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Editorial

Jamshedpur Research Review
Year 14, Volume 5, Issue 81
Interdisciplinary Inquiry for a Multipolar, Digitally Transforming, and Climate-Constrained World

1 September – October 2026

The present issue of *Jamshedpur Research Review* appears at a defining moment in the contemporary world. The international system is undergoing a visible transition from established patterns of unipolarity towards a more complex and contested multipolar order. At the same time, digital technologies and artificial intelligence are transforming economies, institutions, education, employment and everyday social relations. Climate change is reshaping development priorities, while India's aspiration of **Viksit Bharat @ 2047** raises fundamental questions about growth, equity, institutional capacity, technological transformation and sustainability. These developments cannot be understood in isolation. Fiscal policy influences developmental capacity; climate change affects migration and livelihoods; technological transformation alters employment and education; geopolitical tensions influence energy, trade and supply chains; and digitalisation creates new opportunities alongside questions of privacy, inclusion and institutional accountability. The contributions in this issue engage with these interconnected realities from economic, political, strategic, educational, sociological, legal, literary and physical-education perspectives.

Macroeconomics, Public Finance and Sustainable Development

The issue opens important discussions on India's fiscal and developmental trajectory. Shrikant Shekhar examines the relationship between India's fiscal deficit and economic growth, drawing attention to the implications of persistent fiscal pressures for long-term development. Aparna Kumari places the macroeconomic dimensions of Viksit Bharat @ 2047 within the broader context of structural transformation, employment, energy security and the transition towards a low-carbon economy.

The growing importance of sustainable finance is examined through Pinki Kumari's study of green bonds in comparison with conventional bonds. The analysis contributes to the continuing debate over whether environmental objectives and financial considerations can be pursued simultaneously. At the grassroots level, Rina Mahato's study of NABARD-supported agricultural finance in Ranchi District connects institutional credit with agricultural productivity, income and rural development. Taken together, these studies remind us that economic development is not simply a question of aggregate growth. It also concerns the quality of expenditure, access to finance, sustainability of investment and the distribution of developmental opportunities.

Global Politics, Geo-Economics and Strategic Transformation

The changing structure of international power constitutes another major theme of this issue. Dr. R. S. P. Singh examines multipolarity, geo-economics, technological nationalism and the reorganisation of global supply chains. These developments demonstrate how economic instruments, technological capabilities and strategic interests have become increasingly interconnected.

The study of the US–Iran conflict and its global repercussions examines the wider implications of conflict for international relations, India and the emerging geo-economic environment. The India–Indonesia study by Sukhjeet Singh and Harmanpreet Kaur focuses on maritime convergence and strategic partnership in the Indian Ocean, an increasingly significant arena of regional interaction. The discussion of India's No First Use nuclear policy further extends the strategic dimension of the issue by examining questions of credibility and adaptation in a changing security environment. Collectively, these contributions highlight the growing importance of combining diplomatic, economic, technological, maritime and security perspectives when analysing India's position in the emerging international order.

Education, Skills and Human Capital

Education remains central to India's developmental aspirations. Jetendra Nath Uthansingh's gender-comparative study of learning-style preferences and academic performance questions simplistic assumptions about instructional preferences and academic achievement. Such findings are relevant to contemporary debates on learner-centred education and evidence-based pedagogy. The study by Lisamayee Das and Prof. Ramakanta Mohalik examines 21st-century skills among secondary-school students in Odisha, providing evidence relevant to the changing requirements of education in an increasingly technology-driven economy.

The issue also includes an examination of minority welfare schemes by Dr. Md. Raghib Baber and colleagues. By connecting policy interventions with educational and developmental concerns, the study contributes to the broader question of how public policy can address persistent inequalities in access and opportunity. The larger message emerging from these contributions is clear: human capital development requires more than access to formal education. It requires skills, adaptability, inclusion and the ability to participate meaningfully in a rapidly changing economy.

Society, Gender, Tribal Communities and Inclusion

Several contributions turn attention towards communities and social groups whose experiences are often inadequately represented in macro-level development narratives.

Gautam Kumar and Dr. Sanhita Sucharita examine climate-induced labour mobility in rural Bihar, bringing together environmental change, livelihood insecurity and labour movement. Dr. Gyan Prakash studies social media among tribal rural youth in Jharkhand, focusing on employment aspirations, social identity and changing life-values. The literary-critical contribution by Nisha Chaudhary and colleagues examines the intersection of gender, caste and psychological trauma in *The Prison We Broke*, demonstrating how literary texts can provide important spaces for examining structures of inequality and lived experience. Raul Habil's synthesis of research on women's decision-making autonomy, with particular reference to Jharkhand, further strengthens the gender dimension of the issue. Shiv Kumar Mahto and Dr. Dilip Prasad examine the impact of PM POSHAN on tribal households in Jharkhand, bringing questions of nutrition, education, household welfare and social inclusion into the discussion.

These studies collectively reinforce an important proposition: development cannot be measured adequately through economic indicators alone. Its consequences must also be assessed through changes in dignity, agency, opportunity, social mobility and inclusion.

Corporate Governance, Digitalisation and Financial Behaviour

The transformation of institutions is also visible in the corporate and digital domains. Dr. Ranjit Kumar Paswan examines board gender diversity and corporate performance among BSE-listed companies, contributing to the continuing discussion on corporate governance and representation.

Prakash Kumar Thakur and Dr. Sunil Kumar examine consumer satisfaction and the continuance of digital payments in rural markets. The subject is particularly relevant to India's expanding digital financial ecosystem, where technological adoption depends not only on availability but also on trust, convenience and user experience. Dr. Nitesh Raj and colleagues investigate expenditure patterns, financial vulnerability and social-security penetration among private-school teachers. Their study draws attention to the financial realities of a significant segment of the service sector and raises broader questions concerning economic security and social protection.

Law, Privacy and Human Development

The digital transformation of society inevitably raises questions about rights and regulation. Baljinder Kaur's contribution on the right to privacy in the digital era examines the legal and ethical challenges associated with data, surveillance and rapidly expanding digital platforms. Complementing the social-science contributions, Kalicharan Ghosh and Dr. Najmuddin Khan examine achievement motivation and health-related fitness among male football players from Bankura and Howrah districts of West Bengal. The study adds a valuable physical-education perspective to the issue by connecting psychological motivation with physical development and athletic performance.

An Interdisciplinary Perspective

What gives this issue its distinctive character is not simply the diversity of subjects but their underlying interconnectedness. Fiscal policy is linked to development; development is linked to inclusion; inclusion is influenced by education, gender and geography; digitalisation affects finance as well as privacy; climate change affects livelihoods and migration; and geopolitical tensions increasingly influence energy, technology, trade and supply chains. In this sense, interdisciplinarity is not merely an editorial classification. It is a methodological necessity for understanding the contemporary world. For India, the challenges of the coming decades will not fall neatly within disciplinary boundaries. The pursuit of Viksit Bharat @ 2047 will require simultaneous attention to economic resilience, technological capability, social inclusion, environmental sustainability, institutional quality and strategic autonomy. Research therefore has a responsibility not merely to describe change but to investigate its causes, consequences and possible pathways with intellectual rigour and empirical sensitivity.

The Editorial Board is pleased to present this issue as a contribution to that continuing conversation. We express our appreciation to all the authors for their scholarly contributions and to the reviewers whose critical observations have helped strengthen the quality of the published research.

Jamshedpur Research Review remains committed to creating a forum in which diverse disciplines, perspectives and methodologies can meet. We hope that the research presented in this issue will stimulate further inquiry, informed debate and meaningful engagement with the complex challenges confronting India and the wider world.

Dr. Mithilesh Kumar Choubey
Editor-in-Chief
Jamshedpur Research Review

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INDIA'S RISING FISCAL DEFICIT AND ITS IMPACT ON ECONOMIC GROWTH

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Abstract:

For this research paper, we have taken data of 41 years which is from 1980- 2020. We have confirmed through a planned linear regression model that the independent variable revenue expenditure and capital expenditure are important in bringing about a change in the fiscal deficit. That is, it also has a significant impact on GDP. Thus, it is clear from the study that expenditure has a positive relationship with the fiscal deficit and the fiscal deficit has a negative relationship with the GDP (Economic Growth). The main objective of this paper is to determine the effect of expenditure on fiscal deficit and the effect of fiscal deficit on GDP. Linear regression model with least squares has been used to conduct this study. E.g., Durbin Watson (DW) test which has helped in analyzing the serial correlation. The results presented in our study show that the change in expenditure fiscal deficit is statistically significant with a positive relationship.

Therefore, the government should control the long- term deficit because a consistently high fiscal deficit can harm economic growth.

Keywords: Fiscal Deficit, GDP, Model, Regression, Regression Equation, Revenue Expenditure, Capital Expenditure, Economic Growth etc.

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1. Introduction:

In the Constitution of India, India has been called a union of states and not a federal republic. In the Indian Constitution, there is a clear division of legislative, administrative and financial powers between the center and the states. Today we are writing a research paper under the financial power of India, whose name is: ***India's Rising Fiscal Deficit and its Impact on Economic Growth.***

The difference between the total income and expenditure of the government is called the fiscal deficit. This shows how much borrowing will be required by the government to run its business. Borrowings are not included in the calculation of total revenue. Fiscal deficit is generally caused due to decrease in revenue or excessive increase in capital expenditure. Capital expenditure is incurred on long- term use of assets such as factories, construction of buildings and other development works. Fiscal deficit is usually compensated by borrowing from the central bank or funds are raised in the capital market through short- and long-term bonds. A fiscal deficit is to be calculated as a percentage of GDP or simply put, the expenditure of Rs. In any case, only taxes and revenue are included in the income figures and do not include money borrowed to make up the shortfall. Any government spending more than the money it receives from taxes and other revenues, in addition to debt, brings about a state of fiscal deficit. The gap between income and expenditure is filled by government borrowing.

Meaning, **Fiscal Deficit = Total Expenditure of the Government – Total Income of the Government**

Note:

Expenditure = (Capital Expenditure + Revenue Expenditure)

Income = Revenue receipts, difference of capital receipts including loans, advances.

Revenue Expenditure: It is such government expenditure which is done on pension, government employee salary and debt service. It does not create any kind of assets. Revenue expenditure also called maintenance expenditure is incurred by the government on the assets that the government keeps for working. Similarly,

Capital Expenditure: It is that part of government expenditure which is done on fiscal assets like roads, schools, highways, dams, rails. That is, we can say that capital expenditure is the expenditure that creates assets. It plays a big role in the development of the country. In conclusion, it can be said that revenue expenditure refers to the regular expenditure which is done for day- to- day business activities. Whereas in contrast, capital expenditure is the expenditure incurred for the purpose of acquiring an asset or improving the asset.

Now we will know under this paper whether the expenditure fiscal deficit really affects the economic development of the country i.e., GDP. It has also been reviewed by many researchers who dealt with this issue and faced different consequences. The empirical evidence that we have gathered and the conclusions drawn through its results, shows that revenue expenditure and capital expenditure always affect the fiscal deficit and fiscal deficit has an effect on economic growth i.e., GDP. Setting a certain fiscal deficit to GDP ratio limit comes under specific policy and is the best example of specific policy. Fiscal deficit comes under macroeconomic. Right now, India is facing fiscal deficit with high debt.

He analyzed the empirical evidence in developing countries such as India, which concluded that expenditure has a detrimental effect on the fiscal deficit, both in the short and long term. Apart from this, it was also found that there is a need to reduce the fiscal deficit for short term and long- term sustainable development. In this paper, we have taken data from the ratio of fiscal deficit- GDP (FD- GDP ratio) as dependent variable and the ratio of revenue expenditure- GDP as Independent Variable and the ratio of capital expenditure to GDP. The Linear Regression Model has been used to perform the tests used in this model. I also found from its study that the variable outcome of expenditure is positively indicative and statistically significant. Any country should balance its financial affairs in such a way that it continues to grow and maintains its economic stability. A little ignorance can put the entire financial matter of India in a mess. In the financial year 2019- 20, India's fiscal deficit has become 9.36% of GDP and fiscal deficit- GDP ratio is 13.68%.

Developing countries like India where there is a need to develop its infrastructure along with social welfare. Deficit financing has to be resorted to address the revenue and expenditure mismatch, as well as deficit financing to address macroeconomic imbalances. On the one hand the comfortable level for high fiscal deficit adversely affects the economic growth and on the other hand the hand down grade affects the global rating of the country. This is the situation that keeps discouraging foreign investors to invest in India. Apart from this, it becomes difficult for India to borrow from international loan and capital market and the possibility of it becoming expensive also increases. Thus, we can say that deficit financing is such a double- edged sword that needs to be managed on a large scale. Otherwise, it can do more harm to the economy of a country or India than service.

2. Literature Review:

To write this paper, we studied many research papers, which found that revenue expenditure and capital expenditure affect the fiscal deficit and fiscal deficit affects the economic development of India i.e., GDP. That is, we can say that there is a relationship between fiscal deficit and GDP. Yet the impact of the budget deficit on GDP is linked with the source of the fiscal deficit. Budget deficit has a positive impact on economic growth. The results of the study revealed that fiscal deficit has a negative impact on economic growth (GDP) which drives the economy backwards. According to some economists, society can benefit through deficit due to low production and maximum economic development can also happen.

Bahmani analyzed the long-term relationship between federalism and capital in his research.

Thus, the results we have obtained from empirical research indicate that fiscal deficit has greatly affected real investment. We also learned that fiscal deficit has a negative impact on economic growth (GDP). It was also noted that expansion in government spending hinders overall growth within a country as an increase in government spending leads to a situation of spending or taxation, leading to a steady decline in job growth. A high ratio of debt can also be detrimental to economic growth.

Thus, we come to know that deficit financing has become a burning issue all over the world which has attracted the attention of the whole world as well as India. Many academics have researched the spillover effects of losses. In this regard, the researchers reviewed some of the major studies which are as follows:

Mohamed et. al. (2010)

According to them, it was found that there is an inverse relationship between public debt and economic development.

Vicente et. al. (2012)

They analyzed the effect of economic growth and fiscal deficit and the conclusion of the study showed that there exists an inverse relationship between fiscal deficit and economic growth. Simultaneously, empirical evidence showed that a 1% increase in fiscal deficit is capable of easing the economic slowdown.

Gemme conducted a study on low-, middle- and high-income countries and the results established a significant negative impact. In addition, Candon sampled 96 developing countries to determine the relationship between fiscal deficits and economic growth. In conclusion, he concluded from his study that a large fiscal deficit can reduce economic growth.

After studying many research papers and economic survey, we have come to the conclusion that fiscal deficit is an important issue for our country's Indian economy which has an impact on the country both in the short term and long term. However, India can effectively address this challenge through balanced fiscal policy and economic reforms. In future, initiatives like Self- reliant India scheme and Digitalization of the Government of India can prove to be helpful in increasing revenue and reducing the deficit. So, in this way we can say that the fiscal deficit remains below the critical level and the economic growth moves upwards.

3. Objective of the study:

a) **To determining the Impact of Expenditure on the Fiscal Deficit.**

The impact of expenditure on fiscal deficit is determined by various economic factors as well as government policies in the country which is explained below:

On the basis of government expenditure: Under this, if the government invests in infrastructure, education, health and industry etc. then it can result in long-term economic growth which can reduce the negative impact of deficit. If more expenditure is made on the country's salary, pension, interest payment and subsidy under revenue expenditure, then this does not increase the production capacity but rather increases the possibility of increasing the deficit.

