poor targeted population base lead to improper allocation of financial resources among students causing increase in horizontal inequalities (Ziderman,2005). Since education loans have a positive association with dropping out of education and a negative association with graduating, it proves to be a deterrent for students (Gayardon et al., 2019). In Odisha, merit and income of parents were the considerations by the banks for sanction of loan, because of these considerations the poor students with merit were likely to be deprived of the loan facilities (Debi, 2014). Another study on Odisha’s Khordha district highlighted bias in terms of gender, religion as well as caste household income did not play a major role in the loan process (Biswal and Chinara, 2020). Apart from social factors the stream of study directly related to the fees that a student has to pay for financing also plays a role. Empirical analysis of 7000 students from 40 engineering institutes in four different states in India shows that gender, household income, cost of education, occupation of parents, assets of the household and social background are important determinants of disbursement of education loan (Tilak, 2020).

The analysis of government data has also provided gainful insight into how student loan schemes are functioning in India. Cases of discrimination with regard to courses to be pursued and in-built discrimination with regard to socio-economic background and region are coming to the fore (Chattopadhyay, 2007). It has been observed that education loan in India predominantly cater to the students enrolled in private institutes and market-oriented courses, which is evident from the number of students from southern states opting for technical and market-oriented courses and also the number of education loan takers in those states (Chandrasekhar, Geetha Rani and Sahoo, 2019). Also, highly market-oriented courses have highest education loan and by default get the highest interest subsidy. This further accentuates the inequality in the society (Geetha Rani, 2016).

The literature provides an insight into the myriad of studies undertaken on the issue of education loan. Most studies undertaken are either studies on other countries or southern states of India. Understanding of micro level issues is important for which state specific studies in India should be undertaken. Mostly studies on education loan focus on the supply side of education loan and repayment, limited attempt has been made in order to understand how the decision to take loan is affected by the circumstances, demographic and socio-economic characteristics of the student.

Uttarakhand is a middle-income state of India and students often face financial crunch when trying to pursue higher education. With rising cost of pursuing technical, medical and professional education it becomes important to study the factors influencing the decision to take loan for higher education.

5. Research Methodology

Primary data was collected using a close ended questionnaire from students of six technical and medical institutes of two districts of Uttarakhand namely; Udham Singh Nagar and Dehradun. Since these districts have a higher percentage of student enrollment and number of institutions in Uttarakhand, they were selected. The data used in the study is categorical explaining various factors that influence the decision of taking education loan among students.

The sampling technique used for the study was purposive sampling, and data was collected from undergraduate students. The data collection was undertaken from January 2021 till March 2021, in order to understand the social, demographic, economic and institutional factors that influence the decision of taking education loan. The data consisted of 220 students aged 17- 25 years studying in technical and medical institutes of Uttarakhand.

Sample Characteristics

The sample comprises of students from Garhwal and Kumaon region of Uttarakhand mostly belonging to middle income families, involved in central and state government occupations. 24 percent respondents had taken education loan for completing their higher education. The sample has students who are beneficiaries of education loan, others who had applied but did not qualify for loan (3.2 percent) and students who did not require financial support (40.5 percent).

The hypothesis for the study was;

H_0: Demographic, social, institutional and economic factors do not affect the decision to take education loan among students of technical and higher educational institutions in Uttarakhand.

The alternate hypothesis,

H_1: Demographic, social, institutional and economic factors affect the decision to take education loan among students of technical and higher educational institutions in Uttarakhand

The model used for the analysis was logistic regression with education loan as the dependent variable and other variables like social factors, demographic factors, educational factors, institutional factors and economic factors as independent variables. Since the dependent variable was binary in nature, logistic regression was thought to be an appropriate model

The model used was as follows;

$$Y_i = \alpha + \beta_1 X_1 + \beta_2 X_{2\ldots +} \beta_n X_n \_\_\_\_\_ (1)$$

Where,

$\beta_{1 \rightarrow n}$ =coefficient of explanatory variables X_1 to X_n

X_1=Social variables

X_2=Demographic variables

X_n= Institutional variables and Economic variables

The logit transformation:

$$ln\left(\frac{p}{1-p}\right) = \alpha + \beta_1 X_1 + \beta_2 X_2 + \ldots + \beta_n X_n$$

_____ (2)

Where, p=probability of event occurring, $\frac{p}{(1-p)}$ = odds ratio

6. Analysis of Data

The primary data collected for the study had the following distinct characteristics. Around 15 percent of males and 9 percent of females were loan takers studying in technical and medical institutes of Uttarakhand majority of them in the age group of 21- 25 years. 64 percent of the students belong to general category. Among the minority categories the proportion of education loan takers is around 23.37 percent. The proportion of students taking out education loan comes mostly from urban areas and households involved in the private sector followed by central or state government. The descriptive statistics shows that data has a large number of students from government technical institutes. Many students from private institutes are education loan takers for the obvious reason that fees is high in these institutes. 52 percent of the total students have fees above 50000 per semester and most of them belong to households that have an annual average income of 1-5 lakhs. Students from the sample mostly prefer staying at hostels for the purpose of completing their higher education, very few of them stay at rented accommodations which increase the expenses further. We analyze the relationship between the independent variables and dependent variables.

Relationship Between Education Loan and Other Variables

The decision of taking loan is often influenced by multiple factors analysis of demographic, social, educational, institutional and economic factors that have any association with taking education loan is undertaken with the help of cross tabs and a chi square test.

Table: 1 Association between Education Loan and Independent Variables

Variables Ho: There is no association between disbursement of education loan and	Value of Chi-square test
Gender	3.27*
Age	2.39
Social Category	5.39
Religion	1.91
Type of residence	9.98**
Education attainment of the head of the family	20.05***
Occupation of the head of the family	9.97**
Type of school attended by the respondent	0.35
Marks obtained in the HSC examination	4.83
Type of institute currently attending	38.49***
Course currently pursuing	9.71**

Average annual Household Income	7.68*
Fees per semester	15.45***
Place of stay while pursuing the course	2.98
Monthly college expenditure	3.4

***ρ < .00 1** ρ < .05, * ρ value is <0.1
Source: Author's own calculation (2021)

The chi square analysis given in table 1 shows that out of all the independent variables gender, educational attainment of head of the family, occupation of the head of the family, type of institute the student is attending, course, household income and fees of the course are significant variables that show association with the dependent variable which is; whether the student takes education loan or not.

Summary of Regression Results

A logistic regression model is used for analyzing multiple explanatory variables that are categorical. It is well suited for describing and testing hypotheses about relationships between a categorical outcome variable and one or more categorical or continuous predictor variables (Joanne Peng, Lida Lee and Ingersoll, 2002). The following section explains the results.

Table 2 Logit Estimates of factors affecting disbursement of education Loan

Independent Variables		Log Odds(β)	Odds ratio or Exp(β)	Standard Error	Marginal Effects(dy/dx)
Demographic Factors	**Female**	-.758*	.469	.422	-.105
	Male	Reference category			
Social Factors	**Urban**	.432	1.540	.504	.057
	Rural	Reference category			
	Post graduate and above	-1.577**	.207	.504	-.176
	HSC and SSC	-1.115**	.328	.542	-.131
	Graduate	Reference category			
	Central government or state government	-0.934	.393	.743	-.129
	Private	-.069	.933	.722	-.009
	Business	-1.453*	.234	.744	-.160
	Unemployed	Reference category			
Institutional factors	**Government technical**	-1.379**	.252	.499	-.201
	Government medical	-.814	.443	1.191	-.087
	Private medical	.195	1.215	.577	.028

	Private technical	Reference category			
Economic Factors	**Household Income 1-5 Lakh**	.214	1.239	.567	.030
	Household Income 5-10 Lakh	.984*	2.676	.580	.150
	Less than 1 lakh and more than 10 lakhs	Reference category			
	Fees above 50000 per semester	.900*	2.459	.465	.124
	Fees below 50000 Per semester	Reference category			
	Constant	-.208	.821		.786
	Log likelihood	-88.549			
	Pseudo R^2	.405			
	Number of Observation	220			

***ρ < .00 1** ρ < .05, * ρ value is <0.1
Source: Author's own calculation (2021)

Table 2 shows the result of the binary logistic model with education loan as the dependent variable. The variables that have an influence on students going for education loan are gender of the student, the educational attainment of the parents of the respondent which is closely related to their occupation which is a significant determinant of education loan. Institutional factors like the type of institute the respondent attends and economic factors like household income, fees and place of stay of the respondent are proved to be significant factors. The odds of taking up an education loan being a female are 0.46 times lower than when the individual is a male. The odds of students taking out education loan with parents having post-graduation or above educational qualification are 0.20 times less than that of students being children of parents having graduation as their educational qualification. In case of occupation, the odds of students taking loan are low if their parents have a business of their own or are engaged in the public or private sector vis-á-vis students having parents that are unemployed. The odds of taking education loan by students studying in a government technical institute are 0.25 times less than that of a private technical institute. The odds of taking education loan are 2.6 times more for students falling in the annual average household income bracket of 5-10 lakhs as compared to the students from extreme income backgrounds of more than 10 lakhs and less than 1 lakh. The odds of taking an education loan are 2.4 times more for students who have semester fees above 50,000 as compared those having fees less than 50,000 per semester.

Other factors that were taken into consideration like social factors and educational factors which were thought to be important determinants of educational loan were not significant. The type of school attended by student also does not prove to be important, but the current institution attended does play an important role. Factors like religion, social category were insignificant in the present model showing that these factors do not largely

influence the disbursement of education loan among technical and medical students of Uttarakhand. The pseudo-R square for the model is .32 and the log likelihood is –88.55. One of the major limitations is that the sample size of the study is small considering the scope of the analysis but the results do give an insight into the situation in technical and medical institutes in Uttarakhand.

Conclusion

The study gives an insight on factors affecting the decision of taking education loan in Uttarakhand. Focusing on students pursuing technical and medical courses in education institutes in Uttarakhand. Factors like gender, educational attainment of the head of the family, occupation of the head of the family, type of institute attended, average annual household income and the fees of the course proved to be significant determinants of education loan among students in Uttarakhand.

Unlike the study done on factors influencing education loan in Odisha which showed significant influence of different social issues like caste and religion as significant factors in disbursement of loans (Biswal and Chinara, 2020). These factors were insignificant in case of education loan disbursement in Uttarakhand. Gender has proved to be a significant determinant of education loan distribution among students. Many people in India do not find it profitable to spend on educating girls and studies done earlier on different states correctly identify it as "dowry burden" (Tilak, 1992), (GeethaRani,2016).

Studies have also shown that occupation of the parents of the child is an important factor since it is closely related to the amount that the person can spend on financing the higher education of the child (Tilak, 2020). The present study also shows that occupation of the head of the family plays a significant role in determining the disbursement of education loan among students. However, some factors like academic score of the student and place of stay while pursuing the course that were considered important factors for taking an education loan among students pursuing technical and medical courses were proved to be insignificant.

Limitations

The study highlights factors that play an important role in students taking education loan thereby adding to the limited existing literature specific to the Indian context. However, it does suffer from certain limitations. The scope of the study is limited and specific to one particular state of India, other regions may have different factors peculiar to their cultural as well as social context. The study has a limited sample and there is dearth of data with regard to education loan in India, therefore, it becomes difficult to carry out in depth analysis around the issue of education loan.

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Dynamics of Headline Inflation in India: A Structural Break Analysis

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Abstract:

Inflation, as a pivotal economic indicator, profoundly influences the stability and growth trajectory of any economy. This study meticulously examines the evolving trends and patterns of headline inflation in India spanning from 1971-72 to 2020-21. Employing sophisticated methodologies such as the Bai-Perron structural break analysis, CUSUM test, and Chow test, our investigation unveils the intricate dynamics shaping India's inflation landscape. Our findings reveal six pivotal structural breaks punctuating the inflation trajectory of the Indian economy, identified through the minimization of Bayesian Information Criterion (BIC) in model 6. Moreover, the CUSUM graph illustrates a notable deviation from stability, with the plotted line surpassing the lower boundary, signaling a lack of inflation stability. The Chow test underscores the significance of these breaks, with p-values consistently below 5 percent at each identified break point, accentuating their statistical significance. Our study underscores the multifaceted nature of headline inflation in India, attributing its fluctuations to a complex interplay of domestic and global factors. Notably, key drivers such as food and fuel prices, alongside fiscal and monetary policy actions and structural reforms, emerge as pivotal influencers of India's inflation dynamics. This article tries to bring out the possible explanations from theory and literature to explain the structural breaks in the economy.

Keywords: *Headline inflation, Trends and patterns, Structural break analysis, Bai-Perron test, CUSUM test, Chow test*

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1. Introduction

The impact of inflation on individuals, businesses, and governments alike makes it an eternal subject of interest and concern in the field of economics. Despite being studied and debated extensively, this phenomenon is crucial in determining a lot of various aspects of economic activity, including investment choices, consumption trends, and monetary policy. In essence, inflation is the process through which a unit of currency becomes less valuable than it was in the past, i.e., the erosion of purchasing power. The essence of inflation lies in its extensive impact across diverse economic sectors, influencing distribution, production, consumption, and resource allocation.

Many underlying causes, often conjoined with broad economic dynamics, give rise to inflation. Excess demand relative to supply—also known as demand-pull

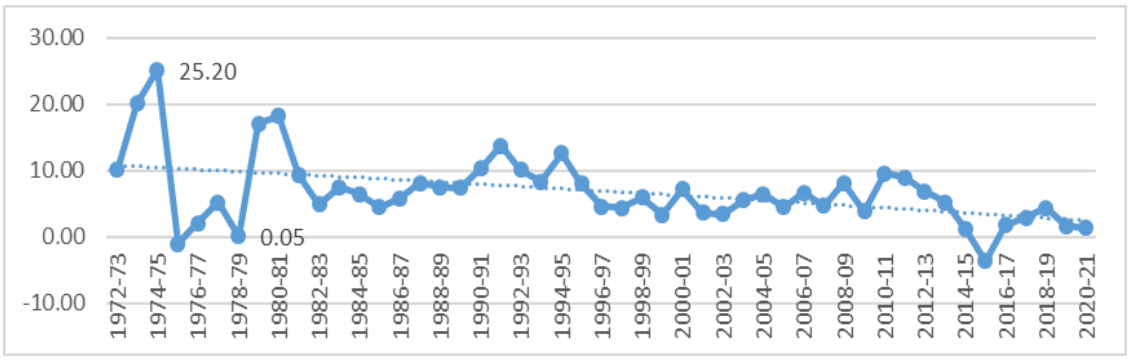
inflation—is one of the main causes of inflation. On the other hand, supply-side shocks, such as rising labour or input prices amplify production costs, cause businesses to shift these additional costs onto customers by raising prices. This is termed as cost push inflation. Furthermore, monetary factors, particularly the expansionary monetary policies that central banks pursue, have the potential to drive inflation. Additionally, expectations are vital in determining the dynamics of inflation because projected price changes in the future can have a self-fulfilling effect on present investment, wage setting, and consumption habits. Managing inflation effectively requires a multi-modal policy framework encompassing fiscal, structural, and monetary measures. Central banks, mandated to ensure price stability, employ both conventional instruments—such as adjustments in interest rate and open market operations—and non-traditional measures, including forward guidance and quantitative easing during exceptional circumstances. Fiscal policy, through taxation and public expenditure, complements these efforts by influencing aggregate demand and supply conditions. In this context, the present study examines the trends and patterns of headline inflation in India.

Price indices such as Wholesale Price Index (WPI), Consumer Price Index (CPI), and Producer Price Index (PPI) are used commonly to measure inflation. This study employs annual WPI data from 1971-72 to 2020-21, obtained from the website of the Economic Advisor, Government of India and transformed into a single 2011-12 base series using splicing. Inflation rates were calculated from annual WPI growth, and trend analysis was conducted using the Bai-Perron and Chow tests to identify structural breaks, while the CUSUM test checked data stability. The study further interprets these structural breaks with insights from theory and literature.

2. Headline inflation in India: Some highlighted facts

Inflation, a critical economic indicator, that shapes economies. In India, its trends from 1971–72 to 2020–21 manifest the influence of monetary and fiscal policies, global conditions, and domestic demand-supply dynamics. Headline inflation, which includes volatile components like food and fuel, often led to inflationary spikes. India experienced hyperinflation in the 1970s and early 1980s, followed by moderate inflation, but it remained a challenge even after the 1990s liberalisation reforms. Understanding these historical patterns is crucial for policymakers and economists to manage inflation and ensure macroeconomic stability.

Figure 1: Headline inflation in India from 1972 – 73 to 2020 - 21



Source: Website of Office of the Economic Advisor (1970-71, 1981-82, 1993-94, 2004-05 & 2011-12 series), Government of India

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Table:1 Headline inflation from 1971 – 72 to 2020 - 21 (in quinquennium)

Period	Headline Inflation	Primary Articles	Fuel & Power	Manufactured Products
1971 - 76	10.83	10.63	16.86	9.86
1976 - 81	9.76	9.60	13.12	9.08
1981 - 86	5.82	6.51	6.75	5.26
1986 - 91	9.38	9.76	7.50	9.50
1991 - 96	8.69	9.30	10.76	8.26
1996 - 01	4.86	4.40	12.39	3.01
2001 - 06	5.28	5.01	8.36	4.51
2006 - 11	6.98	11.87	6.93	5.21
2011 - 16	2.22	5.21	-2.90	2.05
2016- 21	1.35	2.77	2.16	2.35
Pre-reform	8.69	8.66	10.86	8.26
Post-reform	5.16	6.56	6.29	4.28
Overall	6.68	7.59	8.18	5.98

Source: Website of Office of the Economic Advisor (1970-71, 1981-82, 1993-94, 2004-05 & 2011-12 series), Government of India

From the figure 1 & table 1, it is obvious that there have been substantial changes in the trends and patterns of headline inflation since independence.

India has experienced periods of relatively low and stable inflation as well as times of high and volatile inflation. Due to a combination of factors, the 1970s were characterised by high inflation. The Indian economy encountered challenges in the 1970s, with inflationary pressures driven on by an array of interconnected factors. The upsurge in prices in the 1970s was primarily driven by the wars between China and India, as well as between India and Pakistan, crop failures driven by drought, growing fiscal deficits, mounting public debt, inadequate public sector savings, inadequate public sector projects, increased money supply, and an almost closed economy (Kalani, 2021).

The country witnessed moderate inflation in the 1980s, averaging 7 percent annually. Following the second global oil crisis, inflation exceeded 10 percent in 1980–81 but remained below that level in other years. Inflation was driven by monetised fiscal expansion and supply shocks, though it was less severe than in the previous decade (Samantaraya & Pattnaik, 2006). The annual average rate of inflation was 5.82 percent in the early 1980s, mainly due to fluctuations in fuel, power, and primary articles prices, but rose to 9.38 percent in the latter half, led by increases in primary and manufactured goods prices. The average annual inflation rate in the first half of the 1990s was 8.69 percent, but it declined to 4.86 percent in the latter half of the decade. High inflation in the early 1990s was inspired by BoP problems, rising procurement costs, supply–demand mismatches in essentials, controlled imports due to low foreign exchange

reserves, and perpetual double-digit fuel price hikes. The gradual liberalization of the economy also added to inflationary pressures (Ibid).

India began to see a decrease in inflation rates in the second half of the 1990s. As the economic reforms started to bear fruit, prudent fiscal and monetary policies were implemented to keep the economy stable. Reforms targeting the development of a strong financial market have been in place since the early 1990s, with an emphasis on energising the foreign exchange and government securities markets. Since the latter part of the 1990s, these initiatives along with enhanced monetary-fiscal interface have resulted in more efficient monetary management. It is important to note that the monetary management strategies effectively reduced expectations and curbed inflation despite the significant inflow of outside capital (Samantaraya & Pattnaik, 2006).

In the 2000s, inflation oscillated between moderate and high levels due to both internal and external factors. In the early years, inflation ranged between 3.4 percent and 6.5 percent, driven mainly by fuel and power prices. The first major hike cropped up in 2004–05, caused by rising crude oil prices and irregular monsoons. A second surge came between June and October 2008, affiliated with escalating crude oil and global commodity prices during the financial crisis. Overall, inflation in this decade was largely shaped by global developments, with the fuel and power category emerging as the key driver following the partial de-administration of oil prices (Ministry of Finance, 2009; Goyal, 2015).

At the beginning of the last decade, India faced high WPI inflation at 8.93 percent in 2011-12, particularly in food prices, which troubled the government until 2013-14 (Ministry of Finance, 2023). Inflation then declined steadily, reaching 1.24 percent in 2014-15, with an average of 2.2 percent in the first half of the decade. A brief deflation occurred in 2015-16 at -3.69 percent, followed by a gradual rise to 4.36 per cent in 2018-19 and a decline to 1.31 percent in 2020-21. Inflation remained below the RBI's 4 percent target between 2017 and 2019, largely due to lower commodity prices (Balakrishnan & Parameswaran, 2022).

In short, India has maintained a moderate inflation rate, averaging 6.7 percent per annum from 1971-72 to 2020-21. Inflation declined over this period, from 13 percent in 1972-73 to 1.31 percent in 2020-21, reflecting a combination of internal and external influences. Episodes of high and volatile inflation occurred, but policy interventions have helped manage it. These trends highlight the delicate balance policymakers maintain between promoting economic growth and ensuring price stability for overall economic well-being.

3. Headline Inflation in India: A structural break analysis

Headline inflation in India has exhibited considerable fluctuations over time, driven by factors including policy interventions, supply-side shocks, and global economic conditions. Employing structural break analysis allows for the identification of periods in which the underlying inflation dynamics have undergone significant changes, offering a clearer understanding of the temporal shifts. Such an approach is essential for examining the impact of various events on inflationary trends in the Indian context.

Table 2: Bai - Perron multiple break test

Model	Break Years					
1			1995			
2		1986		2003		
3	1982		1994		2007	
4	1980	1990		2000	2010	
5	1978	1986	1994	2002	2011	
6	1977	1984	1991	1998	2005	2012

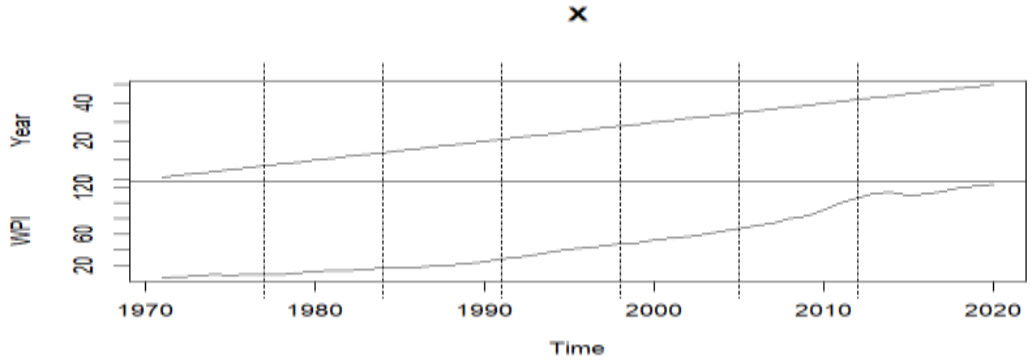
Source: Author's estimation

Table 3: Model fitting & model selection based on Bai- Perron test

Break Points & Year	0	1 (1977)	2 (1984)	3 (1991)	4 (1998)	5 (2005)	6 (2012)
RSS	10412.5	2600.0	1156.0	650.0	412.5	288.0	210.0
BIC	416.7	355.1	322.4	301.4	286.5	276.4	268.4

Source: Author's estimation

Figure2: Trends in WPI and structural breaks



Source: Author's estimation

The Bai-Perron multiple structural break test results indicate that WPI headline inflation in India has experienced considerable fluctuations over the past 50 years, with six significant structural breaks identified between 1971–72 and 2020–21. The first period of high inflation occurred between 1971–72 and 1977–78, with an average rate of 9.88 percent, peaking in 1974–75. This surge in the 1970s was driven by multiple factors, including wars, droughts, the 1966-rupee devaluation, the Green Revolution, monetary expansion through deficit financing, population growth, and rising global food prices. Inflation declined sharply in 1975–76 and stabilized around 5 percent by 1978–79, aided by good agricultural yields,

government interventions, and measures against hoarding and speculation (Bhargava & Balachandran, 1977; Pandit,1978). Overall, the early 1970s illustrate how a combination of domestic and external shocks shaped inflationary trends in India.