Deficit Financing: If the government borrows internally, i.e., borrows from the domestic market, then this may increase the interest rates and also increases the possibility of private investment being affected. If external debt is taken, i.e. borrowing from abroad, then there is pressure on the foreign exchange reserves, as a result of which the ability to repay the long-term loan is affected. Inflation means if the money supply is increased by the government to compensate for the deficit in the country, then it may result in inflation.

Impact on Economic Growth: If the deficit in the country is used to increase economic production, then it helps in increasing tax collection in the long run, which can reduce the deficit. And if the expenditure in the country is mainly consumption-oriented, then it can increase economic imbalance in the long run.

Effect on Inflation and Interest Rates: When the government borrows money to increase expenditure in the country, inflation may occur due to increased demand. Increased borrowing causes a shortage of capital in the market, which increases interest rates and private investment may be affected.

Effect on Fiscal Deficit on Trade Balance: If increased government expenditure in the country does not boost domestic production, then imports will increase. As a result, the current account may increase. However, if the expenditure increases productivity and exports, then it can be beneficial for the economy.

So, we can say that the impact of expenditure on fiscal deficit depends on how and for what purpose the money is being spent. We know that if spending is done in productive areas, then it can affect economic growth and can also help in reducing the deficit in the long run. Apart from this, if spending is done in non-productive areas, then it can cause economic instability and high inflation.

(b). To examine the impact of expenditure and fiscal deficit.

Various types of indicators and analytical tools are used by the government to examine the impact of expenditure and fiscal deficit in the country and the following methods are adopted:

Calculation and Trend of Fiscal Deficit:

We know that fiscal deficit = total expenditure – total revenue (without borrowing).Under this, it is found out whether the fiscal deficit in the country is increasing or decreasing as compared to previous years. Additionally, the fiscal deficit to GDP ratio is calculated in the country, which helps analyze the capacity to bear the economic burden.

Impact on Inflation: When the government runs a deficit, it prints more money to cover the deficit, which leads to inflation. As a result, demand increases and the prices of goods and services rise. The impact of inflation is controlled by the monetary policy of the central bank in the country such as RBI.

Effect on Interest Rates: When the government takes loan to meet its deficit, the amount of money available in the market decreases. As a result, the interest rate increases.Thus, high interest rates affect private investment in the country, which slows down the pace of economic development.

Impact on Global Investment and Credit ratings: We know that when the fiscal deficit in the country increases, the confidence of international investors decreases. Credit rating agencies reduce the creditworthiness of the country, which makes borrowing expensive.

Its Impact on the Growth rate of the Economy: If the country increases investment in infrastructure, health and education due to the deficit, then long-term economic growth can take place. But if the deficit is on administrative expenses and subsidies in the country, then it leads to economic instability.

Reforms in Fiscal Policy: The government in the country brings about tax reforms, disinvestment and changes in expenditure priorities to reduce its deficit. The government takes long-term measures like GST and improving tax policies and public financial management.

So, we can say that the fiscal deficit in the country has both short-term and long-term effects. To keep it under control, a balanced policy is adopted by the government so that along with economic growth, financial stability is also maintained in the country.

4. Hypotheses

4.1 Null Hypothesis (H_0)

H_0: The ratio of expenditure to GDP does not significantly affect the ratio of fiscal deficit to GDP.

4.2 Alternative Hypothesis (H_1)

H_1: The ratio of expenditure to GDP significantly affects the ratio of fiscal deficit to GDP.

5. Methodology

5.1 Data Source and Period of Study

The study is based on secondary time-series data covering 41 years, from 1980 to 2020.

The data have been obtained from the official Reserve Bank of India (RBI), Handbook of Statistics, with the objective of ensuring reliability and consistency of the data used in the analysis.

5.2 Variables of the Study

The study examines the relationship between the Fiscal Deficit–GDP ratio and expenditure-related variables.

The Fiscal Deficit–GDP ratio (FD/GDP) is considered the dependent variable, while the following are treated as independent variables:

1. Revenue Expenditure–GDP ratio (RE/GDP)
2. Capital Expenditure–GDP ratio (CE/GDP)

All variables are expressed as percentages of GDP.**5.3 Econometric Model**

A multiple linear regression model has been employed to examine the relationship between the fiscal deficit and the explanatory variables. The analysis was conducted using Gretl and Stata.

The regression equation is specified as:

FD/GDP=β0+β1(RE/GDP)+β2(CE/GDP)+εF D/GDP = \beta_0 + \beta_1(RE/GDP) + \beta_2(CE/GDP) + \varepsilon

The estimated regression equation is:

FD/GDP=−0.133+0.146(RE/GDP)+1.292(CE/GDP)FD/GDP = -0.133 + 0.146(RE/GDP) + 1.292(CE/GDP)where the standard errors of the estimated coefficients are given in parentheses.

5.4 Estimated Regression Results

Variable	Coefficient	Standard Error
Constant	-0.133	0.620
RE/GDP	0.146	0.0338
CE/GDP	1.292	0.440

Number of observations (T) = 41 R^2 = 0.6036

5.5 Definition of Variables

Variable	Description	Role in Model
FD/GDP	Fiscal Deficit as a percentage of GDP	Dependent Variable
RE/GDP	Revenue Expenditure as a percentage of GDP	Independent Variable
CE/GDP	Capital Expenditure as a percentage of GDP	Independent Variable

Note: All variables are measured as ratios expressed as percentages of GDP.

6. Results and Discussion- The regression analysis was conducted using Ordinary Least Squares (OLS) in Gretl and Stata. The results are presented below.

6.1 OLS Regression Results

Model 1: OLS, using observations 1980–2020 (T = 41) Dependent Variable: FD/GDP ratio

Variable	Coefficient	Std. Error	t-ratio	p-value
Constant	-0.133388	0.619677	-0.2153	0.8307
RE/GDP ratio	0.146208	0.033773	4.329	0.0001
CE/GDP ratio	1.292230	0.439514	2.940	0.0056

Note: indicates statistical significance at the 1% level.

6.1.1 Model Summary

Statistic	Value
Mean dependent variable	3.044634
Standard deviation of dependent variable	2.360870
Sum of squared residuals	88.37118
Standard error of regression	1.524978
R-squared	0.603625
Adjusted R-squared	0.582763
F-statistic F(2, 38)	28.93436
p-value (F)	2.31×10^{-8}
Log-likelihood	-73.91994
Akaike Information Criterion	153.8399
Schwarz Bayesian Information Criterion	158.9806
Hannan–Quinn Criterion	155.7119
Rho	-0.293957
Durbin–Watson statistic	1.858624

6.1.2 Interpretation of Regression Results

The estimated coefficient of the RE/GDP ratio is 0.146208, with a p-value of 0.0001. This indicates a statistically significant positive relationship between revenue expenditure as a proportion of GDP and the fiscal deficit–GDP ratio. Holding capital expenditure constant, a one-percentage-point increase in the RE/GDP ratio is associated with an estimated 0.146 percentage-point increase in the FD/GDP ratio.The coefficient of the CE/GDP ratio is 1.292230, with a p-value of 0.0056. This coefficient is also statistically significant and positive. Holding revenue expenditure constant, a one-percentage-point increase in the CE/GDP ratio is associated with an estimated 1.292 percentage-point increase in the FD/GDP ratio. The R^2 value of 0.603625 indicates that approximately 60.36% of the variation in the fiscal deficit–GDP ratio is explained by the two expenditure variables included in the model. The adjusted R^2 is 0.582763, indicating that the explanatory power remains substantial after adjusting for the number of independent variables. The overall F-statistic of 28.93436, with a p-value of 2.31×10^{-8}, indicates that the explanatory variables are jointly statistically significant in explaining variations in the fiscal deficit–GDP ratio.The Durbin–Watson statistic of 1.858624 is close to 2, suggesting that the residuals do not exhibit strong first-order serial correlation.

6.2 Unit Root Test

Since the study uses time-series data, the stationarity of the variables was examined using the Augmented/standard Dickey–Fuller (Dickey–Fuller) unit-root test reported by Stata.

6. .2.1 Unit Root Test for FD/GDP Ratio

Command: dfuller fdgdp_ratio
Number of observations = 40

Test Statistic	Value
Dickey–Fuller Z(t)	1.626
1% Critical Value	-3.648
5% Critical Value	-2.958
10% Critical Value	-2.614
MacKinnon approximate p-value	0.9979

Interpretation- The p-value of 0.9979 is substantially higher than the conventional 5% significance level. Therefore, the null hypothesis of a unit root cannot be rejected for the FD/GDP ratio at level. This indicates that the FD/GDP series is non-stationary in levels.

6.2.2 Unit Root Test for RE/GDP Ratio

Command: dfuller regdp_ratio
Number of observations = 40

Test Statistic	**Value**
Dickey–Fuller Z(t)	-2.787
1% Critical Value	-3.648
5% Critical Value	-2.958
10% Critical Value	-2.612
MacKinnon approximate p-value	0.0601

Interpretation-The p-value of 0.0601 is greater than 0.05. Therefore, the null hypothesis of a unit root cannot be rejected at the 5% significance level. However, the result is relatively close to the 10% significance threshold. Thus, the RE/GDP ratio can be regarded as non-stationary at the 5% level, although the evidence against a unit root is stronger at the 10% level.

6.2.3 Unit Root Test for CE/GDP Ratio

Command: dfuller cegdp_ratio
Number of observations = 40

Test Statistic	Value
Dickey–Fuller Z(t)	-3.361
1% Critical Value	-3.648
5% Critical Value	-2.958
10% Critical Value	-2.612
MacKinnon approximate p-value	0.0124

Interpretation- The p-value of 0.0124 is below the 5% significance level. Therefore, the null hypothesis of a unit root is rejected at the 5% level. The CE/GDP ratio can consequently be considered stationary at level according to this test.

6.3 Summary of Unit Root Tests

Variable	DF Test Statistic	p-value	Decision at 5%	Conclusion
FD/GDP ratio	1.626	0.9979	Fail to reject H_0	Non-stationary
RE/GDP ratio	-2.787	0.0601	Fail to reject H_0	Non-stationary at 5%
CE/GDP ratio	-3.361	0.0124	Reject H_0	Stationary

Overall Interpretation

The unit-root results show that the variables do not all possess the same order of stationarity at level. The FD/GDP ratio is non-stationary, the RE/GDP ratio is non-stationary at the 5% level, while the CE/GDP ratio is stationary at level.Therefore, before drawing final inferences from the OLS regression, further time-series analysis—such as testing for cointegration and/or estimating an appropriate transformed or dynamic model—would be advisable. This is important because regression involving non-stationary variables may produce misleading or spurious relationships if the variables are not appropriately treated.

6.4 Hypothesis Testing

The regression results show statistically significant positive coefficients for both RE/GDP ($p = 0.0001$) and CE/GDP ($p = 0.0056$). Thus, within the estimated OLS model, expenditure ratios are significantly associated with the fiscal deficit–GDP ratio.Accordingly, the empirical results provide evidence against the null hypothesis that expenditure ratios do not affect the fiscal deficit–GDP ratio, subject to the time-series stationarity issue identified above.

Interpretation: The table in above show the factors affecting fiscal deficit in India. From regression result, R square i.e., means variables such as revenue and capital expenditure explain more than 60% variables in fiscal deficit in model. The finding of the study reveals that both revenue and capital expenditure has positive effect on fiscal deficit. The revenue expenditure, i. e, Stationary significant as 0.1% level and has a positive sign indicates about positive effect. A 1% increase in revenue expenditure will result 0.14 increase in fiscal deficit. The capital expenditure is stationary significance at 1% level and has a positive sign which indicate about its positive effect on fiscal deficit. The coefficient of capital expenditure shows that a 1% increase in capital expenditure will be related about 1.29% increase in fiscal deficit. The value of Durbin Watson statistics is 1.85 which guarantees the absence of auto-connected among expiratory variables.

Thus, we can say that the model is a simple OLS Regression that aims to explain the relationship between the dependent variable (fiscal deficit to GDP ratio) and the two independent variables that are capital expenditure to GDP ratio and revenue expenditure to GDP ratio. The signs of the coefficients are as per expectations and the p values of capital expenditure to GDP ratio indicates that it is significant at 1% level of significance and also the p value of revenue expenditure to GDP ratio indicates that it is significant at 1% level of significance.

Considering the first independent variable that capital expenditure to GDP ratio, we see that it is positively correlated to fiscal deficit to GDP ratio indicating that 1% increase in the capital expenditure to GDP ratio would lead to an increase in the fiscal deficit to GDP ratio by 1.29 percentage points on an average, keeping the revenue expenditure to GDP ratio constant.

Further, keeping the capital expenditure to GDP ratio constant, a 1% increase in the revenue expenditure to GDP ratio, would lead to an increase in the fiscal deficit to GDP ratio by 0.14 percentage points on an average.

The R2 of 0.60 indicates that 60% of the variation in the dependent variable is explained by the independent variables.

Further the Durbin Watson test statistic of 1.85 is within limits indicating that the model does not suffer from autocorrelation.

7. Conclusion:

Thus, we can say that expenditure affects the fiscal deficit. And fiscal deficit affects economic growth. That is, we can also say that expenditure affects economic growth. Although the growth of GDP is considered the most important indicator of the economy of a country. So, we have tried to establish in the study whether expenditure affects the fiscal deficit or not.

Ultimately the result establishes that expenditure significantly affects the fiscal deficit. And the fiscal deficit affects the GDP as well. Thus, based on the findings of the study, it can be said that the expenditure of the government positively affects the fiscal deficit. The government needs to be mindful of fiscal policy.

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LEARNING-STYLE PREFERENCES AND ACADEMIC PERFORMANCE: A GENDER-COMPARATIVE STUDY

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Abstract

Learning styles are still being used despite scientific controversy surrounding their role in explaining learning and achievement. Evidence concerning the association between overall learning-style preferences and academic performance among secondary school students remains controversial, indicating the necessity for further empirical research. This study aimed to examine the association between overall learning-style preferences and academic performance and assess gender differences in these two variables. A cross-sectional survey was used with 100 secondary school students (50 females and 50 males). Learning-style preferences were measured using an inventory consisting of 42 items (42-210), while academic performance was measured using examination marks out of 600. Independent-samples t-tests and Pearson's correlation were conducted. There were no statistically significant gender differences in learning styles, $t(98) = 0.211$, $p = .833$, or academic performance, $t(98) = 0.663$, $p = .509$. A weak positive association was observed between learning styles and academic performance, $r(98) = .224$, $p = .025$, corresponding to approximately 5% shared variance. The findings indicate a modest association but do not establish causation or provide evidence that instructional matching to learning-style preferences improves academic achievement.

Keywords: Academic performance; Gender differences; Learning-style preferences; Secondary school students.

1. Introduction

Academic performance in secondary education is an indicator of learners' emerging capabilities and the basis of future educational and vocational possibilities. As achievement is influenced by many factors, scholarly research has considered a range of psychological factors associated with high or low academic performance. Meta-analytic evidence has established associations between academic achievement and study habits, skills, self-regulation, and psychological factors (Richardson et al., 2012). At the same time, complementary evidence shows that study habits, skills, and attitudes matter beyond standard assessments of aptitude (Credé & Kuncel, 2008); moreover, personality factors such as conscientiousness have been reliably associated with academic performance (Poropat, 2009). This broad field of individual differences has also included learners' preferred approaches to educational content.

Learning styles are intuitively appealing because students may differ in how they prefer to encounter and engage with information. This perspective has stimulated research involving learning-style measures. Recent studies have examined preferred learning styles and academic performance among health science students (Gangadharan et al., 2025), explored learning-style preferences among open and distance learners (Dey & Panda, 2024), and reviewed research on cognitive style and academic achievement (Xie et al., 2025). These studies demonstrate continued empirical interest in the topic but do not establish that learning styles are educationally causal or should be the basis for instruction.

The distinction between preference and instructional prescription is thus crucial for the current study. A student's self-reported preference for a particular way of learning is not equivalent to evidence of better outcomes resulting from instruction delivered in that way. The hypothesis of matching or meshing needs stronger empirical support, including evidence that students achieve better outcomes when the instructional method corresponds to the style they prefer. An observed relationship between a preference score and academic performance addresses a different empirical problem. This distinction makes it possible for the current study to investigate the relationship between learning-style preferences and academic performance without assuming any causal effect.

The existing literature provides reasons for examining this narrower association while at the same time necessitating cautious interpretation. Findings regarding learning styles and achievement have been heterogeneous, and studies have used different measures, populations, educational settings, subject areas, and achievement indicators. A preference measure that has shown a weak correlation with achievement in one setting may show little or no association in another, as these aspects influence what is being measured and how the construct is operationalized. Evidence of such variance continues to emerge across educational populations and measurement approaches (Gangadharan et al., 2025; Dey & Panda, 2024; Xie et al., 2025). Accordingly, no single study can resolve the broader learning-styles debate, but a carefully defined study can provide a bounded estimate from a well-defined population that can be compared with evidence from other settings.

This issue is particularly important because learning-style findings can very easily be overstated on the basis of observed findings, which is something the current study aims to avoid. The existence of a positive relationship may be incorrectly interpreted as evidence that learning styles increase achievement levels, while a nonsignificant finding may be incorrectly interpreted as evidence that there is no educational use for learning styles. None of these conclusions follow naturally from an observational correlation. What a conclusion means depends on the magnitude of the effect, its direction, uncertainty, the construct measured, and alternative explanations. In the current study, statistical significance will be just one part of the interpretation process, along with the effect size.

The focus on secondary school students provides an additional reason for the study. Indeed, much of the relevant literature on learning styles has focused on higher education, professional education, or theoretical discussion. Empirical work has also addressed university and health profession students, ranging from examinations of learning style preferences and academic performance (Gangadharan et al., 2025) to learning style preferences in open and distance learning (Dey & Panda, 2024). Empirical knowledge concerning secondary school populations remains relatively limited. This is important due to possible differences in developmental levels, academic demands, assessment procedures, teaching environments, and learner autonomy. The findings from one educational level cannot necessarily be extended to another

.Gender provides an additional descriptive dimension. Analyzing the difference between learning-style and academic-performance scores of female and male students will enable the research to identify whether there are group differences within the sampled population. This analysis is bound by descriptive inference and does not prove that gender dictates learning style and academic performance, nor does it justify assuming that the identified group differences will generalize across other populations. In the current research, gender thus becomes one of the comparison variables used to complement the primary investigation of the relationship between learning styles and academic performance.

Against this background, the present study attempts to address a specific and answerable empirical question. Specifically, it investigates whether the overall index of learning-style preference is statistically associated with academic performance, and whether the scores on learning style and academic performance differ between female and male students using a sample of 100 secondary school students. The current study adopts a cross-sectional research design that examines association and group differences without manipulating instructional conditions, grouping participants according to learning styles, or testing instructional matching effects on academic achievement.

The contribution of the study is correspondingly focused. Instead of trying to settle the controversy on the topic, the research makes a magnitude-conscious estimate of the association between the overall learning-style preference score and academic performance in an equal-gender sample of secondary students, while also examining gender differences in both measures. Thus, the research contributes to an existing literature on the topic that also contains substantial controversy regarding the meaning of the construct and its relevance for education. The significance of the study does not lie in the claim that the concept explains academic success; rather, it consists in establishing whether an association is present, how large the association is, and what conclusions the available evidence can reasonably support.

The study is positioned at the intersection of an empirical question and an interpretive question. The empirical question relates to the association between overall learning-style preferences and academic performance and to differences by gender in these constructs. The interpretive question relates to how such a result may be appropriately interpreted in light of the cross-sectional design employed. Separating these questions helps avoid overinterpretation of the results as a causal instructional recommendation. Thus, the study is informed by three research questions. The first is whether there are significant differences in overall learning-style scores between female and male students, the second is whether there are significant differences in academic performance between female and male students, and the third is whether overall learning-style scores are significantly associated with academic performance.

2. Theoretical Background

2.1 Learning-Style Preferences, Styles, Cognitive Styles, and Approaches

Interpretation of learning-style research requires conceptual precision due to the overlap among related constructs. The learning preference construct describes a self-reported tendency toward a certain mode of dealing with the material at hand. Learning style, on the other hand, is normally seen as a somewhat consistent construct derived from learning preferences. Cognitive style relates to how people tend to perceive and process information, while the learning approach relates to the intentions and strategies employed by students when engaged in a certain learning task. The issue is important since terminology could result in inconsistent findings that could actually stem from differences between constructs and their measurements. Research synthesis focuses on separating the constructs and evaluating their empirical bases separately (Kozhevnikov et al., 2014). Previous literature has also questioned the ability of style constructs to make cumulative progress without adequate theoretical and empirical foundations (Peterson et al., 2009). Experiential learning theory views preferences as aspects of interaction between the learner and learning space rather than necessarily as a stable trait (Kolb & Kolb, 2005).

2.2 Learning-Style Preferences and Academic Performance

The relationship between learning-style preferences and academic performance remains empirically heterogeneous. Some scholars have reported positive links between preference-based instruction and performance. In addition, some researchers noted that differentiated activities based on the principles of learning-style preferences may contribute to better academic outcomes or retention (Taş & Minaz, 2024). At the same time, other evidence suggests that there is no strong correlation between learners' preferences and their preferred forms of virtual education (Karimian & Zolfaghari, 2024). Research on study approaches has shown that there may be certain links between the way students engage with their learning environment and achievement. However, these links differ from one context to another (Han, 2023). In addition, more recent evidence has questioned the validity of the concept of learning styles as a predictor of academic success when other factors have more significant influences on the results (Marwaha & Sharma, 2025). Overall, these findings do not lead to straightforward conclusions regarding the ability of preferences to predict academic achievement. Rather, they raise an important question about whether and to what extent associations between learners' preferences and attainment can be demonstrated.

2.3 The Learning-Styles Matching Hypothesis

A central theoretical distinction in this field concerns the difference between an observed association and the instructional matching hypothesis. The first proposition is the idea that there is variability in the way individuals interact with material, which can be related to their academic performance. The second proposition is much more specific in that it suggests that learning benefits from matching the teaching style to the learner's preference, as compared with a mismatch. Different forms of evidence are required to distinguish these propositions. Proving the second proposition requires designing a study in which participants are categorized according to learning style, exposed to different instructional conditions, and tested using a common outcome measure. The critical prediction is an interaction between learner preference and instructional condition. The critical review of the literature indicated that the necessary studies were few and did not show the needed interaction (Pashler et al., 2008).

Subsequent research reinforces this distinction. Evidence indicates a widespread belief in matching learning styles and teaching without adequate empirical evidence, with this prevalence referred to as an educational neuromyth (Newton, 2015; Dekker et al., 2012; Papadatou-Pastou et al., 2018). The higher education literature also casts doubt on the evidence base for maintaining the matching argument (Newton & Miah, 2017). Experimental research shows no evidence for the superiority of matched learning (Rogowsky et al., 2020), while modality-specific reviews of the relevant hypotheses also draw similar conclusions (Aslaksen & Lorås, 2018). Scholarly criticism thus argues against promoting learning-style matching as an evidence-based educational practice (Kirschner, 2017). Alternative research studies also suggest that learning-style theory fails to explain learning and achievement beyond what other theories can explain (An & Carr, 2017).

Evidence from measurement, developmental, and educational contexts strengthens the critique. Research in the field of health professions education showed discrepancies between learners' learning-style preferences, learning strategies used by them, and learning performance, thereby disputing the assumption that learning-style preferences correspond to learners' effective learning behaviour (Husmann & O'Loughlin, 2019). Developmental research has suggested that the attractiveness of learning styles is supported by beliefs about learners rather than by robust evidence (Nancekivell et al., 2020). In general, the scientific status of learning-style theories suggests that the central educational claims of those theories lack sufficient empirical basis (Willingham et al., 2015). Similarly, the review of learning-style-based instruction also shows that there is insufficient evidence of the efficacy of instructional approaches based on matching preferences (Cuevas, 2015). Related evidence suggests that judgments of learning may differ from the actual performance of learners (Knoll et al., 2017).

This distinction also has practical importance. Instructional time and energy are limited; focusing on identifying and addressing learning styles may take away attention from instructional approaches that have been validated by more compelling evidence. The question is whether the use of style labels takes away attention from better-proven methods of instruction and learning. In the current study, this distinction defines the interpretive boundaries: the presence of an association between the overall preference score and academic performance does not necessarily imply the benefit of matching instruction with that preference.

2.4 Learning Approaches, Self-Regulation, and Academic Achievement

Broader learner characteristics provide an alternative explanation for any preference-achievement association. Studies of self-regulated learning have focused on the importance of motivation, metacognition, monitoring, and strategies in students' involvement in academic activities (Panadero, 2017). Meta-analytic findings have demonstrated that self-regulated learning interventions are positively associated with students' academic achievement and learning outcomes (Theobald, 2021). Moreover, systematic review data suggest a connection between self-regulated learning strategies and achievement in online higher education (Broadbent & Poon, 2015), while more general meta-analytic findings report relationships between self-regulated learning and educational attainment regardless of the context of learning and training (Sitzmann & Ely, 2011). Contemporary studies also reveal connections between metacognitive self-regulation and informal digital learning and academic achievement (Ko, 2026), as well as learning strategies and styles in distance higher education (Kuluşaklı, 2026). Recent meta-synthesis has also highlighted pedagogical approaches promoting self-regulated learning instead of simple preference-matching (Robles Mucho et al., 2026). These factors are not measured in this study, but they are considered as possible explanations for an observed association.

2.5 Gender and Educational Outcomes

Gender is examined because researchers may expect differences between female and male students. However, available evidence suggests that such differences are not universal and not always large. Meta-analytic evidence indicates that differences in scholastic attainment by gender are diverse and cannot be considered a consistent advantage for either group (Voyer & Voyer, 2014). The analysis of national testing data provides evidence of small and field-specific differences in mathematics and science performance among students (Reilly et al., 2015). Furthermore, cross-national studies show that patterns of performance among males and females are variable across domains of academic achievement and countries (Stoet & Geary, 2013). Evidence related to the influence of learning-style grouping interventions also does not provide strong support for the assumption that educational benefits can be achieved through such an organization of instruction (Wu et al., 2025). Evidence regarding relationships between learning approaches and academic performance also shows variation according to educational setting and learning approach (Ramanarayanan et al., 2026). Gender is thus used as a comparative factor but not a causal one in the present research.

2.6 Theoretical Synthesis

The theoretical position follows directly from these distinctions. Learning-style preferences can be analyzed as individual differences without any assumption about whether they cause or determine achievement or what techniques should be used to achieve this goal. The research examines whether a general score for a preference is related to academic achievement and whether the measures differ between female and male students. Meshing is not tested here because there is no manipulation of instructional format or estimation of the required crossover interaction.

The aggregate measurement limits interpretation. There is one total score derived from the inventory; thus, it represents a generalized overall tendency rather than specific learning modalities. An observed association therefore has to be interpreted at the level of the total-score index. This approach allows for greater caution in interpretation: preference and academic performance can coincide, but such an association does not necessarily imply causation or instructional matching. This distinction provides the underlying conceptual basis for the research questions examined in the study.

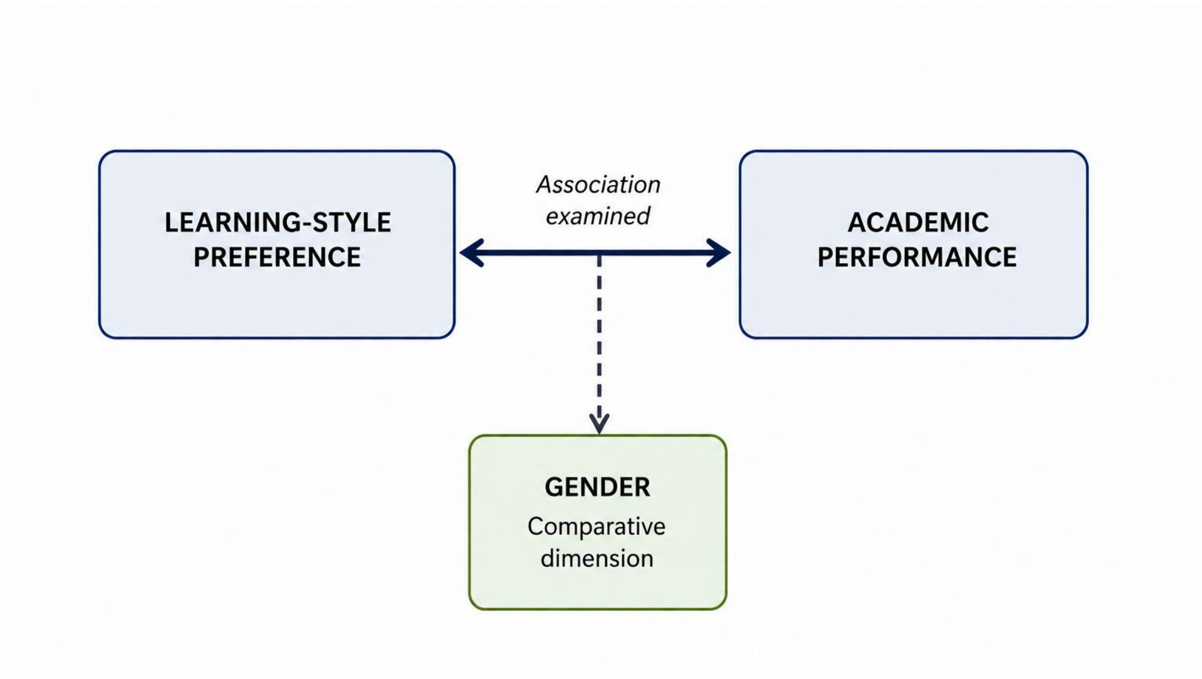

Fig 1. Conceptual framework of learning-style preference, academic performance, and gender.

3. Research Questions, Objectives, and Hypotheses

The secondary school setting represents a key empirical setting for investigating the relationship between learning-style preferences and academic achievement. Adolescents face academic challenges, develop study skills, and show variations in academic accomplishment. If a statistically significant association between the variables exists, it becomes essential to investigate the educational significance of the phenomenon. However, if the association is weak or non-significant, it becomes essential to focus on other factors that have a stronger empirical foundation. The majority of the available literature focuses on university or professional students, who differ in age, educational specialization, and learning environment from secondary school students.