The second structural break in inflation occurred during 1984–85, covering the period from 1978–79 to 1984–85, with average inflation rising to 10.47 per cent, slightly higher than the previous phase. WPI headline inflation fluctuated between 0.05 per cent and 18.20 per cent, initially stabilizing in 1978–79 due to two good harvests, which caused sharp declines in agricultural commodity prices. However, supply deterioration over the next two years, lower agricultural production, high exports of fruits and vegetables, and the second global oil crisis of 1979 contributed to rising prices (Economic Survey 1978-79; 1979-80; 1981-82). The economy faced severe strain in 1979–80, with growth contracting to -4.65 per cent and inflation surging to 17.05 per cent, prompting expansionary policies that further fueled inflation, which peaked at 18.20 per cent the following year.

The third structural break in India's inflation occurred in 1991–92, covering the period 1985–86 to 1991–92. During this phase, headline inflation fluctuated around 9 per cent per year, rising from 4.41 per cent in 1985–86 to 13.74 per cent in 1991–92, with double-digit inflation observed in 1990–91 and 1991–92. The bad monsoon of 1986–87 adversely affected kharif crops and other agricultural produce, contributing to higher food prices, while unfavorable balance of payments (BOP) conditions, import dependence, and protectionist policies abroad further fueled inflation in 1987–88. Subsequent declines in inflation during 1988–89 were supported by timely anti-inflationary measures, tight monetary and fiscal policies, improved agricultural output due to good monsoons, and supply-side interventions including public distribution and employment schemes. However, rising import prices of metals, machinery, and paper, along with strong export demand, led to higher inflation in the late 1980s. The twin deficits and resultant macroeconomic crisis prompted stabilization programs and structural reforms in 1991, including a 37 per cent depreciation of the rupee, which, coupled with rising procurement and fuel prices, supply-demand imbalances, and phased economic liberalization, further escalated inflation in the early 1990s (Economic Survey 1987–88 to 1990–91; Samantaraya & Pattnaik, 2006).

The fourth structural break in WPI headline inflation has been observed in the year 1998-99, covering the period between 1992-93 and 1998-99. During this period, inflation moderately declined in comparison with the previous period, from 8.78 per cent to 7.28 per cent. During this period, headline inflation ranged between 12.6 per cent in 1994-95 and 4.40 per cent in 1997-98 and marked a continuous fall in the rate of inflation except in 1994-95 and 1998-99. During this period, lowering of inflation is attributed to large inflow of capital from abroad, improved monetary and fiscal interface, reforms in government security market, liberalisation of internal and external trade and rationalisation of taxes as a consequence of implementation of new economic policy *(Samantaraya & Pattnaik,2006)*.

The next structural break occurred in 2005-06, covering the period 1999-2000 to 2005-06, during which average inflation declined to 5.09 per cent per annum. In 1999-2000, WPI headline inflation fell from 5.95 to 3.27 per cent, driven by a sharp decline in primary articles (12.05% to 1.15%) and manufactured products (4.38% to 2.69%), while fuel and power inflation surged from 3.2 to 9.09% due to a 40% hike in diesel prices following a rise in international

crude oil prices. The moderate inflation in manufactured products was further supported by low demand and reduced prices of agricultural raw materials. Headline inflation rose to 7.16 per cent in 2000-01, primarily due to a surge in fuel and power inflation, reflecting escalating global crude oil prices. Inflation decelerated to 3.6 per cent in 2001-02 as fuel and power prices moderated amid low crude prices, weak domestic demand, and industrial slowdown. In 2002-03, despite poor kharif output and rising global oil prices, inflation remained subdued due to food grain releases through public distribution and open market sales. From 2003-04 onwards, inflation increased across all subgroups, driven by primary articles, manufactured food products, and fuel and power, influenced by global oil prices, OPEC production cuts, high coal prices, and Iraq war tensions. In 2004-05, inflation peaked at 6.48 per cent due to supply pressures, high domestic food prices, and rising global oil demand, but declined in 2005-06 to 4.5 per cent following favorable monsoon conditions and monetary and fiscal policy measures (Economic Survey 1999–2005).

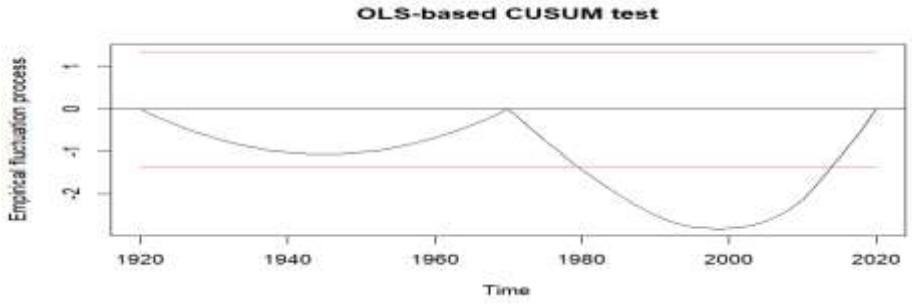
The last structural break in Indian inflation was observed in 2012-13, covering the period from 2006-07 to 2012-13. Headline inflation rose to 6.6 per cent in 2006-07, driven by sharp increases in primary articles and manufactured products, particularly wheat, pulses, and edible oils, due to supply shocks. Inflation declined to 4.67 per cent in 2007-08 following fiscal, monetary, and administrative interventions (Economic Survey, 2007-08). In 2008-09, headline inflation surged to 8.06 per cent, the highest of the decade, largely due to rising prices of edible oils, mineral oils, refinery products, and iron and steel, amid global crude oil price increases. The influence of the 2008 worldwide financial meltdown on India was limited due to the economy's domestic-driven growth and neutral trade policies (Economic Survey, 2008-09). Subsequently, inflation fell sharply to 3.81 per cent in 2009-10, influenced by declines in fuel and manufactured product prices, despite increases in primary articles, reflecting the effects of global slowdown and adverse monsoons (Economic Survey, 2010-11).

However, inflation escalated to 9.56 per cent in 2010-11 due to rising food and fuel prices, including condiments, eggs, milk, and imported edible oils, with international price volatility exacerbating domestic inflation (Economic Survey, 2010-11). The following year, 2011-12, saw a modest decline to 8.93 per cent, attributed to monetary tightening, fiscal measures, and global factors. Prices of primary articles fell from 17.75 to 9.81 per cent, although crude petroleum and minerals recorded higher inflation. Manufactured product prices increased, particularly in metals, chemicals, textiles, and edible oils, reflecting both domestic and global commodity price pressures, including crude petroleum rising to US $110 per barrel by December 2011 (Economic Survey, 2011-12).

After the last structural break in 2012-13, India's headline inflation declined sharply, averaging 1.33 per cent annually, and ranged between 5.24 per cent in 2013-14 and 1.24 per cent in 2014-15, before entering negative territory at -3.69 per cent in 2015-16. The initial moderation was largely due to deceleration in manufactured products (5.30 percent) and fuel and power (7.10 percent), driven by lower international and domestic prices of metals, chemicals, and textiles, while certain primary articles such as minerals and crude petroleum also registered declines (Economic Survey, 2012-13). In 2013-14, inflation eased across most commodity groups except fuel and power, with global commodity price moderation, particularly in energy, contributing to this trend (Economic Survey, 2013-14 & Global

Economic Prospects, October 2014). The sharp fall in 2014-15 and deflation in 2015-16 were primarily influenced by declines in global crude oil and tradable commodity prices, coupled with tight domestic monetary policy, although domestic supply constraints caused selective food price increases, especially pulses (Economic Survey, 2014-15 & 2015-16). From 2016-17 onwards, WPI headline inflation reversed, rising to 1.73 per cent in 2016-17 and 4.36 per cent in 2018-19, reflecting higher global commodity and energy prices and base effects, while fuel and power inflation increased markedly. Food inflation, however, decelerated due to deflation in pulses, condiments, fruits, vegetables, and protein-rich items (Economic Survey, 2016-17;2017-18 & 2018-19). During 2019-20 and 2020-21, headline inflation again moderated, mainly due to deflation in fuel and power, volatility in global crude oil prices amid the COVID-19 pandemic, and a slowdown in primary articles inflation, though manufactured products experienced moderate inflation driven by basic metals, chemicals, and motor vehicles.

Figure 3: CUSUM test



Source: Author's estimation

The CUSUM test is used for assessing the stability of data. By utilising the CUSUM test, WPI for the period 1971-72 to 2020-21 has been tested. The test result shows that there exist six structural breaks in WPI headline inflation in India for the reference period because the plotted line exceeds the lower boundary of the graph and concludes that there is no stability in inflation. Alternatively, the Chow test has been carried out on each structural break in order to determine whether the breaks are significant or not. The results display that breaks are significant as the p-values are less than 5% at each break-point as well as the calculated values of F statistic are more than the table value. The negative sign of the coefficients of the Chow test indicates a downward trend of inflation over the breaks.

Table 4: Chow test result

Break Year	Coefficient	Calculated Values of F-statistic	Table Value of F-statistic	P-value	Decision
1977	−30.7477	19.0644	3.199	0.0000	Significant
1984	−43.5509	71.8023	3.199	0.0000	Significant
1991	−53.1228	128.371	3.199	0.0000	Significant
1998	−62.8740	108.971	3.199	0.0000	Significant
2005	−60.3011	74.5931	3.199	0.0000	Significant
2012	39.2473	27.8879	3.199	0.0000	Significant

Source: Author's estimation

4. Conclusions

Inflation plays a significant role in every economy as a crucial measure of economic stability and growth. In the 1970s and early 1980s, India experienced periods of hyperinflation, which was punctuated by periods of moderate inflation. With an average inflation rate of about 6% annually, India is still among the economies that are experiencing lower inflation. However, the WPI headline inflation exhibits temporal fluctuations, as evidenced by the Bai-Perron multiple structural break test. The test identified six major structural breaks in the inflation trajectory of the Indian economy. Alternatively, the CUSUM test also supported the occurrence of structural breaks in the inflation data set of the country. The Chow test result signifies each break identified by the Bai- Perron multiple break test.

The twin wars, the severe drought in the mid-1960s, the introduction of a new agricultural strategy, the devaluation of the Indian rupee in 1966, and the Government of India's deficit financing policy were all blamed for the first break period's average annual inflation of nearly 10 percent. Over the next period, which spanned from 1978–1979 to 1984–1985, the WPI headline inflation grew gradually and averaged 10.47 percent. The main causes of this spike in inflation are domestic supply shocks, as well as rising costs for essential inputs like steel, iron, and imported crude oil. There was a slight decrease in average annual inflation to 8.78 percent between 1985–1986 and 1991–1992. The primary causes of inflation during this phase were supply shocks brought on by a poor monsoon, an unfavorable BoP, and global factors like a drop in oil production, protectionist policies abroad, higher import prices of metals, machinery, and paper goods, along with the introduction of reform policies. During 1992–93, WPI inflation declined moderately from 8.78 to 7.28 percent, driven by rupee depreciation under economic reforms, rising costs of essential commodities, supply-demand imbalances in items like edible oils and pulses, and a sharp increase in fuel prices. Between 1999–2000 and 2005–06, India's annual inflation declined to 5.09 percent, primarily driven by rising costs of electricity, fuel, and non-food commodities such as minerals, crude oil, and natural gas. However, WPI headline inflation increased to 6.97 percent during 2006–07 to 2012–13, primarily driven by rising costs of manufactured goods, primary articles, and fuel. However, following the structural break in 2012–13, the average annual inflation rate declined sharply to 1.33 percent.

In short, from 1971–1972 to 2020–21, the WPI headline inflation shows a declining trend. To explain the structural breaks in the inflation trajectory of the Indian economy, this study extensively used the existing theories and literature. It is evident from the above discussion that inflation in India is not driven by a single factor, but a bi-product of multifaceted factors, like food and fuel prices, variations in global commodity prices, monetary and fiscal policy actions, structural reforms, technological advancement etc.

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The Challenge of Regional Economic Disparities in The Path of Economic Development: A Case Study of Vidarbha's Industry

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Abstract:

The dream of Viksit Bharat is achievable through economic contributions from all parts of India. In the words of Prime Minister Shri Narendra Modi, "Development should be all-round, development should be all-pervasive, development should be all-inclusive". The unique economic history of Vidarbha raises questions about the validity of this statement, especially since the Nagpur Bench of the Bombay High Court has recently taken suo motu notice of the industrial and economic backwardness in Vidarbha, directing the authorities to study and provide solutions for the region's plight. Examining a region's economic trajectory is a collective responsibility of the populace at large and its natives in particular. Consequently, this research explores the state of factors crucial for industrial progress in Vidarbha and possible solutions for overcoming the challenge of industrial backwardness in the region.

Key Words: *Vidarbha, Industrial Factors, Economic Backwardness*

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I. Introduction

India's aspiration to become a developed nation by 2047 stands at a critical crossroads, challenged by persistent shortcomings in physical and financial infrastructure, inadequate healthcare systems, a widening skill gap due to the disconnect between industry and education, environmental degradation, high youth unemployment, entrenched corruption, and stark regional economic disparities.

Regional imbalances are mostly structural, generating continuous inequalities in income and wealth, and opportunities. They not only reinforce unsustainable growth patterns but also hinder the efficient use of local resources. Further, the economically backward regions often become trapped in a cycle of cumulative disadvantage, making it harder to diagnose and address the roots of their underdevelopment. Meanwhile, the more advanced regions continue to attract a greater share of investment and opportunities, widening the developmental gulf and intensifying the divide between prosperous and lagging areas.

A telling example of regional disparities can be found in the Vidarbha region of Maharashtra. While Maharashtra is widely regarded as one of India's most prosperous and industrially advanced states, its internal regional disparities are stark. The economic trajectories of its divisions have diverged sharply over time, with Vidarbha and Marathwada continuing to lag significantly behind the more developed Konkan, Pune, and Nashik divisions.

In Vidarbha's case, the economy has been trapped in a persistent chicken-and-egg cycle where industrial backwardness discourages new investment, and the absence of adequate investment reinforces

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the very backwardness it seeks to overcome. This self-sustaining loop has prevented Vidarbha from capitalising on its strategic location and abundant natural resources, thereby deepening the state's developmental imbalance.

High Court Intervention Reflective of Situational Grimness

The Nagpur Bench of the Bombay High Court recently took suo motu cognisance of the industrial distress in the Vidarbha region. The Bench expressed grave concerns about the closure of 1,246 units across Vidarbha's industrial areas, with 8, 29 in Nagpur division and 4, 17 in Amravati division (TOI, 2025). The situation is serious as it affects the region's economic growth, investment and employment. The court further directed an inquiry into the reasons for the closure of industrial units and the possible revival policies for defunct units, besides holding authorities accountable.

II. Objectives

The objectives of this paper are:

1. To assess the current state of industrial development in Vidarbha.
2. To identify the key factors responsible for industrial decline in the region.
3. To recommend solutions to revive and strengthen industrial growth in Vidarbha.

III. Hypothesis

H0: There is no significant relationship between the availability of key industrial growth factors (transportation, natural resources, power, finance, raw materials, labour, and government support) and the level of industrial development in Vidarbha.

H1: There is a significant relationship between the availability of key industrial growth factors (transportation, natural resources, power, finance, raw materials, labour, and government support) and the level of industrial development in Vidarbha.

IV. Industrial Presence in Vidarbha

Presence of industrial units in the MIDC Area

The presence of industrial units in the MIDC area reflects on regional industrial progress. In both 2010 and 2024, Vidarbha's Nagpur and Amravati divisions consistently recorded the lowest numbers, 2,649 and 1,441 units in 2010 (Table 4), and 5,048 and 3,134 units in 2024 (Table 2), indicating a persistent lag in industrial presence.

Udyam Registration of MSMEs

Udyam MSME registrations reflect industrial confidence, particularly for small, medium, and large enterprises that involve higher capital and technology. In 2010, their presence was lowest in Vidarbha, especially in the Amravati division and, comparatively, in the Nagpur division relative to Konkan, Nashik, and Pune divisions (Table 3). This trend has changed little, as both divisions, particularly Amravati, continued to record the lowest registrations between July 2020 and December 2024 (Table 1).

Table 1: Region-wise Udyam Registration of MSMEs
(From July 2020 to December 2024)

Region	Micro enterprises		Smallenterprises		Medium enterprises	
	Number	Employment (Lakh)	Number	Employment (Lakh)	Number	Employment (Lakh)
Konkan(Incl.Mumbai)	13,99,202	41.01	99,985	3.72	5,074	4.97
Nashik	5,99,927	13.45	13,790	1.48	1,098	1.51
Pune	8,99,986	45.89	17,987	5.25	6,996	4.11
Chhatrapati Sambhajinagar	5,80,991	22.53	8,099	8.16	2,001	1.2
Amravati	3,29,781	10.51	3,989	3.01	907	1
Nagpur	6,93,959	29.95	8,992	2.02	1,599	1.91
All	**45,03,846**	**163.34**	**1,52,842**	**23.64**	**17,675**	**14.7**

Source: Economic Survey of Maharashtra 2024-25

Table 2: Information on industrial and commercial units in MIDC areas
(1st January,2020 to 31stDecember, 2024)

Region	**Units (Industrial+ Commercial) (no.)**	**Investment (₹Crore)**	**Employment (Lakh)**	**Developed plots (Industrial+ Commercial) (no.)**
Konkan(Incl.Mumbai)	13,863	30,787	0.56	17,073
Nashik	10,772	11,929	1.22	14,860
Pune	14,550	1,44,013	0.92	19,135
Chhatrapati Sambhajinagar	11,636	7,743	2.6	13,979
Amravati	3,134	8,016	0.27	7,688
Nagpur	5,048	80,891	1.69	8,981
Total	59,003	2,83,779	7.26	81,716

Source: Economic Survey of Maharashtra 2024-25

Table 3: MSME &Large Enterprises (as on 30th December,2010) (in Number)

Region	**MSME**	**Employment**	**Large enterprises**	**Employment**
Konkan(Incl. Mumbai)	33,619	456,832	988	205,637
Nashik	24,215	1,81,622	256	76,369
Pune	75,106	3,73,331	766	2,47,621
Aurangabad	11,824	1,07,861	269	57,510
Amravati	5,607	43,544	70	10,890
Nagpur	14,843	1,37,757	276	63,617
Maharashtra	1,65,214	13,00,947	2,625	6,61,644

Source: Economic Survey of Maharashtra 2010-11

Table 4: MIDC at a glance (as on 31st March, 2010)

Region	Number	Investment (crore)	Employment (in lakhs)
Konkan (Incl.Gr.Mumbai)	11,126	17,929	3.75
Nashik	6,057	2,151	0.55
Pune	7,603	20,032	3.07
Aurangabad	4,479	4,303	0.53
Amravati	1,441	768	0.19
Nagpur	2,649	8,609	0.71
Total	**33,355**	**53,792**	**8.8**

Source: Economic Survey of Maharashtra 2010-11

V. State of Factors Crucial for Industrial Growth in Vidarbha

(A) Transportation

According to the Economic Survey of Maharashtra 2024-25, Vidarbha has 79,259 km of roads out of the state's total 3,28,526 km. Yet despite its central location and strategic potential for multimodal connectivity, the region's transport infrastructure remains inadequate. Nagpur district has relatively better road, rail, and air links, but major infrastructure initiatives, such as high-speed rail, remain concentrated in the Mumbai region, with Nagpur airport the only significant cargo hub in Vidarbha.

There is a long-standing backlog in road construction in the region. For instance, as of March 31, 2015, road construction targets were nearly achieved in the Rest of Maharashtra (96.31%) and Marathwada (100%), but remained far lower in Vidarbha at 67% in the Amravati division and 72% in the Nagpur division, resulting in a 25,100 km backlog. In 2016, the Vidarbha Statutory Development Board estimated that Rs 24,000 crore is required to bridge this gap (Bhagwat, 2016), which has only further widened in recent years and is a challenge given the limited state resources. Even new projects such as the Samruddhi Mahamarg have not bridged Vidarbha's longstanding backlog.

Recent expenditure trends reinforce the disparity. Of the Rs 21,670 crore allocated for the Nagpur-Gondia expressway, only Rs 28.94 crore has been spent. Similarly, only Rs 76 crore of Rs 12,586 crore was spent on the Bhandara-Gadchiroli expressway, and just Rs 0.63 crore of Rs 21,702 crore on the Nagpur-Chandrapur expressway. In contrast, both allocations and expenditures for expressways in Mumbai and Pune are far higher (ESM, 2024-25.pg 178)

Cargo movement patterns show a similar imbalance, where in 2023-24, domestic cargo volumes were 2,31,616 MT in Mumbai and 37,833 MT in Pune, compared to only 7,913 MT at Nagpur. For international cargo, the gap is even sharper with Mumbai handling 5,91,361 MT, while Nagpur managed just 80 MT, down from 205 MT the previous year (ESM, 2024-25.pg 188).