The present study addresses this question based on a gender-balanced sample of participants. This approach is supported by the fact that an equal number of female and male secondary school students provides a balanced basis for comparing the two groups. In this study, the researchers use quantitative measures of learning-style preferences and academic performance, which allow them to assess potential differences between genders and the association between the two measures. Overall, this approach enables the study to examine whether overall learning-style preferences are associated with academic performance and whether either of these variables differs across genders.

The study was guided by three research questions:

RQ1: Is there a statistically significant difference in overall learning-style scores between female and male secondary school students

RQ2: Is there a statistically significant difference in academic performance between female and male secondary school students?

RQ3: Is there a statistically significant association between overall learning-style scores and academic performance among secondary school students?

Correspondingly, the study objectives were:

RO1: To compare overall learning-style scores between female and male secondary school students.

RO2: To compare academic performance between female and male secondary school students.

RO3: To estimate the association between overall learning-style scores and academic performance among secondary school students. The one-to-one alignment provides a clear analytical roadmap linking the research questions and their empirical testing.

Three null hypotheses were specified:

H01: There is no statistically significant difference in overall learning-style scores between female and male secondary school students.

H02: There is no statistically significant difference in academic performance between female and male secondary school students.

H03: There is no statistically significant association between overall learning-style scores and academic performance among secondary school students.

These hypotheses have a direct alignment with the three research questions and research objectives and form a clear basis for statistical testing. Given that the study is cross-sectional and observational, no causal or matching hypotheses were formulated. Accordingly, the analytical framework is confined to examining group differences and statistical associations, without extending the findings to causal or instructional claims.

4. Materials and Methods

The study employed a quantitative, cross-sectional survey design to investigate differences in learning-style preferences and academic achievement between males and females and to determine the relationship between the two variables. The design was observational, without any manipulation of the variables and without any intervention in instruction. Thus, the analysis focused on group differences and statistical associations rather than causation. The sample consisted of 100 secondary school students, comprising 50 girls and 50 boys. Random sampling was reported as the technique of participant selection. However, the preserved research record does not provide information on the sampling frame, the stratification process, the response rate, or other selection steps.

Learning-style preferences were assessed using a 42-item Learning Style Inventory developed by Prof. Karuna Shankar Misra according to the original study. Every item corresponds to one of the ways of interacting with learning materials, and the participants reported their preference on a five-point Likert-type scale: Very Much (5), Much (4), Average (3), Low (2), and Very Low (1). Thus, the potential total score ranges from 42 to 210, with higher scores indicating stronger overall learning-style preferences. As a rule, the inventory is described as covering broad ranges of learning preferences, such as enactive, figural, and verbal dimensions. In the current study, however, all calculations were carried out based on the total score. Subscale or dimension scores were not calculated due to the lack of the original scoring key, which included the specific item allocations to different dimensions, in the preserved record. The scale was therefore considered a measure of self-reported preference rather than ability or actual learning performance, since perceptions of learning behaviour do not always correspond to actual performance (Cuevas & Dawson, 2018). The sample-specific internal consistency could not be evaluated because the participant-level dataset was not available.

Academic performance was measured using the total marks earned in the latest examination, with a maximum possible score of 600. The examination total was treated as a continuous measure of academic attainment. The preserved data do not provide information regarding the number or type of subjects contributing to the total examination score, and no assumption was made regarding this information. The operational definition therefore captures performance on a single examination rather than multidimensional academic achievement. This operationalisation allows comparison among students using a common scale while maintaining appropriate caution regarding the construct represented by the single examination score.

The learning-style inventory and a short questionnaire pertaining to demographic information were administered under standard group procedures. Participants were asked to respond based on their actual learning behaviour and were given approximately ten minutes to complete the instruments. The original data-collection documents indicated that responses were to be used solely for research purposes and would remain confidential. Participants participated on those terms. No institutional ethics-approval number or separate signed consent or parental-consent documentation is available in the preserved research record; therefore, no such details are inferred.

Data analysis was restricted to the statistical information preserved in the original research record. Descriptive statistics were used to summarise learning-style scores and academic performance for each gender. Two independent-samples t-tests were conducted to examine gender differences in learning-style scores and academic performance. Pearson's product-moment correlation was used to examine the association between learning-style scores and academic performance. Inferential analyses were conducted using two-tailed tests, with the level of significance set at $\alpha = .05$. Derived quantities were restricted to values that could be calculated directly from the preserved statistics and degrees of freedom, including the corresponding p-values and the coefficient of determination derived from the preserved correlation coefficient.

The analytical strategy was deliberately limited to the research questions and the statistical evidence for which sufficient information was available in the preserved record. Regression, analysis of variance, factor analyses, mediation analyses, moderation analyses, and subgroup analyses were not conducted because these methods would have required additional information or would have made claims beyond what the evidence allows. The resulting approach establishes a one-to-one relationship between each research question and its corresponding statistical test. It also avoids post hoc additions to the analytic model.

The methodological choices reflect the study's empirical objectives. A cross-sectional survey can be used in a study that seeks to describe certain characteristics measured at a particular point in time and examine whether there are differences between groups or statistical associations between variables. The gender-balanced sample provides an equal number of participants in both comparison groups, and the use of quantitative methods makes it possible to assess group differences and associations. However, since all variables were measured at the same time and there was no experimental treatment, the study could not establish temporal ordering, causation, or the effectiveness of learning-style matching.

For statistical interpretation, the research distinguishes between statistical significance and substantive magnitude. The comparison of the two groups is concerned with whether the gender differences that have been found are substantially larger than the sampling variability according to the test, while the Pearson correlation concerns the direction and extent of covariation between the two continuous variables. The correlation coefficient is interpreted as an association, not as evidence that the preference for a certain type of learning style causes either higher or lower performance outcomes. In the same way, the nonsignificant comparison between the two groups is interpreted as insufficient evidence to establish the absence of gender differences within the sample studied, rather than as evidence that there is no such gender difference in the wider secondary-school population.

5. Results

5.1 Sample and Descriptive Statistics

The study included 100 secondary school students, who were equally divided into 50 females and 50 males. The equal groups facilitated comparison of gender differences in learning style and academic achievement. Table 1 presents the descriptive statistics and independent-samples t-test results for the study variables.

Table 1. Descriptive Statistics and Gender Comparisons of Study Variables

Variable	Overall ***M***	Female ***M*** (SD)	Male ***M*** (SD)	***t***(98)	***p***
Learning-style score (42–210)	151.35	151.60 (17.48)	151.10 (16.87)	0.211	.833
Academic performance (out of 600)	488.67	487.10 (23.80)	490.24 (23.06)	0.663	.509

5.2 Gender Comparisons

Overall learning-style scores were closely comparable for both female and male learners. The results from an independent-samples t-test indicated no statistically significant difference between females and males in overall learning-style scores, $t(98) = 0.211$, $p = .833$. Accordingly, H01 was not rejected.

Academic performance also did not demonstrate any statistically significant gender difference, $t(98) = 0.663$, $p = .509$. Female respondents had a mean score of 487.10 marks, equivalent to approximately 81.18% of the total score, while the average score of male respondents was 490.24 marks, equivalent to approximately 81.71% of the total score. Hence, H02 was not rejected. No statistically significant gender difference was observed in academic performance in the sample examined.

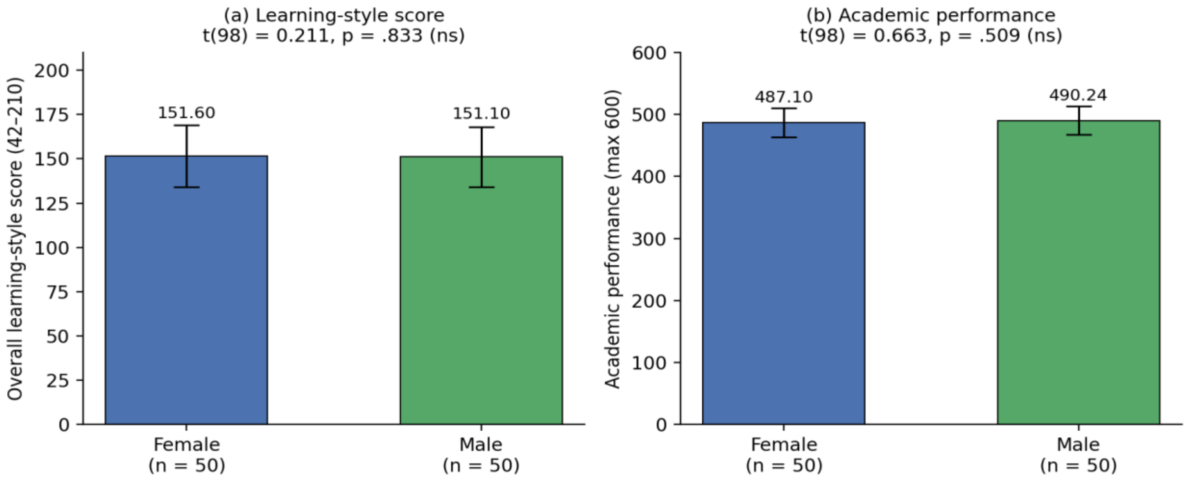

Fig 2. Gender Comparisons of Learning Style and Academic Performance

5.3 Association Between Learning-Style Preferences and Academic Performance

Pearson's correlation showed a weak positive association between learning-style scores and academic performance, $r(98) = .224$, $p = .025$. The coefficient of determination was $r^2 = .050$, indicating that approximately 5.0% of the variance was shared between the two measures (Table 2). Thus, students with higher learning-style scores tended to have slightly higher academic-performance scores. The significant correlation represents evidence of an association within the sample, although the size of the correlation needs to be interpreted with caution. This result cannot prove a causal effect of learning-style preferences on academic performance, or demonstrate that tailored instruction based on students' learning-style preferences will enhance their performance. Hence, H03 was rejected.

Table 2. Pearson Correlation Between Learning-Style Preferences and Academic Performance

Variables	***r*(98)**	***p***	***r*²**	**Interpretation**
Learning-style score ↔ Academic performance	.224	.025	.050	Weak positive association

The three research questions were answered using two independent-samples t-tests and one Pearson correlation. There were no statistically significant gender differences in either the overall learning-style scores or academic performance. However, there was a statistically significant but weak positive relationship between the overall learning-style scores and academic performance. Table 3 provides a summary of the alignment between each research question, statistical test used, test statistic, hypothesis decision, and finding.

Table 3. Alignment of Research Questions, Statistical Analyses, and Findings

Research Question	**Analysis**	**Test Statistic**	***p***	**Interpretation**
RQ1	Independent-samples *t*-test	$t(98) = 0.211$	.833	No statistically significant gender difference
RQ2	Independent-samples *t*-test	$t(98) = 0.663$	.509	No statistically significant gender difference
RQ3	Pearson correlation	$r(98) = .224$	.025	Weak positive association

Overall, the results provide a straightforward empirical answer to all three research questions raised in this paper. Neither gender comparison reached the predetermined significance level of $\alpha = .05$, while the association between overall learning-style scores and academic performance was statistically significant. However, the magnitude of the relationship was small, with approximately 5% shared variance. Thus, the results provide evidence of a weak association between the measured variables but do not establish causality or demonstrate the effectiveness of instructional matching.

6. Discussion

This study explored whether overall learning-style preferences were associated with academic achievement among secondary school students and whether these measures differed by gender. Three main findings emerged from this investigation. First, overall learning-style scores were positively associated with academic achievement in a statistically significant, although weak, manner. However, there was no significant difference between female and male students concerning either their learning-style preferences or academic achievement. Taken together, these findings indicate that learning-style preferences were associated with academic achievement only weakly and do not provide evidence of causality.

The correlation coefficient, $r = .224$, was statistically significant, but its magnitude was modest. While significant in statistical terms, the correlation explained roughly 5% of shared variance and thus left most of the variance in academic achievement unexplained. This is an important distinction between statistical significance and substantive magnitude when interpreting the findings. The results indicate that students who had greater learning-style preference scores had slightly higher levels of academic achievement. However, the correlation was not large enough to indicate substantial practical importance for learning-style preferences.

There are several possible explanations for this relationship. Learning-style scores might measure engagement in the process of learning itself rather than a separate process that leads to academic achievement. More engaged and motivated students might have a higher tendency to indicate their preference for learning and achieve greater success in academics. There is evidence concerning the relationship between self-regulated learning and academic achievement during childhood and adolescence that supports this explanation (Dent & Koenka, 2016). Other plausible explanations include previous achievement, conscientiousness, or varying learning opportunities. As no manipulation was undertaken in this design, there is no way of knowing which process accounts for the observed association.

This finding falls within the context of a diverse body of literature on learning preferences, learning strategies, and educational achievement. Current studies have shown an association between the use of certain learning approaches and educational achievement in certain educational contexts (Tentsho et al., 2026), although other studies have pointed out that the relationship between preference measures and educational achievement is rather context-bound or limited at best. The current finding can be considered a contribution to the discussion on this issue rather than a resolution of the controversy.

Importantly, the demonstrated association should not be taken as proof of the learning-styles matching or meshing hypothesis. An observational association cannot provide evidence that matching instruction with a preferred learning style enhances learning among students. Such a claim would require an experimental design in which instructional modality is manipulated and the interaction between instructional modality and learner characteristics is evaluated. Such a design was not employed in the present study. In addition, other experimental research has found no evidence of an advantage for matching instruction to preferred learning modes (Massa & Mayer, 2006).

The absence of significant gender differences also warrants consideration. Scores on learning-style measures were virtually identical for female and male students, as was the case with academic performance. There is thus no statistically significant evidence of gender differences in either construct within this sample. This result is consistent with previous research pointing to the existence of small gender differences in academic achievement, which might even differ from domain to domain (Else-Quest et al., 2010; Li et al., 2018). Other studies suggest that gender differences in education competencies might be domain-specific (Siddiq & Scherer, 2019). These findings therefore do not support assumptions regarding the necessity of different educational strategies for female and male students.

The findings carry an important implication concerning the interpretation of learning-style research. It is reasonable to assume that learners vary in their preferences and ways of engaging with learning. However, variation in preference does not imply that the preference is educationally consequential or that instruction should be based on those preferences. The present findings illustrate this distinction by showing that an empirical association can exist while having limited substantive magnitude and without establishing instructional effectiveness.

The current study offers an empirically based contribution in four ways. First, it offers data from the secondary school level, thereby expanding an empirical literature that is typically centered on university and professional students. Second, it investigates the entire learning-style preference rating scale instead of taking one particular style to be an instructional prescription. Third, it explores gender differences without making any assumption that gender is what drives learning-style preference and performance. Finally, it distinguishes the observed association between preference and performance from the implied causality of instructional matching.

Several limitations should temper interpretation. The cross-sectional nature of the study does not allow one to make any causal statements or determine the temporal ordering. The learning-style variable might be a reflection of general preferences rather than the observed learning behaviour. Second, academic success is measured using the sum of the marks on the examination, which is quantifiable but does not reflect the multidimensional nature of academic achievement. The relatively small and context-specific sample also limits the generalisability of the findings.

Overall, the findings suggest that the relationship between preferred learning style and academic performance was weak, while no significant difference was observed regarding either learning-style scores or academic performance between genders. The relationship should not be interpreted as a causal or instructional factor, but rather as a relatively weak association in the context of co-occurrence. The main implication of this study is that even though there may exist a statistically significant relationship, this does not necessarily mean that it is substantively strong or causative. Future studies may help determine whether the observed association represents learning preferences or broader predictors of academic achievement.

7. Implications

The implications of these findings should remain proportionate to the evidence. Although there is some positive relationship between general learning-style preferences and academic achievement, it is not sufficient to justify using learning styles as a cause or predictor of academic success or as a basis for instructional matching. Nonetheless, teachers can recognise that students have different approaches towards learning and should provide varied experiences of interacting with learning materials. This supports diversity in instruction rather than teaching students according to presumed learning styles.

A more realistic educational strategy would be to deliver essential concepts using a variety of means that can include verbal explanation, writing, visual representations, discussions, and practical exercises. The aim of the strategy is not to pair the learner with a specific mode but to present the concepts in ways that help learners understand. This strategy acknowledges diversity among learners without making unfounded assumptions regarding their preferences. In this regard, schools should exercise caution regarding the labelling, grouping, and limitation of learners according to presumed learning styles.

For teacher education, the results suggest the need for a focus on evidence-based judgement skills. Teachers would be able to differentiate between learning preferences and learning mechanisms, recognise the limitations of correlation studies, and make informed judgements regarding educational claims by examining the evidence that supports such claims. Learning styles could thus be taken as an example of how one evaluates information critically, not as a well-supported teaching strategy. This perspective would help teachers critically assess appealing claims that lack sufficient evidence.

At the institutional level, schools and teacher-training programmes should give importance to those activities that encourage active engagement, self-regulation, metacognition, effective learning strategies, and formative assessment. Schools and teacher-training programmes should exercise caution before investing in any instrument or program that promises improvement in learning because of the compatibility of styles and achievement without any substantial evidence backing the claims. The absence of significant gender differences in this sample also provides no empirical basis for organising learning activities around presumed gender-specific learning styles or achievement needs.

Overall, the study lends itself to moving away from categorization based on learning styles and towards flexible, inclusive, and evidence-based instruction. Though the results do not suggest that there is no relationship between learning styles and all aspects of the learning process, they do suggest that a weak relationship with academic achievement should not become an evidence-based approach to instruction. What the findings do suggest is that pedagogy should become more inclusive, rather than trying to match teaching styles to assumed learning styles.

8. Limitations

Several limitations should be considered when interpreting the findings. First, the study was based on a sample of 100 secondary school students in a limited research setting, and this limits the precision and generalisability of the findings to secondary schools more broadly. Second, the design of the study is cross-sectional and correlational; therefore, causality cannot be established, and temporal ordering between variables cannot be assessed. Third, the students' learning-style preferences were measured using self-reports, and this means that these preferences may not fully reflect students' actual learning behaviour or performance.

Additional limitations concern measurement and data availability. The participant-level data set was not available; as such, sample-specific reliability could not be reanalyzed, dimension-level analyses were impossible, and it was not possible to assess distributional features and potential outliers independently. It was thus possible to analyze only the learning-style score and the aggregate statistical results that were available. Academic performance was measured using a single examination score, which is a common quantifiable measure of performance but does not reflect the multidimensional nature of academic achievement. These limitations have implications and must be considered in light of the fact that the findings represent a bounded analysis of available evidence, rather than definitive evidence concerning the broader relationship between learning styles and academic achievement.

9. Future Research Directions

Future research should address the limitations of the present study in terms of broadening the sample, adopting a longitudinal approach, improving measurement, and conducting experiments. First of all, using larger samples across various schools and educational environments will provide more precise estimates and increase generalisability, as well as make it possible to establish whether the observed relationship is stable across different settings. Second, longitudinal research should focus on examining learning styles and academic achievement over time.

Third, the instructional matching hypothesis must be subjected to empirical testing through experimentation. Randomised experiments in which participants are classified on the basis of their preferences and instructional methods are varied should be conducted to determine if there are achievement gains associated with instructional matching.

Future research should also consider learning-style measures in conjunction with other factors that have previously been correlated with achievement, such as previous achievement levels, motivation, and self-regulation. The use of multidimensional measures of achievement, rather than a single test score, may help determine if there is any additional information provided by the learning-style preference construct. Preregistration and adequate statistical power will add further methodological rigour to the existing research literature.

10. Conclusion

This research aimed to examine the relationship between overall learning-style preferences and academic achievement among secondary school students, as well as whether either of these variables differed by gender. Overall learning-style preference scores showed a weak but statistically significant positive relationship with academic achievement, $r(98) = .224$, $p = .025$, with approximately 5% shared variance. However, neither overall learning-style preference scores nor academic achievement differed significantly between females and males. This was evident in the non-significant findings for learning styles, $t(98) = 0.211$, $p = .833$, and academic achievement, $t(98) = 0.663$, $p = .509$.

The primary result needs to be explained with regard to both statistical significance and effect size. Despite the fact that there was statistical significance between these two variables, their connection was rather weak. Therefore, students with higher overall learning-style preference scores tended to have slightly higher academic achievement scores; however, such a connection accounts for a relatively small amount of variance in achievement. It cannot be claimed that learning-style preferences caused differences in academic achievement and that the mechanism behind this connection is known. There might be some other factors, such as motivation and self-regulation, that may also contribute to the relationship.

The gender findings also warrant cautious interpretation. The lack of any statistical difference suggests that the current sample does not provide sufficient evidence of gender differences regarding either of the two variables under study. Instead, the findings indicate that there was insufficient evidence of gender differences in either variable within the present sample.

An observational association between learning styles and academic performance does not prove the hypothesis that tailoring teaching to fit individual students' learning styles will lead to improved academic outcomes. Thus, the present research results cannot be employed to support the classification of students into learning-style groups.

Overall, this study presents a bounded empirical finding from a secondary school setting and shows the need to differentiate statistical significance from practical and theoretical significance. Under the constraints of its cross-sectional design, sampling technique, measurement strategy, and data sources, the findings indicate a weak relationship between learning styles and performance, but without any statistically significant gender differences. Consequently, the study does not warrant either causal inference or any changes in classroom practice in terms of matching learning style and instruction. Future studies employing larger and more diverse sample sizes, longitudinal designs, better measurements, and appropriate experimental designs are required to determine whether these findings can be replicated and whether they represent learning styles or other factors influencing academic success. Further research would also be required to find out whether this relationship holds in different educational settings, measurement approaches, and developmental periods before any firm theoretical and educational conclusions are drawn.

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EMERGING PARADIGMS IN GLOBAL POLITICS AND ECONOMICS: MULTIPOLARITY, GEO-ECONOMICS, TECHNOLOGICAL NATIONALISM, AND SUPPLY CHAIN REORGANISATION

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Abstract

The contemporary international system is undergoing a profound structural transformation. The unipolar moment that followed the Cold War has given way to a multipolar distribution of power in which the United States, China, Europe, India, Russia, and an assertive Global South interact through overlapping and often competing networks. Simultaneously, the classical instruments of geopolitics are being supplemented—and in many domains displaced—by the systematic weaponisation of economic interdependence. Tariffs, export controls, investment screening, financial sanctions, and technological restrictions have become central tools of statecraft. This research paper examines twelve interlocking paradigms that define the new landscape: the shift from unipolarity to multipolarity; the rise of geo-economics; the prioritisation of economic security over pure efficiency; the regionalisation of globalisation; the securitisation of strategic trade; the transition from oil geopolitics to critical-minerals geopolitics; the emergence of digital sovereignty; the treatment of artificial intelligence as strategic infrastructure; the energy–technology nexus; monetary diversification away from exclusive dollar dependence; the growing agency of middle powers; and the phenomenon of weaponised interdependence. Drawing on assessments by the International Monetary Fund (IMF), the World Trade Organization (WTO), and contemporary analyses, the paper argues that globalisation is not disappearing but is being reorganised around power, security, technology, and resilience. Power in the twenty-first century is increasingly constructed through the integrated control of technology, artificial intelligence, data, finance, energy, critical minerals, supply chains, military capability, and diplomatic networks.

Keywords: multipolarity, geo-economics, economic security, critical minerals, digital sovereignty, artificial intelligence, weaponised interdependence, middle powers, supply-chain resilience, monetary diversification.

1. Introduction

For nearly three decades after the end of the Cold War, the international order was widely characterised as unipolar. American military, economic, technological, and institutional predominance shaped global rules, markets, and security arrangements. That configuration is now visibly eroding. What is emerging is not a simple bipolar contest between the United States and China, but a more complex multipolar system in which several centres of power—state and non-state—exercise influence across different domains. Parallel to this political shift is an equally consequential economic transformation: the deliberate use of economic instruments for strategic ends. The IMF has described the current period as a “new era of geoeconomics” (IMF, 2026). In this environment, efficiency-driven globalisation is being recalibrated toward resilience, redundancy, and strategic autonomy. The purpose of this paper is to map the principal paradigms that structure the evolving relationship between global politics and global economics, to illustrate them with contemporary evidence, and to draw out their implications for states, firms, and international institutions.

2. From Unipolarity to Multipolarity

The relative decline of exclusive American primacy is the foundational political shift of the present era. The United States remains the single most powerful military actor and continues to dominate key technological and financial networks. Yet its capacity to set the terms of international order unilaterally has diminished. China has emerged as a peer competitor in manufacturing, infrastructure finance, and several advanced technologies. Europe retains significant regulatory and market power. India, Russia, and a cohort of Global South states increasingly assert independent preferences. Institutional expressions of this diffusion of power include the expansion of BRICS, the growing voice of the G20, and the proliferation of minilateral arrangements that deliberately exclude or dilute traditional Western leadership. Viewing contemporary world politics solely through an "America versus China" lens therefore obscures the agency of other actors and the multiplicity of issue-specific alignments that now characterise the system.

3. From Geopolitics to Geo-Economics

The most consequential operational change is the elevation of economic statecraft. Tariffs, sanctions, export controls, investment restrictions, technology denial, and financial exclusion have become primary instruments of foreign policy. The IMF's 2026 assessment explicitly frames this development as the onset of a new era of geoeconomics in which economic tools are routinely deployed for geopolitical objectives (IMF, 2026). States no longer treat trade and investment as predominantly commercial activities governed by efficiency criteria; they treat them as arenas of strategic competition. The result is a partial re-politicisation of markets that had previously been liberalised under the assumption of mutual gain.

4. From Efficiency to Economic Security

For several decades, global firms constructed supply chains primarily on the basis of cost minimisation and just-in-time efficiency. The successive shocks of the COVID-19 pandemic, the Russia–Ukraine war, and intensifying great-power rivalry have elevated a different set of priorities: resilience, redundancy, and the reduction of single-point vulnerabilities. The IMF has advocated targeted diversification precisely to limit excessive dependence on any single supplier or jurisdiction (IMF, 2026). Economic security—defined as the capacity to maintain critical production and consumption under conditions of geopolitical stress—has become a core policy objective for governments and a material consideration for corporate strategy.

5. From Globalisation to Fragmented or Regionalised Globalisation

Globalisation has not ended; its organisational logic is changing. Comprehensive, worldwide production networks are giving way to more regionally concentrated, politically filtered arrangements—friend-shoring, near-shoring, and trusted-partner networks. Scholars and policymakers increasingly describe the process as re-globalisation or the regionalisation of globalisation rather than deglobalisation. Trade and investment continue to grow in absolute terms, yet the composition of partners and the geographic length of supply chains are being deliberately reconfigured to align with security considerations.

6. From Ordinary Trade to Strategic Trade

Trade in certain sectors has been reclassified as a national-security matter. Semiconductors, artificial-intelligence chips, batteries, rare earths, pharmaceuticals, telecommunications equipment, and defence-related technologies are now subject to heightened scrutiny, export licensing, and investment screening. The WTO has noted that in 2026 AI-related investment is providing significant support to global trade volumes, while geopolitical conflict and elevated energy-transport costs simultaneously generate downside risks (World Trade Organization, 2026). Comparative advantage remains relevant, yet it is increasingly subordinated to strategic assessment of technological dependence and supply-chain security.

7. From Oil Geopolitics to Critical-Minerals Geopolitics

Twentieth-century geopolitics was heavily shaped by control over oil. In the twenty-first century that contest has been joined—and in some domains overtaken—by competition over lithium, cobalt, nickel, copper, graphite, and rare-earth elements. Power will increasingly be determined not merely by access to raw deposits but by control of the entire value chain: extraction, processing, refining, and incorporation into advanced manufacturing. States that dominate processing capacity or that can secure long-term offtake agreements enjoy leverage comparable to that once conferred by oil reserves.

8. From Digital Globalisation to Digital Sovereignty

Data, cloud computing, artificial intelligence, fifth- and sixth-generation telecommunications, cybersecurity, and semiconductors have become strategic assets. Governments are responding with data-localisation requirements, export controls on advanced computing hardware, and the development of divergent technical standards. The cumulative effect is the partial segmentation of the digital domain into potentially competing blocs (Financial Times, 2026). Digital sovereignty—the capacity of a state to regulate, protect, and derive value from its data and digital infrastructure—has emerged as a central policy objective.

9. Artificial Intelligence as Strategic Infrastructure

Artificial intelligence is no longer confined to the information-technology sector. Its effective deployment depends on an integrated stack of advanced chips, high-performance computing, large-scale data, reliable electricity, and critical minerals. Competition over AI capability is therefore simultaneously a competition over these underlying inputs. The WTO has highlighted the material contribution of AI-infrastructure investment to global trade dynamics in 2026 (World Trade Organization, 2026). States increasingly treat AI development as a matter of national strategic infrastructure rather than purely commercial innovation.

10. From Energy Security to the Energy–Technology Nexus

Energy security can no longer be defined solely in terms of oil and gas availability. Artificial-intelligence data centres, semiconductor fabrication plants, and advanced manufacturing facilities require vast quantities of reliable, high-quality electricity. Consequently, clean energy, electricity grids, energy storage, nuclear power, critical minerals, and artificial intelligence are becoming tightly coupled systems (Reuters, 2026). Policy that addresses only one element of this nexus while neglecting the others risks strategic shortfall.

11. From Dollar Dominance to Monetary Diversification

The United States dollar remains the dominant global reserve and transaction currency. Nevertheless, a growing number of states are experimenting with local-currency settlement, bilateral payment arrangements, central-bank digital currencies, and alternative financial infrastructures in order to reduce exclusive dependence on dollar-based systems. These efforts should be understood as monetary diversification rather than as an imminent replacement of the dollar. The process is gradual, uneven, and still constrained by the depth and liquidity of existing dollar markets.

12. From Great-Power Dominance to the Agency of Middle Powers

World politics is no longer determined exclusively by the great powers. India, Brazil, Indonesia, Türkiye, Saudi Arabia, the United Arab Emirates, and other middle powers are actively cultivating issue-specific strategic autonomy. They diversify partnerships, hedge between competing centres of power, and seek to shape rules in domains where their interests are most directly engaged. The IMF's 2026 analysis explicitly examines how middle powers can position themselves within the evolving geo-economic landscape (IMF, 2026).

13. From Economic Interdependence to Weaponised Interdependence

Global interdependence, once celebrated primarily as a source of mutual gain and peace, has been revealed as a potential instrument of coercion. Actors that control critical chokepoints—whether in semiconductor manufacturing, payment networks, maritime shipping routes, or critical-mineral processing—can convert that control into strategic leverage. The concept of weaponised interdependence captures this dual character of connectivity: the same networks that generate efficiency can be exploited for political pressure.