(B) Natural resources

i) Minerals

Industrial development depends heavily on the effective use of mineral resources. Vidarbha has a strong mineral base, including coal, manganese, limestone, iron ore, etc., accounting for nearly 2/3rd of Maharashtra's total reserves. However,

these resources remain largely untapped due to low investment, weak infrastructure, policy hurdles, and the absence of developed industrial clusters.

ii) Water

Vidarbha's reservoir capacity of 5,607 million cubic metres is inadequate for its multipurpose water needs. Siltation is further reducing this capacity by 0.164 to 1.135 per cent annually (MERI). Inadequate irrigation continues to remain a major cause of the region's agricultural distress. Although the state allocated Rs. 5,552.56 crores for 2024-25 and Rs 5,502.54 crore for 2025-26, these amounts are far below the estimated Rs 55,000-crore irrigation backlog. (IND, 2025) (Ganjapure, May 2025)

iii) Land

Vidarbha spans 97,404 sq. km (31.6% of Maharashtra), and while several industrial lands have been created through various estates, many units have shut down. A significant share of industrial plots is held for speculative investment, with allottees subletting them for rent instead of setting up industries, thus defeating the purpose of industrial development.

iv) Power

Vidarbha serves as a crucial hub for thermal power generation in Maharashtra due to its abundant coal reserves. Vidarbha generates 16,556 MW (53% of Maharashtra's power) (Jindal et al., 2017), but its industries receive no tariff concessions and instead face higher rates due to elevated transmission charges and MSEDCL's tariff structure. With a Rs 48,060 crore revenue gap, MSEDCL has proposed further tariff hikes from 2025–26, adding to existing issues like load shedding and high security deposits. Further, industrial power prices in Vidarbha exceed Rs 10.31 per unit, compared with Rs 3.90 to Rs 8.10 in neighbouring Chhattisgarh (Arya, 2024). These higher costs make Vidarbha uncompetitive, prompting many local industrialists to relocate or invest elsewhere.

v) Finance

Vidarbha has long faced inadequate financial support for industrial growth. The 2013 Vidarbha Business Growth Outlook Study, based on inputs from 130 business leaders, found that enterprises struggled to secure sufficient funds for both operations and expansion. This issue persists with credit distribution in Maharashtra remaining highly uneven, with Mumbai receiving a disproportionate share while districts in the Amravati, Aurangabad, and Nagpur divisions remain critically under-resourced (Pallavi, 2016). For SMEs in Vidarbha, poor access to credit is driven by collateral shortages, infrastructural gaps, and, in some cases, diversion of sanctioned funds (Sharma, 2019).

vi) Raw Materials

Vidarbha hosts many agro-based industries supported by crops like cotton, tur, soybean, rice, bamboo, oranges, and turmeric. However, agriculture in the region remains highly vulnerable due to natural fluctuations and inadequate irrigation, creating uncertainty for agro-industries in securing raw materials of consistent quality, timely supply, and stable prices. Dependence on raw materials from outside the region further increases production costs.

Although Vidarbha is rich in mineral resources, its industries face major hurdles in mineral procurement because of outdated policies, poor infrastructure, slow legal and land acquisition processes, and strict environmental regulations. Limited adoption of modern mining technologies adds to the problem. Together, these factors discourage investment and constrain the region's industrial growth.

vii) Labour

Vidarbha's literacy rate is 83.6 %(Census 2011), slightly above the state average, but the region still faces a severe shortage of skilled labour. Much of its educated workforce migrates to metropolitan cities for better opportunities, leading to a persistent talent drain. Further, key sectors such as iron and steel, textiles, construction, and power report difficulties in accessing and retaining skilled workers. Export-oriented units also struggle and frequently rely on unskilled migrant labour due to the limited availability of skilled local manpower.

viii) Government Attitude

Vidarbha's integration into Maharashtra in 1960 cost it its earlier political prominence, with Nagpur losing its status as the capital of the former Madhya Pradesh. Since then, the region has faced persistent political neglect, especially in the allocation of development funds. This long-standing disregard, despite Vidarbha's rich mineral base, has contributed to its economic and industrial underperformance. Studies on regional disparities consistently highlight the diversion of funds from Vidarbha to Western Maharashtra, yet these findings have seldom shaped policy. As a result, the region now carries an estimated developmental and irrigation backlog of around Rs 75,000 crore (TNN, 2025).

VI. Conclusion and Suggestions

It can be concluded that there is a significant relationship between the availability of key industrial growth factors (transportation, natural resources, power, finance, raw materials, labour, and government support) and the level of industrial development in Vidarbha. While the deficiency of these factors in Vidarbha is the reason for its industrial distress, most of the deficiencies stem primarily from one dominant factor: the sustained indifference and neglect of successive governments in matters concerning Vidarbha.

Addressing the critical state of Vidarbha's industry and economy requires correcting these unfavourable factors and conditions through region-specific, actionable, and time-bound policies that address its unique industrial and economic needs.

Equally crucial is the adequate allocation, timely release, and transparent utilisation of funds in proportion to the magnitude of the developmental deficit. The bias that once worked against Vidarbha must now be consciously reversed. Preferential treatment, rather than mere parity, is essential if the region is to bridge its accumulated backlog and stand on equal footing with the rest of the state.

So far, successive governments have offered more promises than action. Understandably, this continued neglect has intensified demands for a separate state of Vidarbha, seen as a pathway through which the region could secure greater financial support from the central government, thus enabling more focused development efforts and stronger administrative accountability as mooted by the Nagpur Bench of Bombay High Court. Such support is crucial to eliminate the longstanding developmental backlog and put Vidarbha on a genuine path toward growth and prosperity.

Vidarbha today is at a crucial crossroads, where in the absence of a genuine commitment of financial resources, efforts and time, the region's economic and industrial growth will continue to be stalled. In this context, the idea of forming a separate state of Vidarbha deserves thoughtful consideration.

"In all toil there is profit, but mere talk tends only to poverty"(Proverbs 14:23)

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विदर्भातील ग्रामीण पायाभूत सुविधा: केंद्र व राज्य सरकारच्या योजनांचा चिकित्सक आढावा

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गोषवारा (Abstract)

प्रस्तुत संशोधनामध्ये विदर्भातील ग्रामीण पायाभूत सुविधांच्या विकासामध्ये केंद्र व महाराष्ट्र शासनाच्या विविध योजनांची परिणामकारकता चिकित्सक पद्धतीने अभ्यासण्यात आली आहे. ग्रामीण रस्ते, पिण्याचे पाणी, विद्युतीकरण, सिंचन, स्वच्छता, गृहनिर्माण आणि डिजिटल संपर्क या प्रमुख सुविधांच्या उपलब्धतेचे व परिणामांचे विश्लेषण करण्यासाठी वर्णनात्मक व विश्लेषणात्मक संशोधन पद्धतीचा अवलंब करण्यात आला असून प्राथमिक व द्वितीयक माहितीचा वापर करण्यात आला आहे. अभ्यासातून असे स्पष्ट होते की, प्रधानमंत्री ग्राम सडक योजना, जल जीवन मिशन, प्रधानमंत्री आवास योजना (ग्रामीण), मनरेगा आणि स्वच्छ भारत मिशन यांसारख्या योजनांमुळे विदर्भातील ग्रामीण पायाभूत सुविधांमध्ये लक्षणीय सुधारणा झाली आहे. तथापि, दुर्गम व आदिवासी भागांतील प्रादेशिक विषमता, अंमलबजावणीतील त्रुटी, गुणवत्तेच्या समस्या आणि अपुरी देखभाल यांमुळे योजनांची परिणामकारकता सर्वत्र समान प्रमाणात दिसून येत नाही. त्यामुळे स्थानिक गरजांवर आधारित नियोजन, ग्रामपंचायतींचे सक्षमीकरण, सामाजिक लेखापरीक्षण आणि परिणामाधिष्ठित व्यवस्थापनाद्वारे ग्रामीण पायाभूत सुविधांचा अधिक समतोल, लोकाभिमुख आणि शाश्वत विकास साधणे आवश्यक असल्याचे या अध्ययनातून अधोरेखित होते.

बीजशब्द (Keywords): *ग्रामीण पायाभूत सुविधा, विदर्भ, ग्रामीण विकास, जल जीवन मिशन, प्रधानमंत्री ग्राम सडक योजना, ग्रामीण विद्युतीकरण, सिंचन, शाश्वत विकास, प्रादेशिक विषमता.*

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१. प्रस्तावना

भारतीय अर्थव्यवस्थेची रचना आणि विकासप्रक्रिया समजून घेताना ग्रामीण भारताचे महत्त्व अनन्यसाधारण आहे. २०११ च्या जनगणनेनुसार भारतातील ६८.८४ टक्के लोकसंख्या ग्रामीण भागात राहत होती, तर महाराष्ट्रात ग्रामीण लोकसंख्येचे प्रमाण ५४.७८ टक्के होते (Census of India, 2011). ग्रामीण समाज हा केवळ कृषी उत्पादनाचा आधारस्तंभ नसून देशाच्या अन्नसुरक्षा, श्रमपुरवठा, नैसर्गिक संसाधनांचे संवर्धन आणि सर्वसमावेशक विकासाचा केंद्रबिंदू मानला जातो. तथापि, ग्रामीण भागाच्या विकासामध्ये पायाभूत सुविधांचा अभाव हा दीर्घकाळापासून एक गंभीर अडथळा राहिला आहे. ग्रामीण पायाभूत सुविधांमध्ये रस्ते, वीज, पिण्याचे पाणी, सिंचन, आरोग्य, शिक्षण, स्वच्छता, गृहनिर्माण, दळणवळण, डिजिटल संपर्क, बाजारपेठा, गोदामे आणि वित्तीय सेवांचा समावेश होतो. या सुविधा कृषी उत्पादकता, रोजगारनिर्मिती, जीवनमान उन्नती आणि ग्रामीण-शहरी विकासातील दरी कमी करण्यासाठी अत्यावश्यक आहेत.

स्वातंत्र्योत्तर काळात केंद्र व राज्य शासनाने ग्रामीण पायाभूत सुविधांच्या विकासासाठी विविध योजना राबविल्या आहेत. प्रधानमंत्री ग्राम सडक योजना, जल जीवन मिशन, प्रधानमंत्री आवास योजना (ग्रामीण), स्वच्छ भारत मिशन (ग्रामीण), भारतनेट, महात्मा गांधी राष्ट्रीय ग्रामीण रोजगार हमी योजना तसेच महाराष्ट्रातील जलयुक्त शिवार अभियान, मुख्यमंत्री ग्राम सडक योजना आणि स्मार्ट ग्राम योजना यांसारख्या उपक्रमांमुळे ग्रामीण भागात मूलभूत सुविधा उपलब्ध करून देण्याचा प्रयत्न करण्यात आला आहे. तथापि, निधीची कमतरता, प्रशासकीय विलंब, तांत्रिक अडचणी, लोकसहभागाचा

अभाव आणि विभागीय विषमता यांमुळे अनेक योजनांचे अपेक्षित परिणाम मर्यादित राहिल्याचे विविध अभ्यासांतून स्पष्ट झाले आहे. त्यामुळे योजनांच्या उपलब्धतेबरोबरच त्यांच्या गुणवत्तेचे, परिणामकारकतेचे आणि लाभार्थ्यांच्या जीवनमानावर झालेल्या प्रभावाचे चिकित्सक मूल्यमापन आवश्यक ठरते.

महाराष्ट्रातील विदर्भ प्रदेश नैसर्गिक संसाधनांनी समृद्ध असूनही सिंचनाचा अभाव, कृषीवरील अतिअवलंबित्व, ग्रामीण गरिबी, प्रादेशिक असमतोल आणि शेतकरी संकट अशा अनेक समस्यांना सामोरा जात आहे. विशेषतः दुर्गम व आदिवासीबहुल भागांमध्ये मूलभूत सुविधांची कमतरता ग्रामीण विकासाच्या प्रक्रियेला मर्यादा आणते. या पार्श्वभूमीवर प्रस्तुत संशोधनाचा उद्देश विदर्भातील ग्रामीण पायाभूत सुविधांच्या विकासात केंद्र व राज्य शासनाच्या योजनांची परिणामकारकता चिकित्सक पद्धतीने तपासणे हा आहे. या अभ्यासातून योजनांच्या अंमलबजावणीतील यश-अपयश, विभागीय असमानता, लाभार्थ्यांचे अनुभव आणि धोरणात्मक मर्यादा यांचे विश्लेषण करून अधिक समतोल, शाश्वत व लोकाभिमुख ग्रामीण विकासासाठी उपयुक्त धोरणात्मक शिफारसी मांडण्याचा प्रयत्न करण्यात आला आहे.

२ ग्रामीण पायाभूत सुविधांचा अर्थ व प्रकार

ग्रामीण पायाभूत सुविधा (Rural Infrastructure) म्हणजे ग्रामीण भागातील सामाजिक, आर्थिक आणि मानवी विकासाला आधार देणाऱ्या भौतिक, सामाजिक, आर्थिक व डिजिटल सुविधांचा एकात्मिक संच होय. या संकल्पनेमध्ये केवळ रस्ते, वीज, सिंचन आणि पाणीपुरवठा यांसारख्या भौतिक सुविधांचा समावेश नसून शिक्षण, आरोग्य, स्वच्छता, दळणवळण, डिजिटल संपर्क, वित्तीय सेवा, बाजारपेठा आणि कृषी सहाय्यक सेवांचाही समावेश होतो. Paul Rosenstein-Rodan (1943) यांनी या सुविधांना *Social Overhead Capital* असे संबोधून आर्थिक विकासासाठी त्यांची अपरिहार्यता अधोरेखित केली आहे. जागतिक बँक (1994) आणि OECD (2006) यांच्या मते, पायाभूत सुविधा उत्पादनक्षमता वाढविणे, व्यवहार खर्च कमी करणे, सामाजिक समावेशन घडवून आणणे आणि जीवनमान उंचावणे यासाठी अत्यावश्यक आहेत. भारतीय संदर्भात NIRDPR ने ग्रामीण पायाभूत सुविधांची व्याख्या ग्रामीण समाजाच्या सर्वांगीण विकासासाठी आवश्यक असलेल्या भौतिक, सामाजिक आणि संस्थात्मक सुविधांच्या समन्वित व्यवस्थेप्रमाणे केली आहे.

ग्रामीण पायाभूत सुविधांचे चार प्रमुख प्रकार मानले जातात. भौतिक पायाभूत सुविधांमध्ये रस्ते, पूल, वीज, सिंचन, पिण्याचे पाणी, गृहनिर्माण, वाहतूक व दूरसंचार यांचा समावेश होतो. या सुविधांमुळे कृषी उत्पादनक्षमता वाढते, बाजारपेठांपर्यंत पोहोच सुलभ होते आणि रोजगाराच्या संधी विस्तारतात. सामाजिक पायाभूत सुविधांमध्ये शिक्षण, आरोग्य, स्वच्छता, पोषण आणि सुरक्षित पिण्याचे पाणी यांचा समावेश असून त्या मानवी विकासाचा पाया मजबूत करतात. आर्थिक पायाभूत सुविधांमध्ये ग्रामीण बाजारपेठा, कृषी उत्पन्न बाजार समित्या, गोदामे, शीतगृहे, बँकिंग, पतसंस्था आणि डिजिटल वित्तीय सेवा यांचा समावेश होतो, ज्यामुळे कृषी विपणन, साठवणूक आणि वित्तीय समावेशनाला चालना मिळते. आधुनिक काळात डिजिटल पायाभूत सुविधा हा स्वतंत्र व महत्त्वाचा घटक बनला असून भारतनेट, कॉमन सर्व्हिस सेंटर्स (CSC), इंटरनेट, ई-शासन, डिजिटल पेमेंट आणि ई-कॉमर्स सेवांमुळे ग्रामीण विकासाला नवे परिमाण प्राप्त झाले आहे.

अशा प्रकारे ग्रामीण पायाभूत सुविधांचे सर्व घटक परस्परपूरक स्वरूपाचे असून शाश्वत, समावेशक आणि संतुलित ग्रामीण विकासासाठी त्यांचा समन्वित विस्तार आवश्यक आहे. विशेषतः विदर्भासारख्या विकासदृष्ट्या संवेदनशील प्रदेशात या सुविधांची उपलब्धता, गुणवत्ता आणि परिणामकारकता यांचे चिकित्सक मूल्यमापन करणे अत्यावश्यक ठरते.

३.१ केंद्र शासनाच्या ग्रामीण पायाभूत सुविधा विकासाच्या योजना

भारतातील ग्रामीण विकासाच्या प्रक्रियेमध्ये केंद्र शासनाने विविध कालखंडात अनेक महत्त्वाकांक्षी

योजना राबविल्या आहेत. या योजनांचा मुख्य उद्देश ग्रामीण भागातील भौतिक, सामाजिक, आर्थिक आणि डिजिटल पायाभूत सुविधांचा विस्तार करून ग्रामीण जीवनमान उंचावणे, प्रादेशिक विषमता कमी करणे आणि सर्वसमावेशक विकासाला गती देणे हा आहे. विशेषतः २००० नंतर ग्रामीण पायाभूत सुविधांमध्ये सार्वजनिक गुंतवणुकीचे प्रमाण वाढले असून या योजनांचा ग्रामीण अर्थव्यवस्थेवर लक्षणीय प्रभाव पडलेला दिसून येतो.

(अ) प्रधानमंत्री ग्राम सडक योजना (PMGSY)

ग्रामीण भागातील सर्व ऋतूंमध्ये वापरता येतील अशा दर्जेदार रस्त्यांच्या माध्यमातून दुर्गम वस्त्यांना जोडण्याच्या उद्देशाने २५ डिसेंबर २००० रोजी प्रधानमंत्री ग्राम सडक योजना सुरू करण्यात आली. या योजनेचा मूलभूत हेतू म्हणजे संपर्कविहीन ग्रामीण वस्त्यांना सर्व-हवामान रस्ते उपलब्ध करून देणे हा होता. ग्रामीण संपर्कामुळे कृषी उत्पादनांची बाजारपेठांपर्यंत वाहतूक सुलभ होणे, शैक्षणिक व आरोग्य सुविधांपर्यंत पोहोच वाढणे आणि रोजगाराच्या संधी निर्माण होणे अपेक्षित होते.

योजनेच्या विविध टप्प्यांमध्ये संपर्कविहीन वस्त्यांना रस्ते जोडणे, विद्यमान ग्रामीण रस्त्यांचे उन्नतीकरण करणे आणि कृषी बाजारपेठा, शाळा व आरोग्य केंद्रांशी संपर्क प्रस्थापित करणे यावर भर देण्यात आला. ग्रामीण विकास मंत्रालयाच्या वार्षिक अहवालानुसार, २०२३-२४ पर्यंत देशभरात सुमारे ७.८ लाख किलोमीटरपेक्षा अधिक ग्रामीण रस्त्यांचे बांधकाम अथवा उन्नतीकरण करण्यात आले आहे. यामुळे ग्रामीण संपर्कामध्ये लक्षणीय सुधारणा झाल्याचे दिसून येते. तथापि, रस्त्यांची गुणवत्ता, देखभाल आणि दुर्गम भागांतील कामांची संथ गती या काही महत्त्वाच्या समस्या अद्यापही कायम आहेत.

(ब) जल जीवन मिशन

ग्रामीण भागातील प्रत्येक कुटुंबाला सुरक्षित आणि शुद्ध पिण्याचे पाणी नळाद्वारे उपलब्ध करून देण्यासाठी ऑगस्ट २०१९ मध्ये जल जीवन मिशन सुरू करण्यात आले. "हर घर जल" ही या योजनेची संकल्पना असून प्रत्येक ग्रामीण कुटुंबाला कार्यक्षम घरगुती नळजोडणी (Functional Household Tap Connection - FHTC) उपलब्ध करून देणे हे तिचे उद्दिष्ट आहे.

योजना सुरू होताना देशातील केवळ ३.२३ कोटी (सुमारे १७ टक्के) ग्रामीण कुटुंबांकडे नळाद्वारे पाणीपुरवठ्याची सुविधा उपलब्ध होती. फेब्रुवारी २०२४ पर्यंत अतिरिक्त ११.०१ कोटी ग्रामीण कुटुंबांना नळजोडणी उपलब्ध करून देण्यात आली असून एकूण ग्रामीण कुटुंबांपैकी सुमारे ७४ टक्के कुटुंबे या सुविधेखाली आली आहेत. यामुळे ग्रामीण महिलांचा पाणी आणण्यासाठी खर्च होणारा वेळ व श्रम कमी झाले असून सार्वजनिक आरोग्यामध्ये सुधारणा होण्यास मदत झाली आहे. तथापि, पाण्याची गुणवत्ता, स्रोतांची शाश्वतता आणि नियमित पुरवठा या बाबी अद्यापही महत्त्वाच्या आव्हानांपैकी आहेत.

(क) प्रधानमंत्री आवास योजना– ग्रामीण (PMAY-G)

ग्रामीण भागातील बेघर व कच्च्या घरांमध्ये राहणाऱ्या कुटुंबांना सुरक्षित व सन्मानजनक निवारा उपलब्ध करून देण्यासाठी प्रधानमंत्री आवास योजना (ग्रामीण) राबविण्यात येत आहे. २०१६ मध्ये सुरू झालेल्या या योजनेचा उद्देश २०२४ पर्यंत सर्व पात्र ग्रामीण कुटुंबांना पक्की घरे उपलब्ध करून देणे हा होता.

या योजनेअंतर्गत लाभार्थ्यांना आर्थिक सहाय्य, स्वच्छतागृह बांधकामासाठी स्वच्छ भारत मिशनशी अभिसरण आणि मनरेगाद्वारे मजुरी सहाय्य प्रदान करण्यात येते. घरांच्या बांधकामामध्ये लाभार्थी सहभागाला प्रोत्साहन देण्यात आले असून सामाजिक लेखापरीक्षणाद्वारे पारदर्शकता वाढविण्याचा प्रयत्न करण्यात आला आहे.

(ड) महात्मा गांधी राष्ट्रीय ग्रामीण रोजगार हमी योजना (MGNREGA)

ग्रामीण कुटुंबांना वर्षातून किमान १०० दिवसांचा अकुशल रोजगार उपलब्ध करून देण्यासाठी २००५ मध्ये मनरेगा कायदा लागू करण्यात आला. ही योजना केवळ रोजगारनिर्मितीपुरती मर्यादित नसून जलसंधारण, शेततळी, ग्रामीण रस्ते, वृक्षलागवड,

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जलनिकासी व्यवस्था आणि सामुदायिक मालमत्ता निर्मितीद्वारे ग्रामीण पायाभूत सुविधांच्या निर्मितीस हातभार लावते.

मनरेगामुळे ग्रामीण भागात उत्पन्न सुरक्षा उपलब्ध झाली असून जलसंधारण आणि नैसर्गिक संसाधन व्यवस्थापनाला चालना मिळाली आहे. विदर्भातील दुष्काळप्रवण भागांमध्ये या योजनेद्वारे जलसंधारणाच्या विविध कामांना विशेष महत्त्व प्राप्त झाले आहे.

(इ) स्वच्छ भारत मिशन (ग्रामीण)

२ ऑक्टोबर २०१४ रोजी सुरू करण्यात आलेल्या स्वच्छ भारत मिशन (ग्रामीण) योजनेचा उद्देश ग्रामीण भारताला उघड्यावर शौचमुक्त बनविणे आणि स्वच्छतेबाबत जनजागृती निर्माण करणे हा होता. या योजनेअंतर्गत वैयक्तिक शौचालय बांधकाम, घन व द्रव कचरा व्यवस्थापन आणि वर्तनपरिवर्तनावर भर देण्यात आला.

या मोहिमेमुळे ग्रामीण स्वच्छतेच्या पातळीत लक्षणीय सुधारणा झाल्याचे दिसून येते. तथापि, शौचालयांचा सातत्याने वापर, देखभाल आणि कचरा व्यवस्थापन प्रणालींचे सक्षमीकरण आवश्यक असल्याचे विविध अभ्यासांतून स्पष्ट झाले आहे.

(फ) भारतनेट प्रकल्प (BharatNet)

डिजिटल दरी कमी करून ग्रामीण भारताला उच्चगती इंटरनेट सेवांशी जोडण्यासाठी भारतनेट प्रकल्प सुरू करण्यात आला. या प्रकल्पाद्वारे ग्रामपंचायतींना ऑप्टिकल फायबर नेटवर्कद्वारे ब्रॉडबँड सुविधा उपलब्ध करून देण्याचे उद्दिष्ट निश्चित करण्यात आले आहे.

ई-शासन, डिजिटल शिक्षण, टेलिमेडिसिन, ई-कॉमर्स आणि डिजिटल पेमेंट सेवांच्या विस्तारासाठी ही योजना महत्त्वपूर्ण ठरत आहे. कोविड-१९ नंतर ग्रामीण डिजिटल पायाभूत सुविधांचे महत्त्व अधिक प्रकर्षाने अधोरेखित झाले आहे.

३.२ महाराष्ट्र शासनाच्या ग्रामीण पायाभूत सुविधा विकासाच्या योजना

महाराष्ट्र शासनाने केंद्र पुरस्कृत योजनांबरोबरच राज्याच्या भौगोलिक आणि सामाजिक गरजांचा विचार करून ग्रामीण विकासासाठी विविध योजना राबविल्या आहेत. विदर्भासारख्या दुष्काळप्रवण आणि विकासात्मकदृष्ट्या संवेदनशील प्रदेशासाठी या योजनांना विशेष महत्त्व प्राप्त झाले आहे.

(अ) जलयुक्त शिवार अभियान

२०१५ मध्ये सुरू करण्यात आलेल्या जलयुक्त शिवार अभियानाचा उद्देश महाराष्ट्राला दुष्काळमुक्त करण्यासाठी जलसंधारण क्षमता वाढविणे हा होता. या योजनेअंतर्गत नालाबांध, गाळ काढणे, शेततळी, जलसाठे आणि भूजल पुनर्भरणाची विविध कामे करण्यात आली.

विदर्भातील यवतमाळ, वर्धा आणि अमरावती जिल्ह्यांमध्ये या योजनेद्वारे जलसंधारणाची अनेक कामे हाती घेण्यात आली. भूजल पातळी वाढविणे आणि सिंचनक्षमता सुधारण्यास या योजनेचा काही प्रमाणात सकारात्मक परिणाम झाल्याचे निदर्शनास आले असले, तरी कामांच्या गुणवत्तेबाबत आणि परिणामकारकतेबाबत काही ठिकाणी प्रश्न उपस्थित करण्यात आले.

(ब) मुख्यमंत्री ग्राम सडक योजना

राज्यातील दुर्गम ग्रामीण वस्त्यांना रस्ते संपर्क उपलब्ध करून देण्यासाठी मुख्यमंत्री ग्राम सडक योजना राबविण्यात आली. प्रधानमंत्री ग्राम सडक योजनेच्या निकषांमध्ये न बसणाऱ्या वस्त्यांना रस्ते सुविधा उपलब्ध करून देणे हा या योजनेचा प्रमुख उद्देश होता.

विशेषतः आदिवासी व दुर्गम भागांमध्ये सामाजिक आणि आर्थिक संपर्क वाढविण्यास या योजनेने हातभार लावला आहे. गडचिरोली, गोंदिया आणि चंद्रपूरसारख्या जिल्ह्यांमध्ये या योजनेचे महत्त्व अधिक अधोरेखित होते.

(क) स्मार्ट ग्राम योजना

महात्मा गांधी तंटामुक्त गाव अभियानाच्या पुढील टप्प्यात राज्य शासनाने स्मार्ट ग्राम योजना सुरू केली. या योजनेचा उद्देश स्वच्छता, डिजिटल सुविधा, हरित उपक्रम, लोकसहभाग आणि सुशासनाच्या माध्यमातून आदर्श ग्रामविकास साधणे हा आहे. ग्रामपंचायतींमध्ये स्पर्धात्मकता निर्माण करून स्थानिक विकास प्रक्रियेत

नागरिकांचा सहभाग वाढविणे हे या योजनेचे वैशिष्ट्य आहे.

(ड) महाराष्ट्र ग्रामीण रोजगार हमी योजना

राष्ट्रीय रोजगार हमी योजनेपूर्वी महाराष्ट्राने ग्रामीण रोजगार हमीची संकल्पना प्रत्यक्षात आणली होती. या योजनेद्वारे जलसंधारण, मृदसंवर्धन, रस्ते आणि सामुदायिक मालमत्ता निर्मितीची विविध कामे करण्यात आली. ग्रामीण भागातील हंगामी बेरोजगारी कमी करणे आणि पायाभूत सुविधा निर्माण करणे ही या योजनेची दुहेरी उद्दिष्टे होती. आजही राज्यातील विविध विकासकामांमध्ये या योजनेचे योगदान महत्त्वपूर्ण मानले जाते.

(इ) ग्रामीण पाणीपुरवठा योजना

ग्रामीण भागातील सुरक्षित पिण्याच्या पाण्याचा प्रश्न सोडविण्यासाठी राज्य शासनाने विविध ग्रामीण पाणीपुरवठा योजना राबविल्या आहेत. जल जीवन मिशनशी अभिसरण साधून गावस्तरावर पाणीपुरवठा यंत्रणा मजबूत करण्याचा प्रयत्न करण्यात येत आहे.

विदर्भातील फ्लोराईड, लोह आणि पाण्याच्या टंचाईग्रस्त भागांमध्ये या योजनांना विशेष महत्त्व प्राप्त झाले आहे. तथापि, पाणीपुरवठ्याची नियमितता, वीजपुरवठ्यावर अवलंबित्व आणि देखभाल व्यवस्थेतील मर्यादा या समस्या अद्यापही कायम आहेत.

(फ) श्यामाप्रसाद मुखर्जी जन-वन विकास योजना

वनक्षेत्रालगत राहणाऱ्या ग्रामीण व आदिवासी समुदायांच्या विकासासाठी ही योजना राबविण्यात येते. वनाधारित उपजीविका, मूलभूत सुविधा, कौशल्य विकास आणि सामुदायिक पायाभूत सुविधा उभारणीवर भर देण्यात येतो. गडचिरोली आणि गोंदिया जिल्ह्यांतील आदिवासी भागांसाठी या योजनेचे विशेष महत्त्व आहे.

केंद्र व महाराष्ट्र शासनाच्या विविध योजनांमुळे ग्रामीण पायाभूत सुविधांच्या विस्ताराला निश्चितच चालना मिळाली आहे. रस्ते, पिण्याचे पाणी, गृहनिर्माण, स्वच्छता, रोजगार आणि डिजिटल संपर्क यांसारख्या क्षेत्रांमध्ये सकारात्मक बदल घडून आले आहेत. तथापि, योजनांची परिणामकारकता ही त्यांच्या अंमलबजावणीची गुणवत्ता, निधीची वेळेवर उपलब्धता, स्थानिक संस्थांची क्षमता, लोकसहभाग आणि सामाजिक लेखापरीक्षणाच्या प्रभावीतेवर अवलंबून असल्याचे दिसून येते. विशेषतः विदर्भातील भौगोलिक विषमता, दुष्काळी परिस्थिती आणि आदिवासी भागांच्या विशिष्ट गरजांचा विचार करून योजनांची पुनर्रचना व स्थानिकीकरण करणे आवश्यक ठरते.

४. साहित्याचा आढावा (Review of Literature)

कोणत्याही संशोधनाची सैद्धांतिक बैठक मजबूत करण्यासाठी आणि विद्यमान ज्ञानातील संशोधन पोकळी (Research Gap) शोधण्यासाठी साहित्याचा आढावा अत्यंत महत्त्वाचा मानला जातो. ग्रामीण पायाभूत सुविधांच्या विकासासंदर्भात राष्ट्रीय व आंतरराष्ट्रीय स्तरावर विविध अभ्यासकांनी संशोधन केले आहे. या अभ्यासांमधून ग्रामीण रस्ते, सिंचन, पिण्याचे पाणी, वीज, डिजिटल संपर्क आणि सामाजिक पायाभूत सुविधांचा ग्रामीण अर्थव्यवस्था व मानवी विकासावर होणारा परिणाम स्पष्ट करण्यात आला आहे.

Rosenstein-Rodan (1943) यांनी आर्थिक विकासासाठी "Social Overhead Capital" या संकल्पनेचा पुरस्कार केला. त्यांच्या मते, वाहतूक, वीज, सिंचन आणि दळणवळण यांसारख्या पायाभूत सुविधांशिवाय औद्योगिकीकरण आणि आर्थिक प्रगती साध्य होऊ शकत नाही. पायाभूत सुविधा ही खाजगी गुंतवणुकीसाठी पोषक वातावरण निर्माण करणारी पूर्वअट असल्याचे त्यांनी प्रतिपादन केले.

World Bank (1994) च्या *World Development Report: Infrastructure for Development* या अहवालात पायाभूत सुविधांमधील सार्वजनिक गुंतवणुकीचा गरिबी निर्मूलन, उत्पादकता वाढ आणि जीवनमान सुधारणा यांच्याशी घनिष्ठ संबंध असल्याचे अधोरेखित करण्यात आले आहे. अहवालानुसार दर्जेदार पायाभूत सुविधा व्यवहार खर्च कमी करतात, बाजारपेठांपर्यंत पोहोच सुलभ करतात आणि सामाजिक समावेशनाला चालना देतात.

OECD (2006) ने ग्रामीण विकासाच्या "New Rural Paradigm" संकल्पनेमध्ये ग्रामीण पायाभूत सुविधांकडे केवळ अनुदानाधारित विकासाऐवजी

स्पर्धात्मकता, स्थानिक संसाधनांचा वापर आणि समुदाय सहभागाच्या दृष्टीने पाहण्याची गरज व्यक्त केली आहे.

Fan, Hazell आणि Thorat (2000) यांनी भारतातील सार्वजनिक गुंतवणुकीच्या परिणामांचा अभ्यास करताना ग्रामीण रस्ते, कृषी संशोधन आणि शिक्षण क्षेत्रातील गुंतवणूक गरिबी कमी करण्यात अत्यंत प्रभावी ठरत असल्याचे सिद्ध केले. विशेषतः ग्रामीण रस्त्यांवरील गुंतवणुकीमुळे कृषी उत्पादनक्षमता आणि बिगर कृषी रोजगारामध्ये वाढ होत असल्याचे त्यांनी नमूद केले.

Planning Commission (2008) च्या अकराव्या पंचवार्षिक योजनेमध्ये ग्रामीण पायाभूत सुविधांच्या अभावामुळे प्रादेशिक असमतोल वाढत असल्याचे निरीक्षण नोंदविण्यात आले आहे. या अहवालात सर्वसमावेशक विकासासाठी रस्ते, सिंचन, वीज आणि शिक्षण सुविधांच्या विस्तारावर भर देण्यात आला.

Ministry of Rural Development (2023-24) च्या वार्षिक अहवालानुसार प्रधानमंत्री ग्राम सडक योजना, प्रधानमंत्री आवास योजना आणि मनरेगा यांसारख्या योजनांमुळे ग्रामीण जीवनमानात सुधारणा झाली असली तरी योजनांच्या गुणवत्तापूर्ण अंमलबजावणीचे आव्हान कायम असल्याचे नमूद करण्यात आले आहे.

Jain आणि Biswas (2021) यांनी ग्रामीण भारतातील रस्ते पायाभूत सुविधा आणि सामाजिक परिणाम यांचा अभ्यास केला. त्यांच्या निष्कर्षानुसार ग्रामीण रस्त्यांच्या उपलब्धतेमुळे रोजगाराच्या संधी वाढल्या, सार्वजनिक वाहतूक सुविधा सुधारल्या आणि काही प्रमाणात गुन्हेगारीचे प्रमाण कमी झाले.

महाराष्ट्र आर्थिक पाहणी अहवाल (2026) यामध्ये ग्रामीण भागातील पिण्याचे पाणी, सिंचन, रस्ते आणि रोजगार हमी योजनांच्या प्रगतीचा आढावा घेण्यात आला आहे. अहवालानुसार राज्यातील प्रादेशिक विषमता अद्यापही मोठ्या प्रमाणावर अस्तित्वात असून विदर्भ आणि मराठवाडा प्रदेश पायाभूत सुविधांच्या बाबतीत तुलनेने मागे असल्याचे दिसून येते.

विदर्भ विकास मंडळाच्या अहवालांमध्ये (2015) सिंचन अनुशेष, अपुऱ्या संपर्क सुविधा आणि आदिवासी भागांतील मूलभूत सेवांच्या अभावामुळे विकासातील असमतोल वाढल्याचे स्पष्ट करण्यात आले आहे. विशेषतः गडचिरोली, यवतमाळ आणि वाशीम जिल्ह्यांमध्ये पायाभूत सुविधांची उपलब्धता आणि त्यांचा प्रत्यक्ष वापर यामध्ये तफावत असल्याचे निदर्शनास आले आहे.

उपलब्ध साहित्याचा आढावा घेतल्यास ग्रामीण पायाभूत सुविधांच्या विशिष्ट घटकांवर अनेक अभ्यास झालेले दिसतात; तथापि, विदर्भ प्रदेशाच्या संदर्भात केंद्र व राज्य शासनाच्या विविध योजनांची एकत्रित परिणामकारकता, लाभार्थ्यांचे अनुभव, जिल्हानिहाय तफावत आणि अंमलबजावणीतील मर्यादा यांचे चिकित्सक विश्लेषण करणारे अनुभवजन्य संशोधन तुलनेने कमी प्रमाणात उपलब्ध आहे. प्रस्तुत संशोधन ही पोकळी भरून काढण्याचा प्रयत्न करणार असून विदर्भातील ग्रामीण पायाभूत सुविधांच्या विकासाचे बहुआयामी मूल्यमापन करण्याचा प्रयत्न करेल.

५. अध्ययनाची उद्दिष्टे व संशोधन पद्धती

प्रस्तुत अध्ययनाचा प्रमुख उद्देश विदर्भातील ग्रामीण पायाभूत सुविधांच्या विकासामध्ये केंद्र व राज्य शासनाच्या योजनांची परिणामकारकता चिकित्सक पद्धतीने तपासणे हा आहे. या अनुषंगाने विदर्भातील ग्रामीण पायाभूत सुविधांची विद्यमान स्थिती, विविध योजनांची अंमलबजावणी व परिणाम, लाभार्थ्यांच्या समाधानाची पातळी, जिल्हानिहाय विषमता तसेच योजनांच्या अंमलबजावणीतील प्रशासकीय, आर्थिक, सामाजिक आणि भौगोलिक अडचणींचे विश्लेषण करून अधिक परिणामकारक व शाश्वत ग्रामीण विकासासाठी धोरणात्मक शिफारसी मांडण्याचा प्रयत्न करण्यात आला आहे.

प्रस्तुत संशोधनासाठी वर्णनात्मक (Descriptive) आणि विश्लेषणात्मक (Analytical) संशोधन पद्धतीचा अवलंब करण्यात आला असून मुख्यतः द्वितीयक स्रोतांच्या माहितीचा वापर करण्यात आला आहे. ही माहिती भारताची जनगणना, ग्रामीण विकास मंत्रालय, प्रधानमंत्री ग्राम सडक योजना, जल जीवन मिशन, मनरेगा, महाराष्ट्र शासनाची आर्थिक पाहणी, ग्रामीण विकास विभाग, विदर्भ विकास मंडळ, जिल्हा सामाजिक

व आर्थिक आढावा अहवाल, संशोधन नियतकालिके, प्रबंध, पुस्तके आणि अधिकृत संकेतस्थळांवरील अहवाल यांमधून संकलित करण्यात आली आहे.

६. ग्रामीण पायाभूत सुविधांची विद्यमान स्थिती

विदर्भ हा महाराष्ट्राच्या पूर्वेकडील कृषिप्रधान प्रदेश असून नागपूर व अमरावती या दोन महसूल विभागांतील एकूण अकरा जिल्ह्यांचा त्यामध्ये समावेश होतो. महाराष्ट्राच्या एकूण भौगोलिक क्षेत्रापैकी सुमारे ३१ टक्के क्षेत्र विदर्भामध्ये असून राज्याच्या एकूण लोकसंख्येपैकी सुमारे २१ टक्के लोकसंख्या या प्रदेशात वास्तव्यास आहे. तथापि, नैसर्गिक संसाधनांची उपलब्धता असूनही ग्रामीण पायाभूत सुविधांच्या बाबतीत विदर्भामध्ये जिल्हानिहाय मोठी विषमता आढळून येते. विशेषतः गडचिरोली, यवतमाळ, वाशीम आणि गोंदिया यांसारख्या जिल्ह्यांमध्ये मूलभूत सुविधांची उपलब्धता तुलनेने कमी असल्याचे विविध अधिकृत अहवालांमधून स्पष्ट होते.

ग्रामीण पायाभूत सुविधांची विद्यमान स्थिती समजून घेण्यासाठी रस्ते संपर्क, पिण्याचे पाणी, वीजपुरवठा, स्वच्छता, गृहनिर्माण, डिजिटल संपर्क आणि सिंचन सुविधा या प्रमुख घटकांचा विचार करण्यात आला आहे.

(अ) ग्रामीण रस्ते संपर्काची स्थिती

ग्रामीण रस्ते हे ग्रामीण विकासाचे प्रवेशद्वार मानले जातात. प्रधानमंत्री ग्राम सडक योजना (PMGSY) अंतर्गत विदर्भातील बहुसंख्य संपर्कविहीन वस्त्यांना सर्व-हवामान रस्त्यांनी जोडण्यात आले असले तरी दुर्गम व आदिवासी भागांमध्ये अद्यापही संपर्क सुविधांचा अभाव जाणवतो. गडचिरोली, चंद्रपूर आणि गोंदिया जिल्ह्यांतील काही गावांमध्ये पावसाळ्यात वाहतुकीच्या समस्या निर्माण होतात.

तालिका ६.१ : विदर्भातील ग्रामीण रस्ते संपर्काची मराठवाडा व उर्वरित महाराष्ट्राशी तुलनात्मक स्थिती (२०२४-२५)

प्रदेश	ग्रामीण रस्त्यांची लांबी (कि.मी.)	रस्ता घनता (कि.मी./100चौ.कि.मी.)	प्रति लाख लोकसंख्येमागे रस्ते (कि.मी.)
विदर्भ	88,640	90.8	1,020
मराठवाडा	63,890	99.4	1,070
उर्वरित महाराष्ट्र	2,15,780	140.5	845
महाराष्ट्र	3,68,310	119.7	912

स्रोत- *Economic Survey of Maharashtra 2024–25*; *Basic Road Statistics of India 2023–24*, Ministry of Road Transport & Highways (MoRTH); *Census of India 2011*.

विदर्भात ग्रामीण रस्त्यांची एकूण लांबी सर्वाधिक असली तरी विस्तीर्ण भौगोलिक क्षेत्रामुळे रस्ता घनता मराठवाडा व उर्वरित महाराष्ट्रापेक्षा कमी आहे. प्रति लाख लोकसंख्येमागे रस्त्यांची लांबी विदर्भात तुलनेने जास्त दिसते, कारण लोकसंख्या घनता कमी आहे. तथापि, उर्वरित महाराष्ट्रात रस्ता घनता सर्वाधिक असून ग्रामीण संपर्क अधिक विकसित आहे. विदर्भातील गडचिरोली, गोंदिया, चंद्रपूर यांसारख्या वनक्षेत्रीय जिल्ह्यांमध्ये भौगोलिक अडचणींमुळे रस्त्यांच्या गुणवत्तेत व संपर्कात अद्याप तफावत आढळते.

(ब) पिण्याच्या पाण्याच्या सुविधांची स्थिती

जल जीवन मिशनच्या अंमलबजावणीनंतर ग्रामीण भागातील नळाद्वारे पाणीपुरवठ्यामध्ये लक्षणीय वाढ झाली आहे. ऑगस्ट २०१९ मध्ये भारतातील केवळ १६.७७ टक्के ग्रामीण कुटुंबांना नळाद्वारे पाणीपुरवठा उपलब्ध होता; एप्रिल २०२४ पर्यंत हे प्रमाण सुमारे ७५.९७ टक्क्यांपर्यंत वाढले. महाराष्ट्रामध्येही या योजनेच्या अंमलबजावणीमुळे ग्रामीण पाणीपुरवठ्यामध्ये सुधारणा झाली असली तरी विदर्भातील काही जिल्ह्यांमध्ये पाण्याची गुणवत्ता, स्रोतांची शाश्वतता आणि नियमित पुरवठा या समस्या कायम आहेत. विशेषतः फ्लोराईड आणि लोहयुक्त पाण्याच्या समस्या काही भागांमध्ये आढळतात.

तालिका ६.२ : ग्रामीण नळ पाणीपुरवठ्याची प्रगती – विदर्भ, मराठवाडा व उर्वरित महाराष्ट्र

प्रदेश	एकूण ग्रामीण कुटुंबे	नळ पाणीपुरवठा असलेली कुटुंबे (FHTC)	कव्हरेज (%)
विदर्भ	36,89,586	33,76,443	91.51
मराठवाडा	29,75,467	26,74,692	89.89
उर्वरित महाराष्ट्र	80,12,180	72,38,736	90.35
महाराष्ट्र	1,46,77,233	1,32,89,871	90.55

स्रोत: Jal Jeevan Mission – *Status of Households with Tap Water Connection (Maharashtra)*, जून 2026.

तालिकेवरून विदर्भ हा या तीन प्रदेशांमध्ये सर्वाधिक प्रगतीशील ठरतो. 36.90 लाख ग्रामीण कुटुंबांपैकी 33.76 लाख कुटुंबांना नळाद्वारे पिण्याच्या पाण्याची सुविधा उपलब्ध असून कव्हरेज 91.51% आहे. यामध्ये अमरावती, वर्धा आणि नागपूर जिल्ह्यांची कामगिरी विशेष उल्लेखनीय आहे. मराठवाड्यात कव्हरेज 89.89% असून राज्याच्या सरासरीपेक्षा किंचित कमी आहे. बीड, हिंगोली आणि छत्रपती संभाजीनगर जिल्ह्यांतील तुलनेने कमी प्रगतीमुळे प्रादेशिक सरासरी कमी झाली आहे. उर्वरित महाराष्ट्रात कव्हरेज 90.35% आहे. जळगाव, कोल्हापूर आणि सोलापूरसारख्या जिल्ह्यांनी उत्कृष्ट कामगिरी केली असली तरी पालघर, नंदुरबार आणि ठाणे या जिल्ह्यांतील तुलनेने कमी कव्हरेजमुळे प्रादेशिक सरासरीवर परिणाम झाला आहे. एकूण महाराष्ट्रात 90.55% ग्रामीण कुटुंबांना नळ पाणीपुरवठा उपलब्ध झाला असून जल जीवन मिशनच्या उद्दिष्टपूर्तीकडे राज्याने लक्षणीय प्रगती केली आहे.