14. A Conceptual Synthesis

Comparative Summary: From Older to Emerging Global Paradigms

The transformations described above can be summarised in comparative form as follows:

Table 1 **Comparative Summary: From Older to Emerging Global Paradigms**

Older Paradigm	Emerging Paradigm
Unipolar world	Multipolar world
Classical geopolitics	Geo-economics
Free trade	Strategic trade
Globalisation	Regionalised/fragmented globalisation
Efficiency	Resilience and redundancy
Low-cost supply chains	Secure and diversified supply chains
Oil geopolitics	Critical-minerals geopolitics
Technology as commerce	Technology as strategic power
Borderless digital globalisation	Digital sovereignty and potential digital blocs
Energy security (oil and gas)	Energy–technology security nexus
Economic interdependence	Weaponised interdependence
Dollar-centric monetary system	Monetary diversification
Great-power dominance	Great powers plus assertive middle powers
GDP-centric measures of power	Integrated control of technology, finance, data, energy, resources, and military capabilities

15. Conclusion

The contemporary global order is best understood not as the collapse of globalisation but as its reorganisation around the twin imperatives of power and security. The IMF has identified geoeconomic fragmentation as one of the principal structural risks to medium-term global growth (IMF, 2026). In this environment, national power is no longer adequately measured by military expenditure or aggregate GDP alone. It is increasingly a function of a state's capacity to master and connect technology, artificial intelligence, data, finance, energy systems, critical minerals, resilient supply chains, military capability, and diplomatic networks. States and firms that recognise the shift from efficiency-centric to security-centric logic, and that invest accordingly in diversification, technological capacity, and strategic autonomy, will be better positioned to navigate the uncertainties of the emerging multipolar, geo-economic era.

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US–IRAN CONFLICT AND ITS GLOBAL REPERCUSSIONS: IMPLICATIONS FOR INDIA, GEO-ECONOMICS AND GEOPOLITICS

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Abstract

The contemporary America–Iran conflict and the broader military tensions in West Asia have profoundly affected the structure of international politics, the global balance of power, energy security, maritime trade, military alliances, and the world economy. This confrontation has revived a fundamental question: whether the military capacity of any single great power remains sufficient in the twenty-first century to control world politics. The United States continues to possess the world's largest military power; in 2025 its military expenditure stood at approximately USD 954 billion, nearly one-third of global military spending (Stockholm International Peace Research Institute [SIPRI], 2026a). Yet achieving decisive political outcomes against a geographically extensive, populous, and conflict-resilient state such as Iran through air strikes, missiles, and economic sanctions alone has proved difficult.

This research article analyses the multidimensional global impacts of the America–Iran conflict. Its central argument is that the war has not ended American power but has clearly exposed the limits of unilateral power projection. The conflict has reinforced the strategic centrality of oil, maritime routes, commercial supply chains, and critical minerals in the global economy. In early September 2026, as tensions rose in West Asia, Brent crude approached USD 100 per barrel, intensifying inflationary pressures, trade deficits, and strain on energy-importing economies (Reuters, 2026a, 2026b). This development has underscored, particularly for large energy importers such as India, the necessity of diversifying energy sources and commercial partnerships.

The article further contends that in the post-conflict world order, geopolitics and geo-economics have become more tightly intertwined. Rare earth elements, lithium, cobalt, nickel, maritime trade routes, and multi-layered economic partnerships now possess strategic significance comparable to military power. According to the United Nations Conference on Trade and Development, the supply of critical minerals is highly concentrated; in 2025 China controlled approximately 69 percent of global rare-earth mining (United Nations Conference on Trade and Development [UNCTAD], 2026a). In this context, India's strategic autonomy, continuity of relations with Russia, resource-based partnerships in Africa, and multi-source energy policy assume heightened importance.

Keywords: America–Iran war, multipolar world order, American primacy, geo-economics, energy security, India's strategic autonomy, Russia, China, critical minerals, global trade.

1. Introduction

The nature of war in twenty-first-century world politics has undergone a fundamental transformation. In the world wars of the twentieth century, military victory was typically determined by territorial control, the defeat of opposing armies, and the collapse of political authority. Contemporary conflict is far more complex. Alongside military force, economic sanctions, energy supply, global trade, technological control, cyber capabilities, maritime routes, and critical minerals now shape outcomes. Modern war is no longer merely a contest between soldiers and weapons; it has become a comprehensive geopolitical and geo-economic struggle.

The present confrontation between the United States and Iran exemplifies this altered character of warfare. It is not simply a bilateral military clash. Its repercussions extend beyond the security architecture of West Asia to oil markets, maritime commerce, global inflation, currency markets, the policies of American allies, and the power structure of Asia.

The most significant question raised by the conflict concerns the nature of American power. The United States remains the world's most powerful military actor. According to SIPRI, global military expenditure reached USD 2.887 trillion in 2025, of which the American share was USD 954 billion—approximately 33 percent of the world total (SIPRI, 2026a). China ranked second with roughly USD 336 billion and Russia third with approximately USD 190 billion. India's military spending stood at about USD 92.1 billion (SIPRI, 2026b).

Yet sheer magnitude of military expenditure does not guarantee political victory. The central challenge facing American power is the extent to which military capability can be converted into lasting political results. Attacking a country's military infrastructure and altering its political will are two distinct processes. This distinction is especially salient in the case of a large-territory state with a complex political and social structure such as Iran.

The primary purpose of this research article is to understand the changes emerging in the global balance of power through the lens of the America–Iran conflict. It examines in particular the limits of American primacy, the evolving nature of modern warfare, the roles of energy and trade, the growing importance of critical minerals, challenges confronting NATO and alliance politics, and India's strategic autonomy.

2. Literature Review

Scholarship on great-power competition, hegemony, and the transition toward multipolarity provides essential theoretical grounding for analysing the America–Iran conflict. Classical realists such as Hans Morgenthau emphasised the centrality of power and national interest, while structural realists including Kenneth Waltz highlighted the constraints imposed by the anarchic international system on even the most powerful states. More recent work on hegemony has refined these insights. Robert Gilpin's theory of hegemonic stability argued that a dominant power can provide public goods such as security and an open trading order, yet the costs of maintaining primacy eventually erode the hegemon's relative position. The America–Iran confrontation illustrates precisely this tension: American military superiority remains overwhelming, yet the political returns on the exercise of that superiority are diminishing.

The literature on American primacy after the Cold War is extensive. Charles Krauthammer's early characterisation of a "unipolar moment" and subsequent critiques by scholars such as Christopher Layne and John Mearsheimer anticipated the difficulties of sustaining unilateral dominance. Mearsheimer's offensive realism predicts that regional powers will resist extraterritorial hegemony, a dynamic visible in Iran's capacity to absorb pressure and impose costs through asymmetric means and regional networks. Joseph Nye's concept of soft power and later discussions of "smart power" further underscore that military force alone cannot secure political objectives when legitimacy and domestic resilience are at stake.

Geo-economics has emerged as a central analytical category. Edward Luttwak's early formulation of the term, together with more recent work by scholars examining sanctions, supply-chain weaponisation, and critical-mineral competition, demonstrates that economic instruments have become primary tools of statecraft. The concentration of rare-earth processing in China, documented extensively by UNCTAD and other bodies, has transformed resource security into a strategic domain comparable to traditional military balances. Literature on energy security—from the classic works of Daniel Yergin to contemporary analyses of chokepoints such as the Strait of Hormuz—establishes that disruptions in a single maritime corridor can generate systemic economic effects far beyond the theatre of conflict.

Alliance politics has also received sustained attention. Studies of NATO burden-sharing, the reliability of American security guarantees, and the agency of middle powers illuminate the strains visible within Western coalitions when partners face divergent economic and strategic incentives. Research on India's foreign policy tradition of strategic autonomy—rooted in non-alignment yet adapted to contemporary multipolarity—provides a useful lens for understanding how New Delhi navigates simultaneous relationships with the United States, Russia, and China. Scholars examining Russia–China rapprochement and its implications for Asian balance further highlight the fluidity of alignments in a world no longer structured by rigid bipolar blocs.

Collectively, this body of literature supports the central claim of the present study: the America–Iran war does not signal the end of American power but reveals the practical limits of unilateral military dominance in an era of geo-economic interdependence, resilient regional actors, and emerging multipolarity. The conflict accelerates trends already identified in the scholarly record—the rising strategic weight of energy and critical minerals, the costs of prolonged military commitments, and the growing space for autonomous middle-power diplomacy.

3. Objectives of the Study

The principal objectives of this study are:

1. To analyse the global political impacts of the America–Iran conflict.
2. To examine the limits of American military and political primacy.
3. To analyse the resistance capacity of large geopolitical states in modern warfare.
4. To study the intensifying linkages between war and global trade.
5. To analyse the strategic significance of oil, maritime trade routes, and energy security.
6. To examine the changing geopolitical role of rare earths and other critical minerals.
7. To analyse the challenges confronting NATO and the American alliance system.
8. To study the effects of the war on India's energy policy and strategic autonomy.
9. To understand potential rebalancing in India–Russia, Russia–China, and India–China relations.
10. To analyse the nature of the emerging multipolar world order.

4. Methodology

This study is primarily descriptive, analytical, and based on secondary sources. It draws upon contemporary news sources, reports of international institutions, data on military expenditure, and institutional documents relating to global trade and critical minerals. Military expenditure figures are taken from SIPRI, while analysis of critical minerals and global trade relies on contemporary UNCTAD data. Immediate economic effects of the West Asian conflict and oil-market movements are examined through Reuters and other contemporary news sources. The study does not merely chronicle the immediate course of events; it situates them within longer-term transformations in the global power structure.

5. American Primacy: Not an End, but Limits on Unilateral Power

In the context of the America–Iran conflict, the most important conclusion is that American power has not ended, yet the limits of its unilateral exercise have become more clearly visible. The United States remains the world's largest military power. Its 2025 military expenditure of USD 954 billion far exceeds that of any other state (SIPRI, 2026a).

The relevant question, however, is whether economic and military superiority enables a state to establish political control over another large nation. Historical experience suggests that the answer is not invariably affirmative. Vast military capacity can damage an adversary's military infrastructure, yet extinguishing a society's political will, national identity, and long-term resistance capacity is far more difficult.

Iran's case is instructive in this regard. Its extensive geography, complex mountainous terrain, large population, internal political structure, and regional networks render control through military strikes alone extremely costly. A fundamental principle emerges: military superiority and political victory are not synonymous. Military bases can be attacked, but altering a country's political system requires prolonged military, economic, and social control. Consequently, even for contemporary great powers, decisive victory against large states is becoming prohibitively expensive and uncertain.

6. Limits of Controlling Large States through Air and Missile Warfare Alone

Modern military technology has transformed the character of war. Long-range missiles, drones, precision munitions, and satellite surveillance have expanded the capacity to fight from a distance. It would be mistaken, however, to assume that technological superiority can guarantee the complete defeat of a large nation.

When a state possesses a vast territorial expanse, sufficient population, resources, domestic industrial capacity, political organisation, and the will to wage protracted conflict, rapid victory becomes extremely difficult. The examples of Iran and India are relevant. India's large territory, substantial economy, and multi-layered institutional structure make external control through missiles or air strikes virtually impossible. Similarly, Iran's geography and regional capabilities render permanent military occupation prohibitively costly.

A major lesson of the present conflict is that air superiority will not suffice in future wars against large nations. Economic endurance, domestic production, civil defence, and social resilience will play decisive roles.

7. Pressure on American Economic Resources

Maintaining great-power status is itself an expensive enterprise. Sustaining military bases worldwide, naval power, weapons systems, and alliance commitments requires enormous resources. According to SIPRI, the United States spent approximately USD 954 billion on the military in 2025—the highest in the world—yet recorded a real decline of about 7.5 percent compared with 2024 (SIPRI, 2026a).

Two signals emerge. First, American military capacity remains immense. Second, prolonged global military commitments generate economic and political pressures. When a state simultaneously plays strategic roles across multiple regions—West Asia, Europe, and the Indo-Pacific—the cumulative burden on its economic and political capacity intensifies.

8. Leadership Instability and World Peace

The foreign policy of great powers is shaped not only by institutions but also by the decisions of political leadership. When the leadership of a powerful state becomes highly aggressive, ambitious, or unpredictable, the effects reverberate through world politics. In the American case these effects are especially wide-ranging because decisions influence global financial markets, oil prices, military alliances, commercial relations, and regional conflicts.

Attributing world instability solely to any single individual is analytically unwarranted. Nevertheless, leadership style can shape the direction and tempo of foreign policy. When continuity in decision-making is lacking, uncertainty among allies increases and may prompt them to seek alternative partners.

9. American Allies and the Challenges of Alliance Politics

American global power rests not only on its military but also on its alliance network. NATO and other security partnerships amplify United States strategic reach. Alliances, however, are not permanent; they rest on shared interests and mutual trust.

If partner states perceive that a great power's policy is excessively volatile, contrary to their economic interests, or likely to draw them into unnecessary conflicts, intra-alliance differences can widen. It would be an exaggeration to declare NATO a fully collapsing alliance. Serious debates nonetheless exist within the alliance over strategic priorities, defence spending, and dependence on the United States.

In 2025 NATO members accepted a new target of raising defence expenditure to 5 percent of GDP by 2035—substantially above the earlier 2 percent benchmark (SIPRI, 2026a). This indicates that the alliance is moving toward greater militarisation rather than dissolution, yet higher spending does not equate to complete political uniformity among members.

10. Global Trade: The New Front of Modern Warfare

One of the most significant effects of the America–Iran conflict is that global trade has become a direct component of the war process. Principal instruments of contemporary conflict now include economic sanctions, banking restrictions, technology export controls, pressure on maritime routes, control of energy supplies, and restrictions on trade in critical goods. Geopolitics is rapidly converting into geo-economics.

A state that is militarily powerful yet dependent on limited trade routes or resources may find its strategic capacity constrained. Conversely, states possessing diversified commercial partners and alternative supply chains prove more resilient in crises.

11. The Strategic Importance of the Strait of Hormuz and Trade Routes

Conflict in West Asia affects the global economy especially through maritime trade. The Strait of Hormuz, located near Iran, remains a critical artery of global energy commerce. During rising tensions in September 2026, maritime traffic through the region declined and markets registered heightened concern over disrupted energy supplies (Reuters, 2026c).

Such disruptions affect not only the parties directly involved. They influence oil prices, transportation costs, insurance premiums, global inflation, and the trade deficits of importing countries. They also expose a structural vulnerability of the modern world: the extreme interconnectedness of the global economy.

12. Oil Markets and Global Economic Instability

In early September 2026, West Asian tensions drove Brent crude close to USD 100 per barrel, raising concerns about global inflation and economic growth (Reuters, 2026a). Rising oil prices particularly affect energy-importing countries. For India the consequences may include an expanded trade deficit, inflationary pressure, pressure on the rupee, higher transportation costs, and elevated production costs.

In September 2026, rising oil prices were accompanied by pressure on Indian financial markets and the rupee (Reuters, 2026b). The episode demonstrates that the effects of modern war can reach economies thousands of kilometres from the battlefield.

13. Diversification of Energy Sources: A New Imperative for India

The most important policy message for India concerns diversification of energy sources. Excessive dependence on any single country or region generates economic risk during geopolitical crises. Contemporary conditions have prompted Asian energy importers to give greater attention to longer trade routes and new sources. For countries such as India, Japan, and South Korea, energy security is no longer solely a question of lowest cost but of supply continuity and strategic reliability (Reuters, 2026d).