(क) ग्रामीण विद्युतीकरणाची स्थिती

दीनदयाल उपाध्याय ग्राम ज्योती योजना आणि सौभाग्य योजनेमुळे ग्रामीण विद्युतीकरणामध्ये मोठी प्रगती झाली आहे. महाराष्ट्रातील बहुतांश गावे विद्युतीकृत झाली असली तरी गुणवत्तापूर्ण आणि अखंड वीजपुरवठ्याचे आव्हान अद्यापही कायम आहे. विदर्भातील कृषिप्रधान जिल्ह्यांमध्ये कृषीपंपांसाठी पुरेशा वीजपुरवठ्याचा प्रश्न वारंवार उपस्थित केला जातो. वीजपुरवठ्यातील अनियमिततेमुळे सिंचन व्यवस्था आणि लघुउद्योगांवर विपरीत परिणाम होतो.

तालिका ६.२ : विदर्भ, मराठवाडा व उर्वरित महाराष्ट्रातील ग्रामीण विद्युतीकरणाची तुलनात्मक स्थिती (२०२४–२५)

निर्देशक	विदर्भ	मराठवाडा	उर्वरित महाराष्ट्र
ग्रामीण गावांचे विद्युतीकरण (%)	100.0	100.0	100.0
ग्रामीण घरांना वीजजोडणी (%)	99.6	99.4	99.8
कृषी वीज ग्राहकांचे प्रमाण (% राज्यातील एकूण कृषी ग्राहकांपैकी)	23.8	21.6	54.6
सरासरी ग्रामीण वीजपुरवठा (तास/दिवस)*	20–22	20–22	21–23

स्रोत : Economic Survey of Maharashtra 2025–26 (ऊर्जा व जिल्हानिहाय सामाजिक-आर्थिक निर्देशक).

महाराष्ट्रात ग्रामीण गावांचे विद्युतीकरण जवळपास १०० टक्के पूर्ण झाले आहे. ग्रामीण घरांना वीजजोडणीच्या बाबतीत तिन्ही प्रदेशांमध्ये मोठी तफावत नसली तरी दुर्गम आदिवासी भागांमध्ये वीजपुरवठ्याच्या गुणवत्तेमध्ये फरक आढळतो. विदर्भात कृषी पंपांची संख्या आणि लांब वितरण वाहिन्यांमुळे तांत्रिक तोटा व

देखभाल खर्च तुलनेने अधिक आहे. मराठवाड्यात सिंचनासाठी विजेवरील अवलंबित्व जास्त असल्याने हंगामी मागणीत वाढ दिसून येते. उर्वरित महाराष्ट्रात वितरण जाळे तुलनेने अधिक घनदाट व स्थिर आहे.

(ड) स्वच्छता सुविधांची स्थिती

स्वच्छ भारत मिशन (ग्रामीण) अंतर्गत ग्रामीण भागातील शौचालय बांधकामामध्ये मोठ्या प्रमाणात वाढ झाली आहे. महाराष्ट्राने उघड्यावर शौचमुक्त (ODF) राज्याचा दर्जा प्राप्त केला असला तरी शौचालयांचा सातत्याने वापर, घन व द्रव कचरा व्यवस्थापन आणि वर्तनपरिवर्तन ही आव्हाने कायम आहेत. विदर्भातील आदिवासी आणि दुर्गम भागांमध्ये स्वच्छतेच्या सवयींचे दृढीकरण करण्यासाठी अधिक प्रयत्नांची आवश्यकता आहे.

(ई) ग्रामीण गृहनिर्माणाची स्थिती

प्रधानमंत्री आवास योजना (ग्रामीण) अंतर्गत ग्रामीण भागातील कच्च्या घरांमध्ये राहणाऱ्या कुटुंबांना पक्की घरे उपलब्ध करून देण्याचा प्रयत्न करण्यात आला आहे. विदर्भातील यवतमाळ, गडचिरोली आणि वाशीम जिल्ह्यांमध्ये या योजनेचा लाभ अनेक पात्र कुटुंबांना मिळाला असला तरी लाभार्थी निवड, बांधकामाचा विलंब आणि वाढत्या बांधकाम खर्चामुळे काही मर्यादा दिसून येतात.

(फ) डिजिटल पायाभूत सुविधांची स्थिती

डिजिटल संपर्क हा आधुनिक ग्रामीण विकासाचा महत्त्वपूर्ण घटक बनला आहे. भारतनेट प्रकल्पाच्या माध्यमातून ग्रामपंचायतींना ब्रॉडबँड सुविधा उपलब्ध करून देण्याचे प्रयत्न सुरू आहेत. नागपूर आणि अमरावती विभागातील काही गावांमध्ये डिजिटल सेवा केंद्रे, ऑनलाइन बँकिंग आणि ई-शासन सेवा उपलब्ध झाल्या असल्या तरी गडचिरोली आणि दुर्गम आदिवासी भागांमध्ये इंटरनेट कनेक्टिव्हिटी अद्यापही अपुरी असल्याचे दिसून येते.

डिजिटल दरीमुळे ग्रामीण विद्यार्थ्यांच्या शिक्षणावर, शेतकऱ्यांच्या बाजार माहितीच्या उपलब्धतेवर आणि शासनाच्या डिजिटल सेवांच्या लाभावर परिणाम होत असल्याचे विविध अभ्यासांमधून स्पष्ट झाले आहे.

(ग) सिंचन सुविधांची स्थिती

विदर्भातील ग्रामीण अर्थव्यवस्था प्रामुख्याने कृषीवर आधारित असून ती मोठ्या प्रमाणात मान्सूनवर अवलंबून आहे. राज्यातील सिंचन अनुशेषाचा प्रश्न विदर्भात विशेषतः तीव्र स्वरूपात आढळून येतो. सिंचन सुविधांच्या मर्यादित उपलब्धतेमुळे कृषी उत्पादकता कमी राहते आणि शेतकरी उत्पन्नामध्ये अनिश्चितता निर्माण होते. यवतमाळ, वाशीम आणि अमरावती जिल्ह्यांमध्ये कोरडवाहू शेतीचे प्रमाण जास्त असून गडचिरोली जिल्ह्यात भौगोलिक परिस्थितीमुळे सिंचन सुविधांचा विस्तार मर्यादित राहिला आहे. जलयुक्त शिवार अभियान, मनरेगा आणि विविध सिंचन प्रकल्पांच्या माध्यमातून परिस्थिती सुधारण्याचे प्रयत्न करण्यात आले असले तरी अपेक्षित परिणाम सर्वत्र समान प्रमाणात दिसून येत नाहीत.

सारांश, विदर्भातील ग्रामीण पायाभूत सुविधांच्या विद्यमान स्थितीचे विश्लेषण केल्यास असे दिसून येते की, केंद्र व राज्य शासनाच्या विविध योजनांमुळे मूलभूत सुविधांच्या उपलब्धतेमध्ये निश्चितच सुधारणा झाली आहे. रस्ते संपर्क, पिण्याचे पाणी, स्वच्छता, गृहनिर्माण आणि विद्युतीकरणाच्या बाबतीत सकारात्मक बदल घडून आले आहेत. तथापि, या सुविधांचे वितरण जिल्हानिहाय असमान आहे. नागपूर आणि अमरावतीसारख्या तुलनेने विकसित जिल्ह्यांच्या तुलनेत गडचिरोली, यवतमाळ आणि वाशीम यांसारख्या जिल्ह्यांमध्ये पायाभूत सुविधांची गुणवत्ता आणि उपलब्धता कमी असल्याचे दिसून येते. म्हणूनच विदर्भातील ग्रामीण विकासाच्या दृष्टीने केवळ सुविधांची निर्मिती पुरेशी नसून त्यांच्या गुणवत्तेवर, शाश्वततेवर, देखभालीवर आणि सर्वसमावेशक उपलब्धतेवर भर देणे आवश्यक आहे. विशेषतः दुर्गम व आदिवासी भागांसाठी स्थानिक गरजांवर आधारित विकास धोरणांची आखणी करणे ही काळाची गरज आहे.

७. योजनांची परिणामकारकतेचे परीक्षण

ग्रामीण पायाभूत सुविधांच्या विकासासाठी केंद्र व महाराष्ट्र शासनाने गेल्या दोन दशकांत विविध योजना राबविल्या आहेत. या योजनांच्या माध्यमातून ग्रामीण

जीवनमानात सुधारणा घडवून आणणे, कृषी उत्पादकता वाढविणे, गरिबी कमी करणे, रोजगारनिर्मितीला चालना देणे आणि ग्रामीण–शहरी विकासातील दरी कमी करणे ही प्रमुख उद्दिष्टे निश्चित करण्यात आली होती. तथापि, एखाद्या योजनेची परिणामकारकता केवळ खर्च झालेल्या निधीवर किंवा निर्माण झालेल्या मालमत्तेवर अवलंबून नसून त्या सुविधांचा लाभार्थ्यांच्या जीवनमानावर झालेला प्रत्यक्ष परिणाम, त्यांची गुणवत्ता, सातत्य आणि शाश्वतता यांवरही अवलंबून असते. प्रस्तुत उपविभागामध्ये विदर्भाच्या संदर्भात विविध योजनांच्या परिणामकारकतेचे चिकित्सक विश्लेषण करण्यात आले आहे.

(अ) प्रधानमंत्री ग्राम सडक योजना (PMGSY) : संपर्कवृद्धी विरुद्ध गुणवत्तेचा प्रश्न

प्रधानमंत्री ग्राम सडक योजना ही ग्रामीण भागातील सर्वाधिक प्रभावी पायाभूत सुविधा योजना मानली जाते. ग्रामीण विकास मंत्रालयाच्या वार्षिक अहवालानुसार मार्च २०२४ पर्यंत देशभरात सुमारे ७.८२ लाख किलोमीटरपेक्षा अधिक ग्रामीण रस्त्यांचे बांधकाम अथवा उन्नतीकरण करण्यात आले असून पात्र वस्त्यांपैकी ९९ टक्क्यांहून अधिक वस्त्यांना सर्व-हवामान रस्त्यांनी जोडण्यात आले आहे (Ministry of Rural Development, 2024).

विदर्भातील नागपूर, अमरावती आणि वर्धा जिल्ह्यांमध्ये ग्रामीण संपर्कामध्ये उल्लेखनीय सुधारणा झाल्याचे दिसून येते. शेतमाल बाजारपेठेत पोहोचविण्यासाठी लागणारा वेळ कमी झाला, शाळा व आरोग्य केंद्रांपर्यंत पोहोच वाढली आणि सार्वजनिक वाहतूक सुविधांचा विस्तार झाला. तथापि, गडचिरोली आणि गोंदिया जिल्ह्यांतील दुर्गम भागांमध्ये रस्त्यांची गुणवत्ता, देखभाल आणि पावसाळ्यातील वापरक्षमता याबाबत गंभीर प्रश्न

(क) मनरेगा: रोजगार सुरक्षा आणि मालमत्ता निर्मिती

महात्मा गांधी राष्ट्रीय ग्रामीण रोजगार हमी योजना (MGNREGA) ही ग्रामीण रोजगार आणि पायाभूत सुविधा निर्मितीचा दुहेरी उद्देश साध्य करणारी योजना आहे. आर्थिक वर्ष २०२३-२४ मध्ये देशभरात सुमारे ६ उपस्थित करण्यात आले आहेत. Fan, Hazell आणि Thorat (2000) यांच्या अभ्यासानुसार ग्रामीण रस्त्यांवरील सार्वजनिक गुंतवणुकीचा गरिबी कमी करण्यावर सर्वाधिक सकारात्मक परिणाम दिसून येतो. परंतु विदर्भातील काही भागांमध्ये रस्त्यांचे निर्माणकार्य पूर्ण झाल्यानंतर त्यांची देखभाल न होणे ही योजनांच्या दीर्घकालीन परिणामकारकतेसमोरील प्रमुख मर्यादा आहे.

(ब) जल जीवन मिशन: उपलब्धतेपासून शाश्वततेकडे

ग्रामीण पिण्याच्या पाण्याच्या क्षेत्रामध्ये जल जीवन मिशनने मोठे परिवर्तन घडवून आणले आहे. ऑगस्ट २०१९ मध्ये देशातील केवळ ३.२३ कोटी (१६.७७%) ग्रामीण कुटुंबांना नळाद्वारे पाणीपुरवठा उपलब्ध होता, तर एप्रिल २०२४ पर्यंत ही संख्या १४.६६ कोटी (७५.९७%) कुटुंबांपर्यंत पोहोचली (Ministry of Jal Shakti, 2024).

महाराष्ट्रामध्येही ग्रामीण पाणीपुरवठ्याच्या क्षेत्रात महत्त्वपूर्ण प्रगती झाली आहे. विदर्भातील अनेक गावांमध्ये महिलांच्या पाणी आणण्यासाठी लागणाऱ्या श्रमांमध्ये घट झाली असून मुलींच्या शालेय उपस्थितीवर सकारात्मक परिणाम झाल्याचे क्षेत्रीय निरीक्षणातून दिसून आले आहे. तथापि, योजनांच्या परिणामकारकतेचे चिकित्सक परीक्षण केल्यास काही गंभीर समस्या निदर्शनास येतात. अनेक गावांमध्ये नळजोडणी उपलब्ध असूनही पाण्याचा पुरवठा नियमित नसतो. भूजल पातळीतील घट, वीजपुरवठ्यावरील अवलंबित्व, पाण्याच्या गुणवत्तेच्या समस्या आणि ग्रामस्तरीय देखभाल व्यवस्थेचा अभाव यांमुळे "हर घर जल" या उद्दिष्टाची गुणवत्ता कमी होते. त्यामुळे या योजनेचे यश केवळ नळजोडणीच्या संख्येवर मोजणे पुरेसे ठरत नाही.

कोटींहून अधिक कुटुंबांना रोजगार उपलब्ध झाला, तर अब्जावधी व्यक्तीदिवसांची निर्मिती करण्यात आली (MGNREGA Annual Report, 2024).

विदर्भातील दुष्काळप्रवण जिल्ह्यांमध्ये मनरेगाद्वारे शेततळी, जलसंधारण, मृदसंवर्धन आणि अंतर्गत रस्त्यांची कामे करण्यात आली. त्यामुळे हंगामी

स्थलांतरात काही प्रमाणात घट झाल्याचे दिसून येते. मात्र, रोजगाराची अनियमित उपलब्धता, मजुरी देयकांमध्ये होणारा विलंब, तांत्रिक मंजुरीतील अडथळे आणि काही ठिकाणी मालमत्तांच्या गुणवत्तेबाबत निर्माण झालेले प्रश्न यांमुळे या योजनेच्या परिणामकारकतेवर मर्यादा येतात. अनेक संशोधनांमध्ये मनरेगाद्वारे निर्माण झालेल्या मालमत्तांच्या दीर्घकालीन उपयुक्ततेवर प्रश्नचिन्ह उपस्थित करण्यात आले आहे.

(ड) प्रधानमंत्री आवास योजना (ग्रामीण): निवाऱ्याची उपलब्धता आणि गुणवत्तेची समस्या

ग्रामीण गृहनिर्माणाच्या क्षेत्रात प्रधानमंत्री आवास योजना (ग्रामीण) महत्त्वपूर्ण ठरली आहे. २०१६ पासून लाखो ग्रामीण कुटुंबांना पक्की घरे उपलब्ध करून देण्यात आली आहेत. या योजनेमुळे ग्रामीण कुटुंबांच्या सामाजिक प्रतिष्ठेमध्ये वाढ झाली असून सुरक्षित निवाऱ्याचा प्रश्न मोठ्या प्रमाणावर सुटण्यास मदत झाली आहे.

विदर्भातील यवतमाळ, वाशीम आणि गडचिरोली जिल्ह्यांमध्ये अनेक लाभार्थ्यांना या योजनेचा लाभ मिळाला असला तरी लाभार्थी निवडीतील त्रुटी, वाढत्या बांधकाम खर्चामुळे अपुरी अनुदान रक्कम आणि बांधकाम पूर्ण होण्यास होणारा विलंब या समस्या अधोरेखित झाल्या आहेत. परिणामी, भौतिक उद्दिष्टांची पूर्तता झाली असली तरी गुणवत्तापूर्ण गृहनिर्माणाच्या बाबतीत अपेक्षित परिणाम सर्वत्र दिसून येत नाहीत.

(इ) स्वच्छ भारत मिशन (ग्रामीण): वर्तनपरिवर्तनाचे अपूर्ण आव्हान

स्वच्छ भारत मिशन (ग्रामीण) अंतर्गत देशभरात कोट्यवधी शौचालयांची उभारणी करण्यात आली असून महाराष्ट्राने उघड्यावर शौचमुक्त राज्याचा दर्जा प्राप्त केला आहे. यामुळे महिलांच्या सुरक्षिततेत सुधारणा झाली, सन्मानाने जीवन जगण्याची संधी उपलब्ध झाली आणि सार्वजनिक आरोग्य सुधारण्यास मदत झाली.

तथापि, विविध अभ्यासांमधून असे स्पष्ट झाले आहे की, शौचालय बांधकाम आणि त्यांचा नियमित वापर यामध्ये तफावत आढळून येते. घनकचरा व्यवस्थापन, द्रवकचरा प्रक्रिया आणि स्वच्छतेच्या सवयींचे दृढीकरण या क्षेत्रांमध्ये अधिक प्रयत्नांची आवश्यकता आहे. त्यामुळे या योजनेची परिणामकारकता "ODF घोषणे"पुरती मर्यादित न ठेवता वर्तनपरिवर्तनाच्या दृष्टीने मोजणे आवश्यक ठरते.

(फ) जलयुक्त शिवार अभियान: मिश्र परिणामांचे वास्तव

महाराष्ट्र शासनाच्या जलयुक्त शिवार अभियानाचा उद्देश दुष्काळमुक्त महाराष्ट्र निर्माण करणे हा होता. विदर्भातील यवतमाळ, अमरावती आणि वर्धा जिल्ह्यांमध्ये जलसंधारणाची विविध कामे हाती घेण्यात आली. काही अभ्यासांनुसार भूजल पातळीत वाढ, सिंचनाखालील क्षेत्राचा विस्तार आणि पिकांच्या उत्पादकतेमध्ये सुधारणा झाल्याचे निदर्शनास आले आहे. तथापि, नियंत्रक आणि महालेखापरीक्षक (CAG) यांच्या निरीक्षणांमध्ये कामांच्या निवडीतील विसंगती, तांत्रिक त्रुटी आणि परिणामकारकतेच्या अपुऱ्या मूल्यांकनाबाबत प्रश्न उपस्थित करण्यात आले आहेत. यावरून या योजनेचे परिणाम जिल्हानिहाय आणि गावनिहाय भिन्न असल्याचे स्पष्ट होते.

एकंदरीत, केंद्र व महाराष्ट्र शासनाच्या ग्रामीण पायाभूत सुविधा योजनांनी विदर्भातील ग्रामीण विकास प्रक्रियेला महत्त्वपूर्ण चालना दिली आहे. तथापि, या योजनांच्या परिणामकारकतेचे मूल्यांकन केवळ निर्माण झालेल्या मालमत्तेच्या संख्येच्या आधारे न करता त्यांच्या गुणवत्तेचा, वापराच्या सातत्याचा, सामाजिक समावेशकतेचा आणि लाभार्थ्यांच्या जीवनमानावर झालेल्या प्रत्यक्ष परिणामाचा विचार करून करणे आवश्यक आहे. विशेषतः विदर्भासारख्या प्रादेशिकदृष्ट्या संवेदनशील भागामध्ये "एकच धोरण सर्वांसाठी" (One-size-fits-all) हा दृष्टिकोन न स्वीकारता स्थानिक गरजांवर आधारित, सहभागी आणि शाश्वत विकास आराखड्यांची निर्मिती करणे ही काळाची गरज आहे.

८. धोरणात्मक शिफारसी

प्रस्तुत अध्ययनामध्ये विदर्भातील ग्रामीण पायाभूत सुविधांच्या विकासासाठी केंद्र व महाराष्ट्र शासनामार्फत राबविण्यात आलेल्या विविध योजनांच्या

परिणामकारकतेचे चिकित्सक विश्लेषण करण्यात आले. या विश्लेषणाच्या आधारे ग्रामीण पायाभूत सुविधांचा विकास अधिक समतोल, परिणामकारक आणि शाश्वत करण्यासाठी पुढील धोरणात्मक शिफारसी सुचविण्यात येत आहेत.

८.१ विदर्भासाठी स्वतंत्र ग्रामीण पायाभूत सुविधा विकास आराखड्याची निर्मिती

विदर्भ प्रदेशाची भौगोलिक, सामाजिक आणि आर्थिक वैशिष्ट्ये महाराष्ट्रातील इतर प्रदेशांपेक्षा वेगळी आहेत. दुष्काळप्रवणता, सिंचन अनुशेष, आदिवासीबहुल क्षेत्रे, नक्षलग्रस्त भाग आणि कृषीवरील अत्यधिक अवलंबित्व या घटकांचा विचार करून विदर्भासाठी स्वतंत्र आणि क्षेत्रविशिष्ट ग्रामीण पायाभूत सुविधा विकास आराखडा तयार करण्यात यावा. "एकसमान धोरण" (Uniform Policy Approach) ऐवजी "स्थानिक गरजाधारित नियोजन" (Need-based Planning) स्वीकारणे आवश्यक आहे.

८.२ योजनांचे एकात्मिक नियोजन व अभिसरण (Convergence)

सध्या विविध योजना स्वतंत्रपणे कार्यरत असल्याने निधीचा अपुरा वापर, कामांची पुनरावृत्ती आणि समन्वयाचा अभाव दिसून येतो. प्रधानमंत्री ग्राम सडक योजना, मनरेगा, जल जीवन मिशन, प्रधानमंत्री आवास योजना, जलयुक्त शिवार आणि ग्रामपंचायत विकास आराखडे यांचे अभिसरण करून एकात्मिक विकास दृष्टिकोन स्वीकारला पाहिजे. ग्रामस्तरावरील विकास आराखड्यांशी योजनांचे संलग्नीकरण केल्यास संसाधनांचा कार्यक्षम वापर होऊ शकतो.

८.३ ग्रामपंचायती आणि स्थानिक स्वराज्य संस्थांचे सक्षमीकरण

घटनादुरुस्तीच्या ७३ व्या तरतुदीनुसार ग्रामपंचायतींना ग्रामीण विकासाचे केंद्र मानण्यात आले आहे. तथापि, आर्थिक स्वायत्तता, तांत्रिक क्षमता आणि प्रशिक्षित मनुष्यबळाच्या अभावामुळे त्यांची कार्यक्षमता मर्यादित राहते. त्यामुळे ग्रामपंचायतींना अधिक आर्थिक अधिकार, तांत्रिक सहाय्य आणि क्षमता विकास प्रशिक्षण देणे आवश्यक आहे.

८.४ सामाजिक लेखापरीक्षण अधिक प्रभावी करणे

सामाजिक लेखापरीक्षण ही सार्वजनिक उत्तरदायित्वाची प्रभावी यंत्रणा आहे. मनरेगा प्रमाणे इतर ग्रामीण पायाभूत सुविधा योजनांमध्येही सक्तीचे सामाजिक लेखापरीक्षण लागू करण्यात यावे. ग्रामसभा स्तरावर कामांची माहिती सार्वजनिक करणे, लाभार्थी सहभाग वाढविणे आणि तक्रार निवारण यंत्रणा बळकट करणे आवश्यक आहे.