India’s capacity to purchase energy from Russia, West Asia, Africa, and the United States forms part of this strategic diversification. Diversification does not, however, confer complete independence. Global oil markets remain interconnected; therefore any major war ultimately affects all major energy importers.

14. Russia and India: Rebalancing Strategic Relations

India–Russia relations have historically been rooted in defence, energy, and strategic cooperation. Their importance persists amid changing world politics. The fundamental objective of Indian foreign policy is not permanent dependence on any single power but the maintenance of relations with multiple powers on the basis of national interest.

Russia remains important for India because of a long history of defence cooperation, significant energy ties, Russia’s influence in Asian power politics, and the compatibility of the relationship with the concept of a multipolar world. Recent fluctuations in oil trade illustrate the complexity of energy relations. In August

2026 India's imports of Russian oil declined, while efforts continued to increase imports from other sources (Financial Express, 2026). This does not signal the end of relations with Russia but rather diversification of energy supply and adjustment to changing global market conditions.

15. Russia–China Rapprochement and the Asian Balance of Power

Growing strategic closeness between Russia and China may produce significant changes in Asian geopolitics. The effects of this cooperation can also reach India. India's position is complex: it maintains long-standing strategic ties with Russia, faces competition and boundary disputes with China, and simultaneously sustains important economic and strategic relations with the United States.

Indian foreign policy therefore cannot be the policy of any single pole. Russia's proximity to both India and China may enable it to function as an important informal interlocutor. It would be premature, however, to conclude that Russian mediation has eliminated the possibility of India–China conflict. A more measured conclusion is that changing multipolar politics and economic interdependence may provide both countries with additional incentives to avoid full-scale war.

16. India and China: Competition, Conflict, and Possibilities of Cooperation

India–China relations cannot be understood solely in terms of friendship or enmity. Boundary disputes, economic competition, rivalry for Asian leadership, and clashes of technological and strategic interests all exist. The cost of a major war between the two large economies would nevertheless be extremely high, given their deep integration into world trade.

An indirect effect of the America–Iran war may therefore be that Asian powers prioritise long-term strategic competition and limited tension over direct large-scale conflict.

17. Rare Earth Materials: A New Foundation of Future Power

In the geopolitics of the future, rare earths and critical minerals are acquiring extreme importance. They are essential for electric vehicles, batteries, semiconductors, defence systems, space technology, data centres, and renewable-energy technologies. According to UNCTAD, global supply of critical minerals is highly concentrated. In 2025 China accounted for approximately 69 percent of global rare-earth mining and retained significant dominance in processing and refining (UNCTAD, 2026a). Demand for lithium is projected to rise by roughly 353 percent between 2024 and 2040 (UNCTAD, 2026b).

These figures indicate that future economic and military balances will not be determined by oil alone.

18. Africa and India's Resource Diplomacy

Africa can play an important role in India's future resource security. African countries possess cobalt, copper, lithium, rare minerals, and other industrial resources. According to UNCTAD, in 2025 the Democratic Republic of the Congo supplied approximately 74 percent of global cobalt mining (UNCTAD, 2026a). For India it will not suffice merely to purchase resources; long-term partnerships, investment, processing capacity, and technological cooperation will be required.

19. Transition from Military Power to Geo-Economics

The concept of power in the contemporary world is changing. Earlier the principal bases of power were armies, territory, population, and weapons. Today these have been joined by global trade, data, semiconductors, critical minerals, energy, maritime routes, and supply chains. The powerful state of the future will therefore be one that is capable not only of winning wars but also of keeping its economy and industrial system functioning under conditions of crisis.

20. The Emerging Multipolar World Order

The America–Iran conflict has exerted broad effects on the structure of world power. The world is clearly moving in a multipolar direction. Principal powers in this multipolar system include the United States, China, Russia, India, the European Union, Japan, and various regional powers. This multipolarity, however, does not resemble the rigid bipolarity of the old Cold War. Today a state may cooperate with one power for defence, another for energy, and a third for trade. India is an important example of such flexible alignment.

21. The America–Iran War and Indian Strategic Autonomy

The central challenge facing Indian foreign policy is how to protect national interests within a changing world order. India requires diversification of energy sources, self-reliance in defence production, secure supplies of critical minerals, security of maritime trade routes, balanced relations with Russia, the United States, and Europe, economic partnerships with Africa and Latin America, and expansion of domestic manufacturing capacity. According to SIPRI, India was the world's fifth-largest military spender in 2025, with expenditure of approximately USD 92.1 billion (SIPRI, 2026b). This indicates that India is emerging not only as an economic power but also as a significant strategic actor.

22. The Most Important Lesson of Modern Warfare

The most important lesson of the conflict is that large states cannot easily be defeated by military means in the modern world. Missiles may be launched, air strikes conducted, and economic sanctions imposed, yet these measures do not automatically extinguish a country's political system or resistance capacity. In protracted conflict, civil society, economic resources, and political organisation become decisive. Future war is therefore likely to be increasingly prolonged, economic, and multidimensional.

23. Conclusion

The America–Iran war has revealed several important truths about contemporary world politics. First, the United States remains the world's most powerful military actor, yet military superiority does not automatically translate into political victory against a large and organised nation. Second, in modern warfare not only weapons but also economies, trade, energy, technology, and supply chains play decisive roles.

Third, in the case of large geopolitical states such as Iran, permanent control through missiles, air strikes, and economic sanctions alone is difficult. Fourth, conflict in West Asia produces immediate effects on oil markets and the global economy. The approach of oil prices toward USD 100 per barrel in September 2026 demonstrates that regional conflicts can generate global economic instability (Reuters, 2026a).

Fifth, the importance of critical minerals and rare-earth resources is rising rapidly. The central role of countries such as China in supply chains is prompting others to seek alternative resource partnerships (UNCTAD, 2026a). Sixth, for India the changing order implies greater strategic autonomy. India must maintain relations with the United States, Russia, and other powers while avoiding excessive dependence on any single pole.

Ultimately, the America–Iran conflict is not evidence of the complete collapse of American power but a signal of the limits of unilateral power. The world is moving toward a condition in which military power, economic strength, commercial networks, resource security, and technological capacity together determine a state's real strategic power. The most appropriate description of the emerging world order is therefore competitive multipolarity. In this world the United States will remain powerful, China and Russia will remain influential, India will emerge as an important independent power, and trade, energy, and critical minerals will decisively shape future balances of power.

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CLIMATE INDUCE LABOUR MOBILITY: A STUDY OF RURAL BIHAR

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Abstract

This study examines the relationship between climate change, agricultural production, rural livelihoods, and labour migration in rural Bihar. The impacts of climate variability on rural communities have grown more pronounced with the change in the temperature, rainfall and flooding, drought like conditions and other extreme weather events, all of which have led to uncertainty on farming and traditional liveliness and livelihoods. The study objectives are: to analyse impacts of climate change on agricultural production and other livelihood activities; and to understand the impacts of climate change on migration. A quantitative, descriptive and cross-sectional research method was used and primary data was gathered through the use of a structured questionnaire having five-point likert scale from 150 rural respondents. Agriculture and livelihoods and migration were regarded as dependent variables with climate change as the independent variables. The descriptive data analysis was applied in analyzing characteristics of the respondents and simple linear regression was applied to test the hypotheses. The results show significant and very strong climate change-agriculture and livelihoods relationship ($R = .826$, $R2 = .682$, $p < .001$) with climate change accounting for 68.2% of the variation in agriculture and livelihoods. There was also a strong positive correlation between climate change and migration ($R = .586$, $R^2 = .343$, $p < .001$). The study finds that the climate change has a significant impact on rural livelihoods, and is a coping and adaptation mechanism to migration. Therefore, it is necessary to support and strengthen different climate-resilient livelihoods and social protection measures, rural employment, and agriculture for reducing the vulnerability of the rural population and distress migration in Bihar.

Keywords: Climate Change, Labour Mobility, Rural Migration, Agriculture, Rural Livelihoods, Climate Variability, Bihar

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Introduction

Climate change has become one of the most pressing issues that impact rural livelihoods and especially in developing countries where agriculture and natural resource dependence is still high. Climate change in terms of temperature change, rain patterns, more frequent floods and droughts, and more extreme weather events are changing traditional livelihoods and engendering new forms of economic and social vulnerability **(Roy et al., 2024)**. A significant impact of these changes is climate-related labour migration, which involves migration of people or families on a temporary or permanent basis from climate sensitive regions to places with more favorable jobs and livelihoods **(Gopal et al., 2025)**. In the context, rural Bihar serves as an interesting case study to explore the linkage between climate variability and labour mobility.

Bihar is highly rural and dependent population of the state depends directly or indirectly on agriculture. Small and marginal farmers, agricultural laborers, landless people are the small and marginal sections of the rural communities, whose livelihoods are directly tied to the agricultural production and these are the communities which are vulnerable to climatic fluctuations **(Kumar & Pandey, 2021).** Additionally, the state experiences frequent floods, unpredictable rainfall, drought, elevated temperature and other environmental pressures. Climatic impacts may lower productivity of crops, harm farm assets, affect local jobs and lead to financial insecurity in households. This can lead rural workers to look for jobs outside of their villages as a way of ensuring household's income and livelihood risks **(Malik & Kajale, 2024).**

High labour mobility in Bihar is not something new. Historical evidence shows that seasonal or circular migration is an important livelihood strategy for the rural households as they move from rural or domestic locations to urban/industrial area of Bihar or other states for employment. Now climate change is increasingly having an effect on the timing, length of time and destination and type of such mobility **(Malik & Kajale, 2024).** Households may rely more on the migration option and non-farm work when the agricultural jobs diminish due to crop failure, excessive rainfall, flooding, prolonged dry spells, or other climate related disruptions. Climate induced mobility is not just forced migration, but also a change in livelihood coping strategy that is influenced by economic factors, household resources, social networks, information availability, and local employment opportunities **(Choithani et al., 2021).**

The link between climate change and labour migration is complicated. Climate change does not necessarily trigger migration, but rather depends on the interplay between poverty, land tenure, dependence on agriculture, education, household size, indebtedness, job opportunities and institutional support. Households could move as a result of climate shocks impacting on local livelihoods, or they might not have the financial means to move and be stuck in vulnerable areas. Remittances can also be created from migration to improve food security, education, health, housing and investment in agricultural activities in villages of origin. The migration process can also bring social costs, affect family dynamics, leave workers at risk of precarious employment and leave them vulnerable at the destination.

Problem Statement

Climate change has emerged as a significant threat to rural livelihood, especially to areas where agriculture, forestry and the exploitation of natural resources is an important source of livelihood. The rural areas of Bihar are highly vulnerable to climatic variations like irregular rainfall, frequent flooding, drought conditions, rise in temperature and extreme climatic events. All these modifications can have a negative impact on agricultural production and productivity, harvests, livestock, employment in the agricultural sector and other traditional livelihoods. Small and marginal farmers and agricultural laborers are mostly at risk as they have less financial resources and less employment options. As the return from agriculture declines and employment opportunities are disrupted in the villages, rural households might be forced to find other avenues for income outside of their villages. Migration has been a vital livelihood option for the rural households of Bihar, but the heightened climatic stress could cause a rise in the frequency and/or intensity of labour migration. A seasonal or permanent migration from one place to another may occur in order to find employment to offset the losses that may be caused by the climate. Meanwhile, variations in household resources and social networks may also help to determine who can migrate and where they migrate. Although these issues are important, there is a need for more empirical knowledge of the impacts of climate change on agricultural production and other livelihood sources and the impact of these changes on migration decisions. Hence, this study explores the impact of climate change on livelihood and migration in Bihar in rural areas.

Objectives

- To analyse the impact of climate change on agricultural production and other livelihood sources.
- To analyse the impact of climate change on migration.

Hypothesis

a) H_0: There is no significant impact of climate change on agricultural production and other livelihood sources.
b) H_1: There is significant impact of climate change on agricultural production and other livelihood sources.

c) H_0: There is no significant impact of climate change on migration.
d) H_2: There is significant impact of climate change on migration.

Literature Review

(Nag et al., 2026) The study used a descriptive research design that involved personal interviews with 240 migrant workers from flood-prone farm households in the Seemanchal region. The data was gathered to evaluate livelihood vulnerability, migration profile, contribution of remittances and intra-household dynamics. Using the concept of Livelihood Vulnerability Index (LVI), the relative vulnerability of the study area was estimated based on the indicators of exposure, sensitivity and adaptive capacity. The assessment showed a moderate to low relative livelihood vulnerability in the Seemanchal region where the overall Livelihood Vulnerability Index analysis showed a score of −0.089. All four districts had relatively higher adaptive capacity than floods even though they faced floods. The findings also showed that migration was mainly in the form of short-term domestic migration of young men and women within the households. Remittances were an important proportion of household income and livelihood risk management. But although migrants' contribution to the economy was higher, migrant members did not necessarily have more decision making power or more assets within the family. The study highlights the importance of migration and livelihood diversification for boosting the adaptive capacity of the farm households impacted by flood.The study highlights the critical role of migration and livelihood diversification in enhancing the adaptive capacity of flood-prone farm households. More labor opportunities outside of agriculture can contribute to building resilience against repeated climatic shocks in vulnerable areas like Seemanchal. The results also indicate that, in tandem, intra-household socio-economic dynamics need to be taken into account in order to ensure an equitable distribution of the benefits from migration. Future studies should explore and identify the institutional and policy measures which can further reinforce household resilience and enhance the well-being of both migration and non-migration family members in the flood affected areas.

(Nizam et al., 2026) A million people are literally caught in the embankments of Koshi River, mostly from historically marginalised communities, in 380 villages of India and 34 villages of Nepal. This study is based on an ethnographic study on a trapped village and relocation villages that involved 13 months of field work after conducting a baseline study (n = 600) on household members in two trapped villages. This study builds upon these rich insights and places patterns of mobility and immobility in the context of the socioecological shifts taking place in the Koshi region. The findings show high levels of forced immobility across the country, especially by Dalits and other socioeconomically disadvantaged communities, and a rise in irregular seasonal and circular migration. Gender gaps are pronounced: Women are more vulnerable because they have less ability to move around and are burdened with more care responsibilities. The study indicates that while the environment influences mobilities in the Koshi region, the region's mobilities are also governed by structural inequalities, caste hierarchies, and historical marginalisation. The results indicate that migration is not a universal response to climate stress as they found the Koshi River plains to have high in situ immobility.

(Moharaj et al., 2025) This study examines the far-reaching consequences of climate change on human mobility, particularly climate-induced forced migration and internal displacement in rural India, using the example of the community of Meenakshipuram in Thoothukudi District of Tamil Nadu. It seeks to break down the intricate relationship between environmental factors (including rainfall variability and natural hazards) and other drivers of forced migration, such as social, political, economic and governance-related factors. The results show that there has been substantial decrease in rainfall resulting in acute water shortage and crop failure, and thereby increasing economic vulnerabilities and ultimately the migration and abandonment of Meenakshipuram. Moreover, the study points to the fact that socio-economic vulnerabilities, including a lack of infrastructure, education and healthcare, and governance shortcomings, exacerbate the migration pressures on the community, underscoring the fact that the effects of climate change are much greater when compounded by pre-existing socio-economic vulnerabilities. The study highlights the urgent need for establishing a comprehensive national framework to tackle IDPs in India and emphasizes the importance of building strong legislative frameworks that support the effective rehabilitation of IDPs and protect their rights and livelihoods.