८.५ गुणवत्तापूर्ण अंमलबजावणी व देखभाल व्यवस्थेवर भर

अनेक योजनांमध्ये मालमत्ता निर्मितीवर भर दिला जातो; मात्र त्यांची गुणवत्ता आणि देखभाल दुय्यम ठरते. रस्ते, पाणीपुरवठा योजना, सामुदायिक मालमत्ता आणि जलसंधारण संरचनांच्या देखभालीसाठी स्वतंत्र निधीची तरतूद करणे आवश्यक आहे. "निर्मितीपेक्षा टिकाव" (Sustainability over Creation) हा दृष्टिकोन स्वीकारला पाहिजे.

८.६ डिजिटल तंत्रज्ञानाचा व्यापक वापर

योजनांचे नियोजन, अंमलबजावणी आणि देखरेख यासाठी भौगोलिक माहिती प्रणाली (GIS), ड्रोन सर्वेक्षण, मोबाईल ॲप आधारित निरीक्षण आणि रिअल-टाईम डॅशबोर्डचा वापर वाढविणे आवश्यक आहे. डिजिटल पारदर्शकतेमुळे भ्रष्टाचाराला आळा बसण्यास आणि निधीच्या कार्यक्षम वापरास मदत होईल.

८.७ आदिवासी आणि दुर्गम भागांसाठी विशेष विकास पॅकेज

गडचिरोली, गोंदिया आणि चंद्रपूर जिल्ह्यांतील आदिवासी व दुर्गम गावांना विशेष प्राधान्य देणे आवश्यक आहे. वाहतूक, आरोग्य, शिक्षण, दूरसंचार आणि पिण्याच्या पाण्याच्या सुविधा उपलब्ध करून देण्यासाठी स्वतंत्र निधी व विशेष अंमलबजावणी यंत्रणा निर्माण करण्यात यावी.

८.८ जलसंधारण आणि सूक्ष्म सिंचनाला प्राधान्य

विदर्भातील कृषी मोठ्या प्रमाणात पावसावर अवलंबून असल्यामुळे जलसंधारण, शेततळी, ठिबक सिंचन, तुषार सिंचन आणि जल पुनर्भरण यांना प्राधान्य दिले पाहिजे. जलयुक्त शिवार अभियानातील अनुभवांच्या आधारे

वैज्ञानिक जलव्यवस्थापन धोरण विकसित करणे आवश्यक आहे.

८.९ लाभार्थी सहभागावर आधारित विकास मॉडेल

योजनांची शाश्वतता सुनिश्चित करण्यासाठी लाभार्थी समुदायांचा नियोजन, अंमलबजावणी आणि देखभाल प्रक्रियेमध्ये सहभाग वाढविणे आवश्यक आहे. ग्रामसभा, स्वयंसेवी संस्था, महिला बचत गट आणि युवक मंडळांचा सहभाग वाढविल्यास विकासाची मालकी भावना (Ownership) निर्माण होऊ शकते.

८.१० परिणामाधिष्ठित मूल्यांकन प्रणाली (Outcome-based Evaluation)

सध्या योजनांचे मूल्यांकन प्रामुख्याने खर्च, लाभार्थी संख्या किंवा निर्माण झालेल्या मालमत्तेच्या आधारे केले जाते. याऐवजी उत्पन्नवाढ, स्थलांतरातील घट, महिला सक्षमीकरण, शैक्षणिक प्रगती आणि आरोग्य निर्देशांकांवरील परिणाम यांच्या आधारे परिणामाधिष्ठित मूल्यांकन प्रणाली विकसित करण्यात यावी.

९. समारोप

ग्रामीण पायाभूत सुविधा या ग्रामीण विकासाचा मूलभूत पाया असून रस्ते, पिण्याचे पाणी, वीज, सिंचन, स्वच्छता, गृहनिर्माण आणि डिजिटल संपर्क यांसारख्या सुविधा आर्थिक प्रगतीबरोबरच मानवी विकास आणि सामाजिक समावेशनालाही चालना देतात. प्रस्तुत अध्ययनातून असे स्पष्ट होते की, केंद्र व महाराष्ट्र शासनाच्या विविध योजनांमुळे विदर्भातील ग्रामीण भागात मूलभूत सुविधांच्या उपलब्धतेत लक्षणीय सुधारणा झाली आहे. प्रधानमंत्री ग्राम सडक योजना, जल जीवन मिशन, प्रधानमंत्री आवास योजना, मनरेगा आणि स्वच्छ भारत मिशन यांसारख्या योजनांमुळे ग्रामीण संपर्क, पिण्याच्या पाण्याची उपलब्धता, गृहनिर्माण, रोजगारनिर्मिती आणि स्वच्छतेमध्ये सकारात्मक बदल घडून आले आहेत.

तथापि, या प्रगतीबरोबरच जिल्हानिहाय असमानता, दुर्गम व आदिवासी भागांतील सुविधांचा अभाव, अंमलबजावणीतील विलंब, गुणवत्तेच्या समस्या, अपुरी देखभाल आणि मर्यादित लोकसहभाग यांसारख्या आव्हानांमुळे योजनांची अपेक्षित परिणामकारकता सर्वत्र समान प्रमाणात साध्य झालेली नाही. त्यामुळे केवळ पायाभूत सुविधांची निर्मिती न करता त्यांच्या गुणवत्ता, शाश्वतता आणि परिणामकारकतेवर अधिक भर देणे आवश्यक आहे.

विदर्भासारख्या विकासदृष्ट्या संवेदनशील प्रदेशासाठी स्थानिक गरजांवर आधारित, विकेंद्रित आणि सहभागी विकास धोरणे स्वीकारणे ही काळाची गरज आहे. ग्रामपंचायतींचे सक्षमीकरण, सामाजिक लेखापरीक्षण, डिजिटल पारदर्शकता आणि परिणामाधिष्ठित मूल्यांकन यांच्या माध्यमातून ग्रामीण पायाभूत सुविधा योजनांची कार्यक्षमता अधिक वाढविता येईल. त्यामुळे विदर्भातील समतोल व शाश्वत ग्रामीण पायाभूत सुविधा विकास हा केवळ प्रादेशिक विकासासाठीच नव्हे, तर महाराष्ट्राच्या सर्वसमावेशक आणि लोकाभिमुख विकासासाठीही अत्यावश्यक ठरतो.

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भारतातील स्पर्धात्मकता, आर्थिक विषमता आणि संविधानिक विकासदृष्टी

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गोषवारा (Abstract)

भारतातील आर्थिक विकासाच्या प्रक्रियेत स्पर्धात्मकता (Competitiveness) आणि आर्थिक विषमता (Economic Inequality) या दोन परस्परावलंबी संकल्पना आजच्या विकास चर्चेच्या केंद्रस्थानी आहेत. भारताने गेल्या तीन दशकांत उच्च आर्थिक वृद्धी, डिजिटल परिवर्तन, पायाभूत सुविधांचा विस्तार आणि जागतिक स्पर्धात्मकतेमध्ये उल्लेखनीय प्रगती साधली असली, तरी उत्पन्न, संपत्ती, शिक्षण, आरोग्य आणि रोजगाराच्या संधींमधील विषमता कायम असल्याचे विविध राष्ट्रीय व आंतरराष्ट्रीय अहवालांमधून स्पष्ट होते. प्रस्तुत संशोधनाचा उद्देश भारत सरकारच्या आर्थिक सल्लागार परिषदेच्या विनंती वरून 'Institute for Competitiveness' यांच्याद्वारे प्रकाशित State of Inequality in India Report (2022) आणि State of Competitiveness in India Report (2026) या अहवालांचे तुलनात्मक व चिकित्सक विश्लेषण करून स्पर्धात्मकता आणि विषमता यांतील परस्परसंबंधाचा अभ्यास करणे हा आहे. संशोधनासाठी वर्णनात्मक, तुलनात्मक आणि विश्लेषणात्मक पद्धतीचा अवलंब करण्यात आला असून दुय्यम माहितीचा उपयोग करण्यात आला आहे. अभ्यासातून असे निदर्शनास आले की उत्पादकता, नवोन्मेष, मानवी भांडवल आणि पायाभूत सुविधांमध्ये झालेली प्रगती भारताच्या स्पर्धात्मकतेस बळकटी देत असली, तरी सामाजिक व आर्थिक विषमता दीर्घकालीन स्पर्धात्मकतेस मर्यादा निर्माण करते. तसेच भारतीय संविधानातील कलम ३८ आणि कलम ३९ ही सामाजिक न्याय, संधींची समानता आणि संसाधनांच्या न्याय्य वितरणाद्वारे समावेशक व शाश्वत स्पर्धात्मकतेस घटनात्मक अधिष्ठान प्रदान करतात. त्यामुळे विकसित भारत २०४७ या ध्येयाच्या पूर्ततेसाठी उच्च आर्थिक वृद्धीबरोबरच समावेशक, न्याय्य आणि संविधानाधिष्ठित विकास धोरण स्वीकारणे आवश्यक असल्याचे या संशोधनातून अधोरेखित होते.

बीजशब्द (Keywords): *स्पर्धात्मकता, आर्थिक विषमता, समावेशक विकास, मानवी भांडवल, भारतीय संविधान, कलम ३८, कलम ३९, विकसित भारत २०४७.*

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१. प्रस्तावना

एकविसाव्या शतकात जागतिक अर्थव्यवस्थेमध्ये स्पर्धात्मकता (Competitiveness) आणि समावेशक विकास (Inclusive Development) या दोन संकल्पना आर्थिक धोरणांच्या केंद्रस्थानी आल्या आहेत. कोणत्याही राष्ट्राची स्पर्धात्मकता ही केवळ सकल देशांतर्गत उत्पन्नाच्या (GDP) वाढीवर अवलंबून नसून उत्पादकता, नवोन्मेष क्षमता, मानवी भांडवल, संस्थात्मक गुणवत्ता आणि सामाजिक स्थैर्य यांसारख्या घटकांवरही आधारित असते (Porter, 1990; World Economic Forum, 2019). त्याचवेळी आर्थिक वाढीचे लाभ समाजातील विविध घटकांमध्ये समानपणे वितरित न झाल्यास उत्पन्न, संपत्ती, शिक्षण, आरोग्य आणि संधींमधील विषमता वाढते, ज्यामुळे दीर्घकालीन आर्थिक विकासाच्या शाश्वततेवर प्रतिकूल परिणाम होतो (Stiglitz, 2012; Piketty, 2014).

भारताने गेल्या तीन दशकांत उदारीकरण, खाजगीकरण आणि जागतिकीकरण (LPG Reforms) स्वीकारल्यानंतर उच्च आर्थिक वृद्धीचा अनुभव घेतला आहे. जगातील सर्वाधिक वेगाने वाढणाऱ्या

अर्थव्यवस्थांपैकी एक म्हणून भारताची ओळख निर्माण झाली असून 'विकसित भारत २०४७', पाच ट्रिलियन डॉलर अर्थव्यवस्थेचे उद्दिष्ट, डिजिटल सार्वजनिक पायाभूत सुविधा, स्टार्टअप परिसंस्था आणि जागतिक मूल्यसाखळीत वाढता सहभाग यांमुळे भारताच्या स्पर्धात्मक क्षमतेबाबत सकारात्मक अपेक्षा व्यक्त केल्या जात आहेत (Government of India, 2024; IFC, 2026). तथापि, आर्थिक वृद्धीबरोबरच भारतामध्ये उत्पन्न व संपत्तीचे केंद्रीकरण, रोजगारातील असमानता, ग्रामीण-शहरी दरी, शिक्षण व आरोग्य सेवांमधील विषमता तसेच सामाजिक संधींच्या असमान वितरणाबाबत गंभीर प्रश्न उपस्थित होत आहेत. जागतिक आणि राष्ट्रीय स्तरावरील अनेक अभ्यासांनी भारतामधील आर्थिक विषमता सातत्याने वाढत असल्याचे निदर्शनास आणले आहे (World Inequality Lab, 2024; Oxfam, 2024). त्यामुळे स्पर्धात्मकता आणि विषमता या संकल्पना परस्परविरोधी आहेत की परस्परपूरक, हा प्रश्न विकास अर्थशास्त्रातील महत्त्वाचा संशोधन विषय बनला आहे.

या पार्श्वभूमीवर *'Institute for Competitiveness'* यांनी प्रकाशित केलेले *State of Inequality in India Report (2022)* आणि *State of Competitiveness in India Report (2026)* हे दोन अहवाल विशेष महत्त्वाचे ठरतात. पहिला अहवाल भारतातील बहुआयामी विषमतेचे विश्लेषण करतो, तर दुसरा अहवाल भारताच्या स्पर्धात्मक क्षमतेचे निर्धारण करणाऱ्या संरचनात्मक घटकांचे परीक्षण करतो. या दोन्ही अहवालांचे तुलनात्मक आणि चिकित्सक विश्लेषण केल्यास भारतीय विकास प्रक्रियेतील एक मूलभूत विरोधाभास स्पष्ट होतो; आर्थिक वृद्धी आणि स्पर्धात्मकतेत वाढ होत असली तरी तिचे लाभ समाजातील सर्व घटकांपर्यंत समान प्रमाणात पोहोचत नाहीत. आधुनिक विकास अर्थशास्त्रानुसार दीर्घकालीन स्पर्धात्मकता ही मानवी भांडवल, सामाजिक समावेशन, गुणवत्तापूर्ण शिक्षण, आरोग्य, कौशल्य विकास आणि संधींच्या न्याय्य वितरणावर आधारित असते (Acemoglu & Robinson, 2012; OECD, 2015). त्यामुळे सामाजिक विषमता कमी करणे हे केवळ कल्याणकारी धोरणाचे उद्दिष्ट नसून आर्थिक उत्पादकता आणि राष्ट्रीय स्पर्धात्मकता वृद्धिंगत करण्याची पूर्वअट मानली जाते. भारतीय संविधानातील राज्याच्या धोरणाच्या निदेशक तत्त्वांमध्ये, विशेषतः कलम ३८ आणि कलम ३९, सामाजिक व आर्थिक न्याय, संधींची समानता आणि संपत्तीचे न्याय्य वितरण यांना विशेष महत्त्व देण्यात आले आहे. त्यामुळे समता आणि स्पर्धात्मकता यांचा समन्वय हा केवळ आर्थिक धोरणाचा प्रश्न नसून भारतीय राज्यघटनेच्या विकासदृष्टीचाही अविभाज्य भाग आहे.

त्यादृष्टीने, प्रस्तुत संशोधन लेखामध्ये *State of Inequality in India Report (2022)* आणि *State of Competitiveness in India Report (2026)* या अहवालांचे तुलनात्मक व चिकित्सक विश्लेषण करण्यात आले आहे. तसेच स्पर्धात्मकता आणि विषमता यांतील परस्परसंबंधाचा विकास अर्थशास्त्रीय दृष्टिकोनातून अभ्यास करून भारतीय संविधानातील कलम ३८ आणि ३९ यांच्या आधारे समावेशक व शाश्वत विकासासाठी आवश्यक असलेल्या धोरणात्मक दिशेचे विश्लेषण करण्यात आले आहे.

२. स्टेट ऑफ इनइक्वॅलिटी इन इंडिया अहवालाचा आढावा

भारताने 1991 नंतरच्या आर्थिक सुधारणांमुळे उच्च आर्थिक वृद्धीचा अनुभव घेतला असला, तरी त्या वृद्धीचे लाभ समाजातील विविध सामाजिक व आर्थिक गटांमध्ये समान प्रमाणात वितरित झालेले नाहीत. परिणामी उत्पन्न, संपत्ती, शिक्षण, आरोग्य, रोजगार आणि मूलभूत सेवांच्या उपलब्धतेमध्ये लक्षणीय असमानता निर्माण झाली आहे (World Inequality Lab, 2024). या पार्श्वभूमीवर भारत सरकारच्या आर्थिक सल्लागार परिषदेच्या विनंती वरून *'Institute for Competitiveness'* यांनी प्रकाशित केलेला *State of Inequality in India Report (2022)* हा अहवाल भारतातील विषमतेचे बहुआयामी विश्लेषण करणारा एक महत्त्वपूर्ण अधिकृत दस्तऐवज आहे. हा अहवाल विषमतेकडे केवळ उत्पन्नातील तफावत म्हणून न पाहता, सामाजिक संधी, मानवी विकास, जीवनमान

आणि सार्वजनिक सेवांमधील असमान प्रवेश या व्यापक चौकटीतून तिचे विश्लेषण करतो. त्यामुळे हा अहवाल भारतातील विकास प्रक्रियेचे सामाजिक परिणाम समजून घेण्यासाठी महत्त्वपूर्ण संदर्भसाहित्य मानता येईल.

२.१ विषमतेची संकल्पना : बहुआयामी दृष्टिकोन

आधुनिक विकास अर्थशास्त्रात 'विषमता' (Inequality) ही संकल्पना केवळ उत्पन्नातील फरकापुरती मर्यादित नसून संधी, शक्तता (Capabilities) आणि संसाधनांच्या असमान वितरणाशी संबंधित मानली जाते (Sen, 1999; Atkinson, 2015). अमर्त्य सेन यांच्या शक्तता दृष्टिकोन (Capability Approach) नुसार व्यक्तींच्या वास्तविक विकासक्षमतेवर परिणाम करणाऱ्या सामाजिक, आर्थिक आणि संस्थात्मक अडथळ्यांमुळे विषमता निर्माण होते.

याच दृष्टिकोनाशी सुसंगतपणे या अहवालामध्ये विषमता ही उत्पन्न, शिक्षण, आरोग्य, रोजगार, निवास, पिण्याचे पाणी, स्वच्छता आणि सामाजिक संरक्षण यांसारख्या विविध घटकांच्या असमान वितरणातून निर्माण होणारी बहुआयामी प्रक्रिया असल्याचे स्पष्ट केले आहे (IFC, 2022). अहवालात विशेषतः जात, लिंग, धर्म, प्रदेश आणि सामाजिक स्तर यांच्या आधारे निर्माण होणाऱ्या संरचनात्मक विषमतेवर भर देण्यात आला आहे.

२.२ उत्पन्नातील विषमता

भारतातील आर्थिक विषमतेचा सर्वाधिक प्रकर्षाने दिसणारा पैलू म्हणजे उत्पन्नाचे असमान वितरण होय. अहवालात Periodic Labour Force Survey (PLFS) च्या आकडेवारीचा आधार घेत देशातील वेतन वितरणातील असमानता अधोरेखित करण्यात आली आहे.

अहवालानुसार देशातील सर्वोच्च 10 टक्के वेतनधारकांकडे एकूण वेतन उत्पन्नाचा सुमारे एकतृतीयांश हिस्सा केंद्रित असून, सर्वोच्च 1 टक्के गटाकडेही उत्पन्नाचा असमान प्रमाणात मोठा वाटा आहे (IFC, 2022). त्याउलट खालच्या 50 टक्के लोकसंख्येकडे राष्ट्रीय उत्पन्नातील तुलनेने अत्यल्प हिस्सा उपलब्ध आहे. विशेषतः 2019–20 मध्ये दरमहा सुमारे ₹25,000 वेतन मिळविणारी व्यक्ती देशातील सर्वोच्च 10 टक्के वेतनधारकांमध्ये मोडत असल्याचे निरीक्षण भारतीय श्रमबाजारातील व्यापक वेतनविषमतेचे निदर्शक मानले जाते. हे निष्कर्ष भारतातील वाढत्या उत्पन्न ध्रुवीकरणाकडे निर्देश करतात.

२.३ रोजगार व श्रमबाजारातील विषमता

श्रमबाजारातील असमानता ही भारतातील आर्थिक विषमतेचा महत्त्वपूर्ण घटक आहे. अहवालानुसार महिलांचा श्रमशक्ती सहभाग दर (Labour Force Participation Rate) तुलनेने कमी असून, उच्च शिक्षण घेतलेल्या युवकांमध्ये बेरोजगारीचे प्रमाण अधिक असल्याचे दिसून येते (IFC, 2022).

या परिस्थितीत शिक्षण आणि रोजगार यांच्यातील विसंगती (Skill Mismatch) स्पष्ट होते. उच्च शिक्षणाचा विस्तार झाला असला तरी त्यास अनुरूप गुणवत्तापूर्ण रोजगारनिर्मिती अपेक्षित प्रमाणात झालेली नाही. परिणामी शिक्षित बेरोजगारी, अल्परोजगार (Underemployment) आणि अनौपचारिक रोजगार यांसारख्या समस्या अधिक तीव्र झाल्या आहेत (ILO, 2024).

२.४ आरोग्यविषयक विषमता

मानवी विकासामध्ये आरोग्य हा मूलभूत घटक मानला जातो. तथापि भारतामध्ये सार्वजनिक आरोग्य सुविधांतील प्रादेशिक आणि सामाजिक तफावत अद्याप लक्षणीय आहे. अहवालानुसार कुपोषण, रक्तक्षय (Anaemia), बालमृत्यू तसेच आरोग्य सेवांवरील खिशातून करावा लागणारा खर्च (Out-of-Pocket Expenditure) हे गरीब कुटुंबांच्या आर्थिक असुरक्षिततेची प्रमुख कारणे आहेत (IFC, 2022).

राष्ट्रीय आरोग्य अभियान, आयुष्मान भारत आणि पोषण अभियान यांसारख्या योजनांमुळे काही प्रमाणात सुधारणा झाली असली तरी सार्वत्रिक, दर्जेदार आणि परवडणारी आरोग्यसेवा उपलब्ध करून देणे हे अजूनही भारतासमोरील महत्त्वाचे धोरणात्मक आव्हान आहे (WHO, 2024).

२.५ शिक्षणातील विषमता

शिक्षण हे सामाजिक गतिशीलतेचे (Social Mobility) सर्वात प्रभावी साधन मानले जाते. अहवालानुसार शैक्षणिक पायाभूत सुविधांमध्ये सुधारणा झाली असली तरी गुणवत्तापूर्ण शिक्षणाच्या उपलब्धतेमध्ये ग्रामीण-शहरी, सामाजिक आणि आर्थिक स्तरांनुसार मोठी तफावत कायम आहे (IFC, 2022).

शिक्षणातील ही असमानता पुढील काळात रोजगार, उत्पन्न आणि सामाजिक सक्षमीकरणावर परिणाम करते. परिणामी पिढ्यान्पिढ्या विषमता कायम राहण्याची शक्यता वाढते (UNDP, 2024).

२.६ सामाजिक संरक्षण आणि सार्वजनिक धोरणे

अहवालात सामाजिक संरक्षणाच्या विविध योजनांचा विषमता कमी करण्यातील सकारात्मक प्रभाव अधोरेखित करण्यात आला आहे. सार्वजनिक वितरण प्रणाली, थेट लाभ हस्तांतरण (DBT), राष्ट्रीय अन्नसुरक्षा योजना, आयुष्मान भारत आणि इतर सामाजिक सुरक्षा कार्यक्रमांमुळे अत्यंत गरीब घटकांना संरक्षण मिळाल्याचे नमूद करण्यात आले आहे (IFC, 2022).

तथापि, आधुनिक विकास अर्थशास्त्रानुसार सामाजिक संरक्षण योजना गरिबी कमी करण्यासाठी उपयुक्त असल्या तरी त्या विषमतेची संरचनात्मक कारणे दूर करण्यासाठी पुरेशा ठरत नाहीत. उत्पादन साधनांवरील प्रवेश, गुणवत्तापूर्ण शिक्षण, कौशल्य विकास आणि उत्पादक रोजगारनिर्मिती यांशिवाय दीर्घकालीन समावेशक विकास शक्य होत नाही (OECD, 2015).

२.७ चिकित्सक मूल्यांकन

State of Inequality in India Report (2022) हा भारतातील विषमतेचे अधिकृत आणि बहुआयामी विश्लेषण करणारा महत्त्वपूर्ण दस्तऐवज आहे. PLFS, NFHS आणि इतर अधिकृत सांख्यिकीय स्रोतांचा वापर करून अहवालाने उत्पन्न, शिक्षण, आरोग्य आणि रोजगारातील असमानतेचे वस्तुनिष्ठ चित्र सादर केले आहे. त्यामुळे सार्वजनिक धोरणे तयार करण्यासाठी हा अहवाल उपयुक्त आधार प्रदान करतो. तथापि, संशोधनात्मक दृष्टीकोनातून काही मर्यादा अधोरेखित करता येतात.

प्रथम, अहवाल मुख्यतः वेतन उत्पन्न (Wage Income) आणि अधिकृत नमुना सर्वेक्षणांवर आधारित असल्यामुळे संपत्तीतील विषमता (Wealth Inequality), भांडवली उत्पन्न, शेअर बाजारातील मालकी, वारसाहक्कातील संपत्ती आणि कॉर्पोरेट मालमत्तेचे केंद्रीकरण यांचे विश्लेषण मर्यादित स्वरूपात आढळते. आधुनिक विषमता अभ्यासामध्ये संपत्तीचे वितरण हे उत्पन्नापेक्षा अधिक प्रभावी निर्देशक मानले जाते (Piketty, 2014; World Inequality Lab, 2024). दुसरे म्हणजे, अहवालात सामाजिक संरक्षण योजनांच्या सकारात्मक परिणामांवर अधिक भर दिला असला तरी विषमतेची संरचनात्मक कारणे; उदा. भांडवलाचे केंद्रीकरण, कररचना, आर्थिक उदारीकरणाचे वितरणात्मक परिणाम आणि संस्थात्मक असमानता; यांचे तुलनेने सखोल विश्लेषण आढळत नाही. तिसरे म्हणजे, Oxfam (2024) आणि World Inequality Lab (2024) यांच्या अभ्यासांमध्ये भारतातील सर्वोच्च 1 टक्के लोकांकडे राष्ट्रीय संपत्तीचा अत्यंत मोठा हिस्सा केंद्रित असल्याचे स्पष्ट करण्यात आले आहे. या निष्कर्षांच्या तुलनेत सरकारी अहवालातील विश्लेषण तुलनेने संयमित (Conservative) स्वरूपाचे दिसून येते.

एकूणच, हा अहवाल भारतातील विषमतेचे अधिकृत बहुआयामी चित्र समजून घेण्यासाठी अत्यंत उपयुक्त दस्तऐवज असला, तरी भारतातील आर्थिक विषमतेचे संपूर्ण स्वरूप समजण्यासाठी World Inequality Lab, Oxfam आणि इतर स्वतंत्र संशोधन संस्थांच्या निष्कर्षांचा तुलनात्मक वापर करणे आवश्यक ठरते. अशा तुलनात्मक दृष्टिकोनातूनच भारतातील वाढती विषमता आणि तिचे दीर्घकालीन आर्थिक परिणाम अधिक व्यापकपणे समजून घेता येतात.

३. स्टेट ऑफ कॉम्पिटिटिव्हनेस इन इंडिया अहवालाचा आढावा

भारताने 'विकसित भारत २०४७' या दीर्घकालीन विकास उद्दिष्टाच्या दिशेने वाटचाल सुरू केली असताना आर्थिक

वृद्धीची गुणवत्ता, उत्पादकता, नवोन्मेष क्षमता आणि मानवी भांडवल यांचे महत्त्व अधिक अधोरेखित झाले आहे. या पार्श्वभूमीवर प्रकाशित झालेला *'State of Competitiveness in India Report (2026)'* हा अहवाल भारताच्या दीर्घकालीन स्पर्धात्मक क्षमतेचे विश्लेषण करणारा महत्त्वपूर्ण धोरणात्मक दस्तऐवज आहे. अहवालाचा मुख्य उद्देश भारताच्या विकासाचा वेग टिकवून ठेवण्यासाठी उत्पादकता, नवोन्मेष, वित्तीय प्रणाली, मानवी भांडवल, पायाभूत सुविधा आणि पर्यावरणीय शाश्वतता या घटकांची सुसंगत चौकट विकसित करणे हा आहे. आधुनिक विकास अर्थशास्त्रानुसार एखाद्या राष्ट्राची स्पर्धात्मकता ही केवळ कमी उत्पादन खर्च किंवा निर्यातवाढ यावर अवलंबून नसून उपलब्ध संसाधनांचे अधिक मूल्यनिर्मितीत (Value Creation) रूपांतर करण्याच्या क्षमतेवर आधारित असते (Porter, 1990). जागतिक आर्थिक मंच देखील स्पर्धात्मकतेची व्याख्या उत्पादकता, संस्थात्मक गुणवत्ता, नवोन्मेष आणि मानवी भांडवल यांच्या एकत्रित परिणामाच्या स्वरूपात करतो (WEF, 2019). याच विचारसरणीशी सुसंगतपणे प्रस्तुत अहवाल भारताच्या स्पर्धात्मकतेचे विश्लेषण उत्पादकता-केंद्रित (Productivity-led Competitiveness) दृष्टिकोनातून करतो.

३.१ स्पर्धात्मकतेची संकल्पना : उत्पादकता-केंद्रित दृष्टिकोन

अहवालानुसार स्पर्धात्मकता म्हणजे एखाद्या अर्थव्यवस्थेची श्रम, भांडवल, तंत्रज्ञान आणि संस्थात्मक संसाधनांचे अधिक कार्यक्षम उत्पादनक्षमतेत रूपांतर करण्याची क्षमता होय. ज्या अर्थव्यवस्थांमध्ये उत्पादकता अधिक असते त्या अर्थव्यवस्था उच्च उत्पन्न, गुणवत्तापूर्ण रोजगार, नवोन्मेष आणि दीर्घकालीन आर्थिक समृद्धी निर्माण करण्यास सक्षम असतात. त्यामुळे स्पर्धात्मकतेचा संबंध अल्पकालीन खर्च स्पर्धेपेक्षा दीर्घकालीन उत्पादकता वृद्धीशी अधिक निकटचा आहे (Porter, 1990; OECD, 2026). अहवालामध्ये भारताची तुलना अमेरिका, चीन, जर्मनी, जपान, ऑस्ट्रेलिया, इंडोनेशिया, व्हिएतनाम आणि ब्राझील यांसारख्या विकसित व उदयोन्मुख अर्थव्यवस्थांशी करण्यात आली आहे. या तुलनात्मक विश्लेषणातून भारताच्या सामर्थ्यांबरोबरच संरचनात्मक मर्यादाही स्पष्ट होतात.

३.२ भारताची स्पर्धात्मक स्थिती

अहवालानुसार भारताने गेल्या दशकात उच्च आर्थिक वृद्धी साधली असली तरी उत्पादकतेच्या दृष्टीने विकसित अर्थव्यवस्थांशी तसेच काही उदयोन्मुख देशांशी असलेली दरी अद्याप कायम आहे. प्रति कामगार उत्पादनामध्ये (Output per Worker) भारताने सातत्यपूर्ण प्रगती केली असली तरी चीन, इंडोनेशिया आणि व्हिएतनाम यांसारख्या देशांच्या तुलनेत भारताची उत्पादकता अद्याप कमी आहे. तथापि 2010 ते 2024 या कालावधीत भारताच्या उत्पादकतेतील वाढीचा दर अनेक विकसित अर्थव्यवस्थांपेक्षा अधिक असल्याचे अहवालात नमूद करण्यात आले आहे.

ही स्थिती भारतासमोर दुहेरी आव्हान निर्माण करते. एकीकडे आर्थिक वृद्धीचा वेग कायम ठेवणे आवश्यक आहे, तर दुसरीकडे त्या वृद्धीची गुणवत्ता सुधारून उत्पादनक्षमता वाढविणेही तितकेच आवश्यक आहे. त्यामुळे भारतासाठी "Growth with Productivity" हा भविष्यातील विकासाचा प्रमुख आधार ठरतो.

३.३ स्पर्धात्मकतेचे प्रमुख स्तंभ

अहवालात भारताच्या स्पर्धात्मकतेचे मूल्यांकन पुढील पाच परस्परावलंबी स्तंभांच्या आधारे करण्यात आले आहे.

(अ) वित्तीय प्रवेश (Access to Finance)

उत्पादनक्षम उद्योगांना विशेषतः सूक्ष्म, लघु व मध्यम उद्योगांना (MSMEs) परवडणारा आणि वेळेवर वित्तपुरवठा उपलब्ध होणे स्पर्धात्मकतेसाठी अत्यावश्यक मानले गेले आहे. वित्तीय समावेशनात भारताने उल्लेखनीय प्रगती केली असली तरी भांडवलाचे कार्यक्षम वितरण आणि दीर्घकालीन औद्योगिक गुंतवणुकीसाठी वित्तीय प्रणाली अधिक सक्षम करण्याची आवश्यकता अधोरेखित करण्यात आली आहे.

(आ) मानवी भांडवल (Human Capital)

भारताची सर्वात मोठी ताकद म्हणजे त्याची तरुण लोकसंख्या होय. तथापि केवळ लोकसंख्येचा आकार स्पर्धात्मकतेची हमी देत नाही. गुणवत्तापूर्ण शिक्षण, कौशल्य विकास, सार्वजनिक आरोग्य आणि महिलांचा श्रमबाजारातील सहभाग या घटकांवरच भविष्यातील उत्पादकता अवलंबून राहणार असल्याचे अहवाल स्पष्ट करतो. हा दृष्टिकोन मानवी भांडवल सिद्धांताशी (Becker, 1964) सुसंगत आहे.

(इ) नवोन्मेष क्षमता (Innovation Capacity)

भारताने स्टार्टअप परिसंस्था, डिजिटल सार्वजनिक पायाभूत सुविधा आणि उद्योजकतेच्या क्षेत्रात उल्लेखनीय प्रगती केली आहे. तथापि संशोधनाचे (R&D) व्यापारीकरण, पेटंट निर्मिती, उद्योग-विद्यापीठ सहकार्य आणि उच्च तंत्रज्ञान उत्पादन यामध्ये सुधारणा आवश्यक असल्याचे अहवाल नमूद करतो. ज्ञानाधारित अर्थव्यवस्थेमध्ये नवोन्मेष ही दीर्घकालीन स्पर्धात्मकतेची प्रमुख प्रेरक शक्ती मानली जाते.

(ई) भौतिक व डिजिटल पायाभूत सुविधा

अहवालानुसार महामार्ग, रेल्वे, बंदरे, डिजिटल सार्वजनिक पायाभूत सुविधा (UPI, Aadhaar इत्यादी) आणि लॉजिस्टिक्स क्षेत्रात भारताने मोठी गुंतवणूक केली आहे. तथापि डिजिटल उपलब्धता (Digital Access) आणि डिजिटल उत्पादकता (Digital Productivity) यांमध्ये अजूनही अंतर आहे. त्यामुळे तंत्रज्ञानाचा उद्योग आणि श्रम उत्पादकतेवर अधिक परिणाम घडवून आणणे आवश्यक ठरते.

(उ) पर्यावरणीय शाश्वतता

जागतिक स्तरावर हरित विकास आणि हवामान बदलाला प्रतिसाद देणारी अर्थव्यवस्था ही स्पर्धात्मकतेचा अविभाज्य घटक बनली आहे. स्वच्छ ऊर्जा, ऊर्जा कार्यक्षमता, कार्बन उत्सर्जनात घट आणि शाश्वत औद्योगिक विकास या घटकांना अहवालात भविष्यातील स्पर्धात्मकतेचे महत्त्वपूर्ण निर्धारक मानले आहे.

३.४ भारताच्या स्पर्धात्मकतेसाठी परिवर्तनात्मक दिशा

अहवाल भारताच्या स्पर्धात्मकतेसाठी चार मूलभूत परिवर्तनांची आवश्यकता अधोरेखित करतो—

- लोकसंख्येच्या आकारापासून कौशल्याधारित मानवी भांडवलाकडे.
- डिजिटल पोहोचेपासून डिजिटल उत्पादकतेकडे.
- मर्यादित नवोन्मेषापासून व्यापक नवोन्मेष परिसंस्थेकडे.
- पारंपरिक विकासापासून पर्यावरणीयदृष्ट्या शाश्वत विकासाकडे.

ही रूपांतरे भारताला मध्यम-उत्पन्न अर्थव्यवस्थेपासून उच्च उत्पादकता असलेल्या ज्ञानाधारित अर्थव्यवस्थेकडे नेणारी धोरणात्मक दिशा दर्शवितात.

३.५ चिकित्सक मूल्यांकन

हा भारताच्या स्पर्धात्मक क्षमतेचे आधुनिक, बहुआयामी आणि उत्पादकता-केंद्रित विश्लेषण करणारा महत्त्वपूर्ण दस्तऐवज आहे. उत्पादकता, मानवी भांडवल, वित्तीय प्रणाली, नवोन्मेष, पायाभूत सुविधा आणि पर्यावरणीय शाश्वतता यांमधील परस्परसंबंध स्पष्ट करण्याचा अहवालाचा प्रयत्न उल्लेखनीय आहे. तथापि संशोधनात्मक दृष्टीने या अहवालाच्या काही मर्यादा स्पष्टपणे दिसून येतात-

प्रथम, अहवाल उत्पादकता आणि आर्थिक कार्यक्षमतेवर अधिक भर देतो; परंतु सामाजिक विषमता, जातीय व लैंगिक भेदभाव, प्रादेशिक असमतोल आणि संस्थात्मक विषमता यांसारख्या संरचनात्मक घटकांचा स्पर्धात्मकतेवर होणारा परिणाम तुलनेने मर्यादित स्वरूपात चर्चिला आहे. आधुनिक विकास साहित्यामध्ये समावेशक स्पर्धात्मकता (Inclusive Competitiveness) ही दीर्घकालीन उत्पादकतेची पूर्वअट मानली जाते (OECD, 2026). दुसरे म्हणजे, अहवालात आर्थिक वृद्धी आणि उत्पादकता यांच्यातील संबंध स्पष्ट करण्यात आला असला तरी त्या वृद्धीचे वितरण (Distribution of Growth) आणि त्याचा सामाजिक समावेशनावर होणारा परिणाम यांचे विश्लेषण

तुलनेने अपुरे आहे. उच्च उत्पादकता जर केवळ उच्च कौशल्यधारक, मोठ्या उद्योगसमूह किंवा महानगरांपुरती मर्यादित राहिली, तर राष्ट्रीय स्पर्धात्मकतेबरोबरच सामाजिक विषमताही वाढू शकते. तिसरे म्हणजे, डिजिटल परिवर्तनावर भर देताना ग्रामीण-शहरी डिजिटल दरी, कौशल्यातील तफावत, संशोधनावरील सार्वजनिक खर्च आणि शिक्षणाच्या गुणवत्तेतील असमानता या मूलभूत प्रश्नांना अधिक सखोलपणे स्थान दिले असते, तर अहवालाची विश्लेषणात्मक व्याप्ती अधिक व्यापक झाली असती.

एकूणच, State of Competitiveness in India Report (2026) हा भारताच्या दीर्घकालीन विकास धोरणासाठी अत्यंत उपयुक्त संदर्भदस्तऐवज आहे. तथापि, भारताच्या स्पर्धात्मकतेचे वास्तव समजून घेण्यासाठी उत्पादकतेबरोबरच सामाजिक समावेशन, मानवी विकास, संस्थात्मक गुणवत्ता आणि आर्थिक न्याय यांचा समन्वित विचार करणे आवश्यक आहे. त्यामुळे स्पर्धात्मकता ही केवळ आर्थिक कार्यक्षमतेची संकल्पना नसून समावेशक विकासाशी निगडित सामाजिक-आर्थिक प्रक्रिया आहे.

४. स्पर्धात्मकता आणि विषमता यातील संबंधाचे चिकित्सक विश्लेषण

आधुनिक विकास अर्थशास्त्रामध्ये स्पर्धात्मकता आणि आर्थिक विषमता या दोन संकल्पना परस्परविरोधी नसून परस्परावलंबी मानल्या जातात. पारंपरिक नव-अभिजात अर्थशास्त्रानुसार स्पर्धात्मकता वाढल्यास उत्पादकता, गुंतवणूक आणि आर्थिक वृद्धी वाढते, ज्याचा लाभ कालांतराने समाजातील सर्व घटकांपर्यंत पोहोचतो. या दृष्टिकोनाला *'Trickle-down Theory'* म्हणून ओळखले जाते. तथापि गेल्या तीन दशकांतील जागतिक अनुभव तसेच आधुनिक संशोधनातून असे स्पष्ट झाले आहे की आर्थिक वृद्धीचे लाभ आपोआप सर्व समाजघटकांपर्यंत पोहोचत नाहीत; उलट योग्य सार्वजनिक धोरणांचा अभाव असल्यास स्पर्धात्मकतेबरोबर आर्थिक विषमताही वाढू शकते (Stiglitz, 2012; Piketty, 2014). याच कारणामुळे आधुनिक विकास साहित्यामध्ये 'समावेशक स्पर्धात्मकता' (Inclusive Competitiveness) ही संकल्पना उदयास आली आहे. या दृष्टिकोनानुसार कोणत्याही राष्ट्राची स्पर्धात्मकता दीर्घकालीन टिकून राहण्यासाठी आर्थिक वृद्धीबरोबर सामाजिक न्याय, मानवी विकास, संधींची समानता आणि संस्थात्मक समावेशकता यांची जोड आवश्यक असते (World Economic Forum, 2019; OECD, 2025).

४.१ स्पर्धात्मकतेमुळे विषमता वाढण्याची शक्यता : नवउदार आर्थिक व्यवस्थेचा अनुभव

1990 नंतर जागतिकीकरण, उदारीकरण आणि तंत्रज्ञानाधारित उत्पादन व्यवस्थेमुळे अनेक देशांमध्ये उत्पादकता आणि आर्थिक वृद्धीमध्ये लक्षणीय वाढ झाली. भारतात माहिती तंत्रज्ञान, डिजिटल अर्थव्यवस्था, वित्तीय सेवा, औषधनिर्मिती, दूरसंचार आणि सेवा क्षेत्राने जागतिक स्पर्धात्मकतेत उल्लेखनीय प्रगती केली. तथापि या विकासाचा लाभ सर्व सामाजिक गटांना समान प्रमाणात मिळालेला दिसत नाही.

उच्च कौशल्याधारित क्षेत्रांमध्ये कार्यरत व्यक्तींचे उत्पन्न आणि संपत्ती झपाट्याने वाढली; परंतु कृषी क्षेत्र, असंघटित कामगार, ग्रामीण लोकसंख्या आणि अल्पकौशल्यधारक कामगार यांचे उत्पन्न तुलनेने स्थिर राहिले. परिणामी आर्थिक वृद्धीचे रूपांतर अनेकदा "Jobless Growth", "Skill-biased Growth" किंवा "Unequal Growth" मध्ये झाले (ILO, 2024). थॉमस पिकेटी (2014) यांच्या $r > g$ सिद्धांतानुसार भांडवलावरील परतावा दर हा आर्थिक वृद्धीच्या दरापेक्षा जास्त राहिल्यास संपत्तीचे केंद्रीकरण वेगाने वाढते. भारतातील भांडवली बाजाराचा विस्तार, तंत्रज्ञानाधारित उद्योगांची वाढ आणि मालमत्तेच्या किंमतींमध्ये झालेली वाढ यांचा सर्वाधिक लाभ उच्च उत्पन्न गटांना मिळाल्याचे विविध संशोधनातून स्पष्ट झाले आहे (World Inequality Lab, 2024). त्यामुळे स्पर्धात्मकता वाढली असली तरी उत्पन्न आणि संपत्तीतील विषमताही वाढली आहे.

४.२ विषमता ही स्पर्धात्मकतेसाठी संरचनात्मक अडथळा

पारंपरिक विकास सिद्धांतामध्ये विषमता ही आर्थिक विकासाची अपरिहार्य किंमत मानली जात होती. परंतु

आधुनिक अनुभवजन्य संशोधनाने हा दृष्टिकोन मोठ्या प्रमाणावर बदलला आहे. अत्यधिक विषमता असलेली अर्थव्यवस्था दीर्घकालीन स्पर्धात्मकतेसाठी प्रतिकूल ठरते (OECD, 2015). यामागील प्रमुख कारण म्हणजे विषमता वाढल्यास समाजातील मोठा वर्ग गुणवत्तापूर्ण शिक्षण, आरोग्य, कौशल्य प्रशिक्षण, तंत्रज्ञान आणि वित्तीय सेवांपासून वंचित राहतो. परिणामी मानवी भांडवलाचा विकास मर्यादित राहतो, उत्पादकता घटते, नवोन्मेष क्षमता कमी होते आणि अंतर्गत बाजारपेठेची मागणीही संकुचित होते (Sen, 1999; Stiglitz, 2012).

या अहवालामध्ये भारताची सर्वात मोठी ताकद त्याची तरुण लोकसंख्या असल्याचे नमूद करण्यात आले आहे. परंतु ही लोकसंख्या गुणवत्तापूर्ण मानवी भांडवलामध्ये रूपांतरित झाली नाही, तर लोकसंख्यात्मक लाभांश (Demographic Dividend) हा आर्थिक भारामध्ये (Demographic Burden) परिवर्तित होऊ शकतो. दुसरीकडे हा अहवाल शिक्षण, आरोग्य आणि रोजगारातील असमानतेमुळे समाजातील मोठा वर्ग आर्थिक प्रक्रियेपासून वंचित राहत असल्याचे अधोरेखित करतो. या दोन्ही अहवालांचे तुलनात्मक विश्लेषण स्पष्टपणे दर्शविते की विषमता ही दीर्घकालीन स्पर्धात्मकतेसाठी मूलभूत अडथळा आहे.

४.३ मानवी भांडवल : स्पर्धात्मकता आणि समतेतील दुवा

गॅरी बेकर (1964) यांच्या मानवी भांडवल सिद्धांतानुसार शिक्षण, आरोग्य आणि कौशल्यांवरील गुंतवणूक ही उत्पादनक्षमतेतील गुंतवणूक मानली जाते. आधुनिक ज्ञानाधारित अर्थव्यवस्थेमध्ये मानवी भांडवल हा राष्ट्रीय स्पर्धात्मकतेचा सर्वात महत्त्वाचा निर्धारक घटक आहे. जर समाजातील प्रत्येक व्यक्तीला गुणवत्तापूर्ण शिक्षण, सार्वजनिक आरोग्य, डिजिटल कौशल्ये आणि वित्तीय सेवांमध्ये समान प्रवेश उपलब्ध झाला, तर त्यांची उत्पादकता वाढते, नवोन्मेष क्षमता विकसित होते आणि अर्थव्यवस्थेची एकूण स्पर्धात्मकता मजबूत होते.

याच कारणामुळे फिनलंड, डेन्मार्क, नॉर्वे आणि स्वीडन यांसारख्या नॉर्डिक देशांनी सामाजिक संरक्षण, सार्वत्रिक शिक्षण आणि सार्वजनिक आरोग्य यामध्ये मोठ्या प्रमाणावर गुंतवणूक करून उच्च उत्पादकता आणि उच्च स्पर्धात्मकता साध्य केली आहे (WEF, 2019; OECD, 2025). यावरून स्पष्ट होते की सामाजिक क्षेत्रातील सार्वजनिक गुंतवणूक ही खर्च नसून दीर्घकालीन आर्थिक स्पर्धात्मकतेसाठी केलेली धोरणात्मक गुंतवणूक आहे.

४.४ तंत्रज्ञान, कृत्रिम बुद्धिमत्ता आणि नव्या प्रकारची विषमता

चौथ्या औद्योगिक क्रांतीच्या पार्श्वभूमीवर कृत्रिम बुद्धिमत्ता (Artificial Intelligence), स्वयंचलन (Automation), बिग डेटा आणि डिजिटल प्लॅटफॉर्म अर्थव्यवस्था हे स्पर्धात्मकतेचे प्रमुख स्रोत बनले आहेत. परंतु या प्रक्रियेमुळे नवीन प्रकारची आर्थिक विषमता निर्माण होण्याची शक्यता वाढली आहे. उच्च तांत्रिक कौशल्य असलेल्या कामगारांची मागणी झपाट्याने वाढत असताना कमी कौशल्य असलेल्या कामगारांची रोजगारसंधी कमी होत आहे. डिजिटल साक्षरता, इंटरनेट प्रवेश आणि कृत्रिम बुद्धिमत्ता वापरण्याची क्षमता यांतील असमानता भविष्यातील उत्पन्नविषमतेचे प्रमुख कारण ठरू शकते (World Bank, 2024).

भारतीय संदर्भात ग्रामीण-शहरी डिजिटल दरी, गुणवत्तापूर्ण तांत्रिक शिक्षणातील तफावत आणि कृत्रिम बुद्धिमत्तेच्या वापरातील असमानता ही स्पर्धात्मकतेसाठी गंभीर आव्हाने आहेत. त्यामुळे डिजिटल स्पर्धात्मकतेबरोबर डिजिटल समावेशन (Digital Inclusion) सुनिश्चित करणे अत्यावश्यक आहे.

४.५ प्रादेशिक विषमता आणि राष्ट्रीय स्पर्धात्मकता

भारतातील आर्थिक स्पर्धात्मकतेचा लाभ सर्व राज्यांमध्ये समान प्रमाणात वितरित झालेला नाही. महाराष्ट्र, गुजरात, कर्नाटक, तमिळनाडू आणि तेलंगणा यांसारखी राज्ये औद्योगिकीकरण, निर्यात, डिजिटल अर्थव्यवस्था आणि नवोन्मेषामध्ये आघाडीवर आहेत; तर बिहार, झारखंड, ओडिशा आणि काही ईशान्येकडील राज्ये अद्याप मानवी विकास, औद्योगिकीकरण आणि उत्पादकतेच्या बाबतीत मागे आहेत (NITI Aayog, 2024).

ही प्रादेशिक विषमता राष्ट्रीय स्पर्धात्मकतेलाही मर्यादित करते. कारण देशातील सर्व प्रदेशांचा समतोल विकास झाल्याशिवाय अंतर्गत बाजारपेठेची क्षमता, श्रम उत्पादकता आणि गुंतवणुकीचे वितरण अपेक्षित स्तरावर पोहोचू शकत नाही. म्हणूनच संतुलित प्रादेशिक विकास हा राष्ट्रीय स्पर्धात्मकतेचा महत्त्वपूर्ण आधारस्तंभ मानला पाहिजे.

४.६ समावेशक स्पर्धात्मकता : भारतासाठी विकासाचा पर्यायी मार्ग

आधुनिक विकास धोरणामध्ये समावेशक स्पर्धात्मकता (Inclusive Competitiveness) ही आर्थिक कार्यक्षमता आणि सामाजिक न्याय यांचा समन्वय साधणारी संकल्पना म्हणून उदयास आली आहे. या दृष्टिकोनानुसार आर्थिक वृद्धीचे अंतिम उद्दिष्ट केवळ GDP वाढ नसून मानवी विकास, सामाजिक गतिशीलता, रोजगारनिर्मिती आणि संधींची समानता असावे (World Economic Forum, 2019).

भारतीय संदर्भात समावेशक स्पर्धात्मकतेसाठी पुढील धोरणात्मक उपाय आवश्यक ठरतात—

- सार्वत्रिक आणि गुणवत्तापूर्ण शिक्षण व्यवस्था.
- सर्वांसाठी परवडणारी आरोग्यसेवा.
- कौशल्याधारित रोजगारनिर्मिती.
- महिलांचा श्रमशक्ती सहभाग वाढविणे.
- MSME क्षेत्राचे बळकटीकरण.
- डिजिटल व वित्तीय समावेशन.
- संशोधन व नवोन्मेषातील सार्वजनिक गुंतवणूक.
- संतुलित प्रादेशिक विकास.
- सामाजिक सुरक्षा व्यवस्थेचा विस्तार.

ही धोरणे आर्थिक उत्पादकता आणि सामाजिक समता या दोन्ही उद्दिष्टांची एकाच वेळी पूर्तता करतात. 'State of Inequality in India Report (2022)' आणि 'State of Competitiveness in India Report (2026)' या दोन्ही अहवालांचे तुलनात्मक विश्लेषण स्पष्टपणे दर्शविते की स्पर्धात्मकता आणि विषमता या एकमेकांच्या विरोधात नसून एकाच विकास प्रक्रियेच्या परस्परपूरक बाजू आहेत. अल्पकालीन काळात बाजाराधारित स्पर्धेमुळे काही प्रमाणात विषमता वाढू शकते; तथापि दीर्घकालीन आर्थिक स्पर्धात्मकतेसाठी शिक्षण, आरोग्य, कौशल्य, सामाजिक संरक्षण आणि संधींचे न्याय्य वितरण यांमध्ये सार्वजनिक गुंतवणूक अपरिहार्य आहे. यामुळे असे प्रतिपादन करता येते की विषमता कमी करणे हे केवळ सामाजिक न्यायाचे उद्दिष्ट नसून राष्ट्रीय उत्पादकता, नवोन्मेष क्षमता आणि जागतिक स्पर्धात्मकता वृद्धिंगत करण्याचे मूलभूत आर्थिक धोरण आहे. म्हणूनच भारताच्या "विकसित भारत २०४७" या ध्येयाची पूर्तता उच्च आर्थिक वृद्धीबरोबरच समावेशक, न्याय्य आणि संविधानाधिष्ठित स्पर्धात्मक विकास मॉडेल स्वीकारल्याशिवाय शक्य होणार नाही.

५. भारतीय संविधानातील कलम ३८ आणि ३९ : विषमता कमी करून स्पर्धात्मकता वाढविण्याचे घटनात्मक अधिष्ठान

भारतीय अर्थव्यवस्थेच्या विकास प्रक्रियेत आर्थिक स्पर्धात्मकता (Economic Competitiveness) आणि सामाजिक न्याय (Social Justice) या दोन संकल्पना परस्परपूरक स्वरूपाच्या आहेत. आधुनिक विकास अर्थशास्त्रात उत्पादकता, नवोन्मेष आणि आर्थिक वृद्धी यांना जितके महत्त्व दिले जाते, तितकेच मानवी विकास, सामाजिक समावेशन आणि संधींची समानता यांनाही महत्त्व प्राप्त झाले आहे (Sen, 1999; Stiglitz, 2012). या पार्श्वभूमीवर भारतीय संविधानातील राज्याच्या धोरणाच्या निदेशक तत्त्वांना (Directive Principles of State Policy) केवळ सामाजिक न्यायाची मार्गदर्शक तत्त्वे म्हणून न पाहता समावेशक आर्थिक विकासाच्या घटनात्मक आराखड्याच्या स्वरूपात पाहणे आवश्यक ठरते.

प्रस्तुत संशोधनात यापूर्वी केलेल्या विश्लेषणावरून स्पष्ट होते की State of Inequality in India Report (2022) भारतातील वाढत्या आर्थिक व सामाजिक विषमतेकडे लक्ष वेधतो, तर State of Competitiveness in India Report (2026) मानवी भांडवल, उत्पादकता, नवोन्मेष आणि संस्थात्मक गुणवत्तेला राष्ट्रीय स्पर्धात्मकतेचा पाया मानतो. या दोन्ही

अहवालांचे एकत्रित विश्लेषण सूचित करते की सामाजिक समतेशिवाय शाश्वत स्पर्धात्मकता शक्य नाही. याच तत्त्वाला भारतीय संविधानातील कलम ३८ आणि ३९ घटनात्मक अधिष्ठान प्रदान करतात.

५.१ भारतीय संविधानाची विकासदृष्टी : कल्याणकारी राज्याची संकल्पना

भारतीय संविधानाची रचना उदारमतवादी (Liberal) आणि सामाजिक लोकशाही (Social Democratic) या दोन्ही मूल्यांचा समन्वय साधणारी आहे. संविधान निर्मात्यांनी आर्थिक विकासाचा उद्देश केवळ उत्पादनवाढ नसून सामाजिक, आर्थिक आणि राजकीय न्यायावर आधारित समाजव्यवस्था उभारणे हा असल्याचे स्पष्ट केले आहे (Austin, 1966).

घटनेच्या प्रस्तावनेमध्ये (Preamble) न्याय (Justice), समता (Equality), स्वातंत्र्य (Liberty) आणि बंधुता (Fraternity) ही मूलभूत मूल्ये अधोरेखित करण्यात आली आहेत. याच मूल्यांची धोरणात्मक अभिव्यक्ती राज्याच्या धोरणाच्या निदेशक तत्त्वांमध्ये (Part IV) आढळते. न्यायालयीन अंमलबजावणीस पात्र नसली तरी ही तत्त्वे शासनाच्या आर्थिक व सामाजिक धोरणांना घटनात्मक दिशा देतात (Basu, 2023).

आधुनिक सांविधानिक अर्थशास्त्रात (Constitutional Economics) या शाखेनुसार संविधान हे केवळ राजकीय संस्थांचे दस्तऐवज नसून आर्थिक संसाधनांचे वितरण, बाजारव्यवस्थेचे नियमन आणि सामाजिक न्यायाची चौकट निश्चित करणारे मूलभूत धोरणात्मक साधन आहे (Buchanan, 1990). या दृष्टिकोनातून कलम ३८ आणि ३९ यांना भारतीय विकास मॉडेलचे घटनात्मक आधारस्तंभ मानता येते.

५.२ कलम ३८ : सामाजिक, आर्थिक आणि राजकीय न्यायाचा घटनात्मक पाया

भारतीय संविधानातील कलम ३८ राज्याला अशी सामाजिक व्यवस्था निर्माण करण्याचा निर्देश देते की ज्यामध्ये सामाजिक, आर्थिक आणि राजकीय न्याय राष्ट्रीय जीवनातील सर्व संस्थांना प्रेरणा देईल. तसेच कलम ३८(२) नुसार राज्याने व्यक्ती, प्रदेश आणि सामाजिक गटांमधील उत्पन्न, दर्जा, सुविधा आणि संधींमधील विषमता कमी करण्यासाठी प्रयत्न करणे आवश्यक आहे. या तरतुदीचा आधुनिक विकास अर्थशास्त्राच्या संदर्भात विचार केल्यास ती समवेशी वृद्धी आणि समवेशी स्पर्धात्मकता या संकल्पनांशी पूर्णपणे सुसंगत असल्याचे दिसून येते. आधुनिक स्पर्धात्मकतेचा पाया केवळ भांडवल किंवा तंत्रज्ञान नसून शिक्षण, आरोग्य, कौशल्य आणि सामाजिक समावेशनावर आधारित मानवी भांडवल आहे (WEF, 2019).

जर समाजातील मोठा वर्ग शिक्षण, आरोग्य, वित्तीय सेवा आणि रोजगाराच्या संधींपासून वंचित राहिला, तर राष्ट्रीय उत्पादकता कमी होते, नवोन्मेष मर्यादित राहतो आणि स्पर्धात्मकतेचा पाया कमकुवत होतो. त्यामुळे कलम ३८ मधील विषमता कमी करण्याची घटनात्मक जबाबदारी ही केवळ सामाजिक न्यायाचे उद्दिष्ट नसून दीर्घकालीन आर्थिक स्पर्धात्मकतेची पूर्वअट आहे.

५.३ कलम ३९ : आर्थिक लोकशाही आणि संसाधनांचे न्याय्य वितरण

भारतीय संविधानातील कलम ३९ राज्याच्या आर्थिक धोरणाची मूलभूत दिशा निश्चित करते. या कलमानुसार राज्याने अशी धोरणे अवलंबावीत की-

- प्रत्येक नागरिकाला उपजीविकेची पुरेशी साधने उपलब्ध होतील.
- समाजातील भौतिक संसाधनांचे वितरण सामूहिक हिताच्या दृष्टीने केले जाईल.
- संपत्ती आणि उत्पादन साधनांचे अत्यधिक केंद्रीकरण टाळले जाईल.
- समान कामासाठी समान वेतन सुनिश्चित केले जाईल.
- कामगारांचे आरोग्य आणि मानवी प्रतिष्ठेचे संरक्षण केले जाईल.
- बालकांच्या सर्वांगीण विकासासाठी अनुकूल वातावरण निर्माण केले जाईल.

या तरतुदी आर्थिक लोकशाही (Economic Democracy) आणि वितरणात्मक न्याय (Distributive Justice) या संकल्पनांचे घटनात्मक

प्रतिबिंब आहेत. विशेषतः कलम ३९ (ब) आणि ३९ (क) मधील संसाधनांचे न्याय्य वितरण आणि संपत्तीच्या केंद्रीकरणावर नियंत्रण या तरतुदी आजच्या वाढत्या आर्थिक विषमतेच्या पार्श्वभूमीवर अत्यंत महत्त्वपूर्ण ठरतात. थॉमस पिकेटी (2014) यांनी दाखवून दिल्याप्रमाणे, संपत्तीचे अत्यधिक केंद्रीकरण दीर्घकालीन आर्थिक असमतोल निर्माण करते. त्याचप्रमाणे जोसेफ स्टिग्लिट्झ (2012) यांच्या मते विषमता ही केवळ सामाजिक अन्याय नसून आर्थिक कार्यक्षमतेलाही बाधा आणते. या दोन्ही विचारांशी भारतीय संविधानातील कलम ३९ मूलतः सुसंगत आहे.

५.४ संविधान आणि राष्ट्रीय स्पर्धात्मकता : आधुनिक पुनर्व्याख्या

State of Competitiveness in India Report (2026) मध्ये मानवी भांडवल, वित्तीय प्रवेश, नवोन्मेष, डिजिटल पायाभूत सुविधा आणि पर्यावरणीय शाश्वतता यांना राष्ट्रीय स्पर्धात्मकतेचे प्रमुख आधारस्तंभ मानले आहे. परंतु या सर्व घटकांचा लाभ समाजातील सर्व स्तरांपर्यंत पोहोचल्याशिवाय राष्ट्रीय उत्पादकता अपेक्षित स्तरावर पोहोचू शकत नाही. याच ठिकाणी संविधानातील कलम ३८ आणि ३९ यांचे आर्थिक महत्त्व स्पष्ट होते.

उदाहरणार्थ-

- **सार्वत्रिक गुणवत्तापूर्ण शिक्षण** हे कलम ३८ मधील समतेच्या उद्दिष्टाची पूर्तता करते आणि उच्च दर्जाचे मानवी भांडवल निर्माण करते.
- **महिलांना समान रोजगार आणि समान वेतन** उपलब्ध करून देणे हे कलम ३९(ड) चे पालन असून श्रमशक्ती सहभाग वाढवून राष्ट्रीय उत्पादकता वृद्धिंगत करते.
- **MSME क्षेत्राला वित्तीय सहाय्य** उपलब्ध करून देणे हे संसाधनांचे व्यापक वितरण सुनिश्चित करते आणि नवोन्मेषाला चालना देते.
- **ग्रामीण व मागास भागातील पायाभूत सुविधांमध्ये गुंतवणूक** प्रादेशिक विषमता कमी करून राष्ट्रीय स्पर्धात्मकता मजबूत करते.
- **सार्वजनिक आरोग्य आणि सामाजिक संरक्षण** मानवी भांडवलाची गुणवत्ता वाढवून श्रम उत्पादकतेत भर घालतात.

या उदाहरणांवरून स्पष्ट होते की भारतीय संविधानातील निदेशक तत्त्वे आधुनिक समावेशक स्पर्धात्मकतेच्या चौकटीची घटनात्मक अभिव्यक्ती आहेत.

५.५ सर्वोच्च न्यायालयाची भूमिका

भारतीय सर्वोच्च न्यायालयाने अनेक निर्णयांमध्ये निदेशक तत्त्वांना संविधानाच्या मूलभूत तत्त्वज्ञानाचा अविभाज्य भाग मानले आहे. *Kesavananda Bharati v. State of Kerala (1973)* या ऐतिहासिक प्रकरणात न्यायालयाने संविधानातील मूलभूत रचनेचा (Basic Structure) सिद्धांत मांडताना सामाजिक न्यायाच्या मूल्यांना विशेष महत्त्व दिले. त्यानंतर *Minerva Mills Ltd. v. Union of India (1980)* या प्रकरणात न्यायालयाने मूलभूत अधिकार आणि निदेशक तत्त्वे यांच्यातील समतोल हा भारतीय संविधानाचा मूलाधार असल्याचे स्पष्ट केले. न्यायालयाने असेही नमूद केले की सामाजिक व आर्थिक न्यायाशिवाय लोकशाहीची संकल्पना अपूर्ण राहते.

या निर्णयांवरून स्पष्ट होते की भारतीय संविधान आर्थिक विकासाला प्रोत्साहन देत असताना त्या विकासाचे लाभ न्याय्य आणि समतोल पद्धतीने समाजापर्यंत पोहोचावेत, अशी अपेक्षा व्यक्त करते.

५.६ विकसित भारत २०४७ : संविधानाधिष्ठित स्पर्धात्मक विकास प्रारूप

भारताने विकसित राष्ट्र होण्याचे ध्येय साध्य करण्यासाठी केवळ GDP वृद्धीवर भर देणे पुरेसे ठरणार नाही. आधुनिक विकासाचा पाया उत्पादकता, मानवी भांडवल आणि सामाजिक समावेशन यांच्या समन्वयात आहे.

भारतीय संविधानाच्या कलम ३८ आणि ३९ च्या प्रकाशात पुढील धोरणात्मक बाबींना प्राधान्य देणे आवश्यक ठरेल -

- सार्वत्रिक आणि गुणवत्तापूर्ण शिक्षण.
- सर्वांसाठी परवडणारी आरोग्यसेवा.

- कौशल्याधारित रोजगारनिर्मिती.
- महिलांचे आर्थिक सक्षमीकरण.
- संतुलित प्रादेशिक विकास.
- डिजिटल आणि वित्तीय समावेशन.
- MSME आणि सामाजिक उद्योजकतेला प्रोत्साहन.
- संशोधन व नवोन्मेषामध्ये सार्वजनिक गुंतवणूक.
- सामाजिक सुरक्षा व्यवस्थेचा विस्तार.
- संपत्ती आणि संधींच्या अत्यधिक केंद्रीकरणावर प्रभावी नियंत्रण.

ही धोरणे प्रत्यक्षात संविधानातील निदेशक तत्त्वांची आधुनिक आर्थिक पुनर्व्याख्या आहेत.

६. समारोप

प्रस्तुत संशोधनातून असे स्पष्ट होते की स्पर्धात्मकता आणि आर्थिक विषमता या परस्परविरोधी नसून परस्परावलंबी आर्थिक प्रक्रिया आहेत. आर्थिक स्पर्धात्मकता ही उत्पादकता, नवोन्मेष, तांत्रिक प्रगती आणि जागतिक बाजारपेठेतील कार्यक्षमतेवर आधारित असली, तरी तिची दीर्घकालीन शाश्वतता मानवी भांडवल, सामाजिक समावेशन आणि संधींच्या न्याय्य वितरणावर अवलंबून असते. त्यामुळे आर्थिक वृद्धीबरोबर तिचे लाभ समाजातील सर्व घटकांपर्यंत समानपणे पोहोचणे आवश्यक आहे. या शोधनिबंधात *State of Inequality in India Report (2022)* आणि *State of Competitiveness in India Report (2026)* या दोन महत्त्वपूर्ण अहवालांचे तुलनात्मक व चिकित्सक विश्लेषण करण्यात आले असून त्यातून असे दिसून येते की भारताने उत्पादकता, डिजिटल पायाभूत सुविधा, नवोन्मेष आणि आर्थिक वृद्धीमध्ये उल्लेखनीय प्रगती साधली असली, तरी उत्पन्न, संपत्ती, शिक्षण, आरोग्य, कौशल्य विकास आणि रोजगाराच्या संधींमधील विषमता अद्याप कायम आहे. ही विषमता केवळ सामाजिक न्यायालाच बाधा आणत नाही, तर राष्ट्रीय उत्पादकता, मानवी भांडवल आणि दीर्घकालीन स्पर्धात्मकतेलाही मर्यादा घालते. म्हणूनच समावेशक स्पर्धात्मकता (Inclusive Competitiveness) ही आधुनिक विकासाची अपरिहार्य अट ठरते.

अभ्यासातून हेही स्पष्ट होते की भारतीय संविधानातील कलम ३८ आणि कलम ३९ ही केवळ राज्याच्या धोरणाच्या निदेशक तत्त्वांपुरती मर्यादित नसून समावेशक आर्थिक विकासाची घटनात्मक चौकट प्रदान करतात. सामाजिक व आर्थिक न्याय, संधींची समानता, संसाधनांचे न्याय्य वितरण आणि संपत्तीच्या केंद्रीकरणावर नियंत्रण ही या कलमांची मूलभूत उद्दिष्टे असून ती आधुनिक समावेशक विकासाच्या संकल्पनांशी सुसंगत आहेत. 'विकसित भारत २०४७' हे ध्येय साध्य करण्यासाठी केवळ GDP वृद्धीवर भर न देता शिक्षण, सार्वजनिक आरोग्य, कौशल्य विकास, महिला सक्षमीकरण, MSME क्षेत्र, संशोधन व नवोन्मेष, डिजिटल व वित्तीय समावेशन आणि संतुलित प्रादेशिक विकास यांमध्ये व्यापक सार्वजनिक गुंतवणूक करणे आवश्यक आहे. निष्कर्षतः, सामाजिक समतेवर आधारित स्पर्धात्मक अर्थव्यवस्थाच भारताच्या शाश्वत, समावेशक आणि संविधाननिष्ठ विकासाचा पाया ठरू शकते.

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