(Richa & Sen, 2024) The increased frequency and severity of natural hazards threaten rural livelihoods and accentuate rural to urban migration in developing countries. In this paper, we study the relationship between climate variability, hazards and migration in the context of Bihar, a state in India, experiencing floods every year affecting lives, livelihoods and loss and damage to public infrastructures. Existing literature indicates that communities experiencing multiple disaster events use the strategy of migration as an adaptation strategy. An enquiry into the reasons behind migration have been a continuous process but the complex inter-connections between economic, geographic, socio-politico and environmental or even the human psychological factors, make such an enquiry complicated. The study has 29 districts in the state and uses data for three Census rounds (1991, 2001 and 2011) to empirically examine the relationship. Findings indicate that increased flood intensity could lead to more migration outflow. Further, temperature variability and rainfall variability statistically affect the flood intensity index but the impact of the latter is found to be weaker. NELM is partially validated by the findings from this study and therefore, contrary to general perception that relative deprivation and growth prospects are the only factor behind mobility, we find climatic variability too play an important role.

(Poddar, 2024) This study discusses the intricate relation between climate change and migration, with a focus on the environmental drivers, socioeconomic implications, and the various forms of climate induced migration, such as migration across borders and internal displacement. The article also identifies some of the ongoing challenges in the management of climate induced displacement, including gaps in law and policy, social protection and human rights, capacity, and social integration and cultural issues. The article highlights the need for having comprehensive policies and strategies in place to respond to climate induced migration. It includes potential interventions, including strengthening global and regional processes, legal recognition of climate migrants, bolstering regional and international cooperation, mainstreaming climate-induced migration into national climate change and development policies and programmes, and investing in climate resilient infrastructure and livelihoods.

(Sarkar et al., 2022) The purpose of this study is to examine the relationship between drought and the temporary migration in rural India using the binary logistic regression model on a cross sectional data set combining the data of National Sample Survey Organization (NSSO) 64th round and India Meteorological Department (IMD) rainfall data. The paper also explores if this association differs between the various socio-economic groups. Out of the total temporary migrants generated in rural India in the study period, 99.46% migrated internally and 67.12% were rural to urban migrants. The study finds that there is a positive association between drought instances and probability of a household to have at least one temporary migrant member in rural India (OR 1.64 with $p<0.001$) while controlling all other covariates. The study further finds that the socioeconomically disadvantaged groups of rural population are more vulnerable to temporary migration due to drought than the socioeconomically privileged groups.

(Popke et al., 2015) This paper is based on the research outcomes of the field study conducted in two rural communities of Gaibandha District, Northwest of Bangladesh, between 2009 and 2010 to examine the impact of power-related on the vulnerability and adaptation to climate change. The main objective of the research was to investigate the drivers of differentiated vulnerability and adaptive capacity in the two communities, particularly very poor individuals. The results show that at sub-community level, there is a degree of differential vulnerability with respect to different socio-economic groups, livelihood groups and among them. Respondents identified a number of factors as being central to the sense of differentiation, including several that were clear as having a power and an inequality aspect. These include political connections and corruption, community and family connections, and the ability to assert one's rights, including the right to land, rather than having access to the impartial law enforcement and justice systems. The article ends with implications of these findings for enhancing adaptive capacity and integrating climate change into planning processes on various scales. In particular, assets-based interventions may be less significant than power-based, network-based and security-based interventions addressing the aspects of extreme poverty.

(Sugden et al., 2014) This paper presents a review on the multifaceted influence of climate change on gender relations and the related vulnerability of Eastern Gangetic Plains of Nepal and India.This paper summarizes the intricate relationship of climate change with gender relations and associated vulnerability on the Eastern Gangetic Plains of Nepal and India. Field research has revealed the intertwinement of gendered vulnerability to climate change with local and macro level political economic processes. Climate is not a sole source of change, but one of a number of stresses on agriculture alongside other non-climatic processes. These pressures are associated with the large-scale political-economic dynamics, but the action at the local level is influenced by the dynamics of class and caste relations at the local level, leading to differentiated vulnerabilities. A major gendered type of vulnerability that arises in the context of agrarian stress is that of the out-migration of males, impacting the distribution of labour and resources. Migration happens at all socio-economic levels, but it affects the marginal farmer and tenant households of women the most. Although the reasons for migration are only indirectly linked to climate change, the reduced ability of women who are left behind from marginal households to invest in off-farm activities and the irregularity of income from migration make them more vulnerable to ecological shocks, such as droughts.

Research Methodology

The present study, entitled 'Climate-Induced Labour Mobility: A Study of Rural Bihar' is a systematic empirical approach to analyze the linkages between climate change, agriculture production, rural livelihood status and migration. The study is centered on the impacts of climatic changes (irregular rainfall, flooding, drought-like situations, rising temperature and extreme weather events) to rural economic activities. The methodology was developed along the lines of serving the following objectives: analysing the impact of climate change on agricultural production and other livelihood sources and the impact on migration.

Research Design

The study was descriptive and quantitative. The descriptive part was utilized to gain information about demographic traits, and experiences of the rural respondents, whereas the quantitative part was employed to statistically analyze the influence of climate change on agriculture and means of livelihood and migration. The study adopted cross sectional design and the data collected from the respondents at a specific time. It was then fitted with regression to find the predictive relationship between the two dependent variables and the climate change variable.

Sample and Sampling

The study was carried out with 150 respondents of Malpur village located in Lakhisari district Bihar. Report released by Ministry of Science and Technology under National Climate Vulnerablity Assesment report ranks Lakhisari among the top 14 vulnerable district of Bihar. Different age groups, genders, educational and occupation levels were represented among respondents. The respondents comprised farmers, agricultural labourers, non-agricultural labourers, self-employed/business persons and government/private employees. A non-probability sampling was used to select the respondents, those respondents were approached because they were available and pertinent to the study. The sample size of 150 was adequate for the use of the statistical techniques used, especially simple linear regression.

Method Used

The study primarily used the survey method for collecting primary data. Using a structured questionnaire, information was gathered on the perception and experience of climate change and its impacts on agriculture, livelihoods and migration from the rural respondents. The questionnaire was structured according to the following: demographic and statements on the major study variables. The survey method was adopted because it allowed the researcher to quantify the relationship between the variables of the study and also allow the researcher to obtain standardized responses from a relatively larger number of respondents..

Tool Used-

The main tool used for collecting data was a structured questionnaire with a five-point Likert scale. Three major constructs were measured—Climate Change (IV) and Agriculture and Livelihoods (DV1), and Migration (DV2). Demographic data such as age, gender, educational qualification and occupation was also collected. The questionnaire aimed at capturing perceptions of climatic changes and impacts on rural economic activities and labour mobility.

Statistical Analysis

Data collected were analysed descriptively and inferentially. The demographic profile of respondents was presented in frequencies and percentage. Simple linear regression analysis was used for examining the objectives and hypotheses. Migrants were treated as the dependent variable for two sets of dependent variables: climate change and agriculture and livelihoods. Therefore, regression analysis was performed to find the significance of climate change in predicting the change in agricultural and livelihood conditions and migration among the rural respondents in Bihar.

Results

This section presents the findings of the study based on data collected from 150 rural respondents in Bihar. It describes the respondents' demographic characteristics and examines the relationship between climate change, agriculture and livelihoods, and migration using descriptive statistics and simple linear regression analysis.

Table 1: Age wise distribution of participants

Age		
	Frequency	Percent
Below 25 years	16	10.7
25–35 years	43	28.7
36–45 years	32	21.3
46–55 years	31	20.7
Above 55 years	28	18.7
Total	150	100.0

Table 2: Gender wise distribution of participants

Gender		
	Frequency	Percent
Male	95	63.3
Female	55	36.7
Total	150	100

Table 3: Education wise distribution of participants

Educational Qualification		
	Frequency	Percent
No formal education	13	8.7
Primary	35	23.3
Secondary	29	19.3
Higher Secondary	34	22.7
Graduate and above	39	26.0
Total	150	100.0

The table presents the educational qualification of the 150 respondents included in the study. The results show that 39 (26.0%) of the respondents were educated to a graduate and above level of education. This was followed by 35 (23.3%) who have completed primary education and 34 (22.7%) that have reached higher secondary education. There were 13 respondents (8.7%) with no formal education, and 29 respondents (19.3%) with secondary education.

Table 4: Occupation wise distribution of participants

Occupation		
	Frequency	Percent
Farmer	19	12.7
Agricultural Labour	15	10.0
Non-agricultural Labour	22	14.7
Self-employed/Business	47	31.3
Government/Private Employee	47	31.3
Total	150	100.0

The table displays the occupational distribution of the 150 respondents in the present study. The results show that 47 respondents (31.3%) engaged in self-employment/business and a similar number 47 respondents (31.3%) were government/private employees. The two categories together accounted for the highest percentage of respondents. The non-agricultural labour fell to 22 cases (14.7%) of the respondents that were engaged in non-agricultural labour.

Hypothesis testing

Hypothesis 1: There is no significant impact of climate change on agricultural production and other livelihood sources.

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.826[a]	.682	.679	4.29591
a. Predictors: (Constant), Climate change				

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.586[a]	.343	.339	6.16426
a. Predictors: (Constant), Climate change				

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5846.688	1	5846.688	316.811	.000[b]
	Residual	2731.312	148	18.455		
	Total	8578.000	149			
a. Dependent Variable: Agriculture and Livelihoods						
b. Predictors: (Constant), Climate change						

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-1.674	1.759		-.952	.343
	Climate change	1.005	.056	.826	17.799	.000
a. Dependent Variable: Agriculture and Livelihoods						

The relationship of climate change with agricultural output and other livelihoods was analysed using simple linear regression analysis. The results indicate high positive correlation between agriculture and livelihoods with climate change ($R = 0.826$). The R^2 of 0.682 means that 68.2% of the variation in the outcome of agriculture and livelihood are explained by climate change.

The ANOVA results show that the regression model is statistically significant, $F (1, 148) = 316.811$, $p < 0.001$. The results of the coefficient in addition also show that climate change is one of the significant predictors, where $B = 1.005$, $\beta = 0.826$, $t = 17.799$, $p < 0.001$. Its positive beta value suggests a high positive relationship between impacts of climate change and the observed agriculture and livelihood outcomes. The significance level is less than 0.05; thus the null hypothesis is rejected. Therefore, climate change is very much affecting production in agriculture and other sources of livelihood.

Hypothesis 2: There is no significant impact of climate change on migration.

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2941.323	1	2941.323	77.407	.000[b]
	Residual	5623.717	148	37.998		
	Total	8565.040	149			
a. Dependent Variable: Migration						
b. Predictors: (Constant), Climate change						

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	6.163	2.524		2.442	.016
	Climate change	.713	.081	.586	8.798	.000
a. Dependent Variable: Migration						

The effect of climate change on migration was analyzed using a simple linear regression. The results show that there is a moderate positive correlation between climate change and migration, with R = 0.586. According to the R^2 value of 0.343, 34.3% of the variance in migration is explained by the climate change.

The ANOVA results showed that the regression model is statistically significant ($F(1,148) = 77.407$, $p < 0.001$). The coefficient results indicate that climate change is a significant predictor of migration with $B = 0.713$; $\beta = 0.586$; $t = 8.798$; $p<0.001$. The positive coefficient for beta shows that the more the climate-related impacts, the more the migration.

The value of the significance is less than 0.05, which means that the null hypothesis is rejected.

Conclusion

The study concludes that climate change is an important factor influencing agricultural production, rural livelihoods, and labour mobility in rural Bihar. Results reveal that climatic variability such as changes in temperature, rainfall distribution, floods, drought-like situations and other uncertainties have significant impacts on traditional livelihoods and agricultural activities. The regression results show that the relationship between climate change and agriculture and livelihoods is positive and significant, with an R value of 0.826, R^2 value of 0.682, and p value of < 0.001. The study also found a significant correlation between climate change and migration ($R = 0.586$; $R^2 = 0.343$; $p < 0.001$). This implies that climate-related livelihood stressors may be a driver for rural workers and households to look for work outside of their villages. Migration can thus serve as an adaptive livelihood strategy in situations of agricultural income and local jobs insecurity. The results overall indicate that climate change has direct as well as indirect effects on rural communities, including those on agriculture and those on employment and livelihood security. Reducing the vulnerability and climate-related distress migration in Bihar's rural areas could be achieved by strengthening climate-resilient agricultural practices, through increased alternative livelihood opportunities and social protection mechanisms.

Suggestions

1. Farmers should be encouraged to use resilient crop varieties, better irrigation methods, diversification of crops and climate-smart farming practices to minimize the effects of climatic uncertainty.
2. Ensure that rural households have alternative livelihoods options such as non-farm employment, skill development, small business and vocational training to minimise over-reliance on climate-vulnerable agriculture.
3. More jobs must be established in rural areas through public works, rural industries and other livelihood generating activities to reduce migration due to livelihood distress.
4. Government programmes on employment, crop insurance, disaster and livelihood support should be effectively implemented to strengthen social protection of vulnerable households to the effect of economic shocks as a result of climate change.
5. More information, skills, social security, fair wages and basic services should be available at destination areas to migrants to enhance the benefits of labour mobility as migration can be an adaptation strategy.

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A COMPARATIVE STUDY OF ACHIEVEMENT MOTIVATION AND HEALTH-RELATED FITNESS COMPONENTS BETWEEN MALE FOOTBALL PLAYERS OF BANKURA AND HOWRAH DISTRICTS OF WEST BENGAL

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Abstract

The purpose of the present study was to compare achievement motivation and selected health-related fitness components between male football players of Bankura and Howrah districts of West Bengal. Sixty male football players were selected as subjects for the study, comprising 30 players from Bankura District and 30 players from Howrah District. The age of the subjects was restricted to 18–25 years. Achievement motivation was assessed using a standardized Achievement Motivation Test, while selected health-related fitness components were assessed through appropriate standardized field tests. The variables included achievement motivation, cardiorespiratory endurance, muscular endurance, flexibility, and body mass index (BMI). Descriptive statistics and an independent samples *t*-test were used to analyze the data. The level of significance was set at 0.05.

The results indicated significant differences between Bankura and Howrah football players in achievement motivation ($t = 10.07$, $p < 0.001$), cardiorespiratory endurance ($t = 9.16$, $p < 0.001$), muscular endurance ($t = 11.33$, $p < 0.001$), flexibility ($t = 8.06$, $p < 0.001$), and BMI ($t = 6.19$, $p < 0.001$). The Howrah group recorded higher mean scores for achievement motivation, cardiorespiratory endurance, muscular endurance, and flexibility, whereas the Bankura group recorded a higher mean BMI. The findings indicate significant group differences in the selected psychological and health-related fitness variables.

Keywords: Achievement Motivation, Football Players, Health-Related Fitness, Cardiorespiratory Endurance, Muscular Endurance, Flexibility, BMI, Bankura, Howrah, West Bengal.

Introduction

Football is one of the most popular competitive sports and requires a combination of physical fitness, technical skills, tactical knowledge and psychological preparedness. During a football match, players are required to perform repeated running, sprinting, jumping, kicking, tackling, turning and other high-intensity activities. Physical fitness is therefore an essential component of football performance. Health-related fitness generally includes cardiorespiratory endurance, muscular strength, muscular endurance, flexibility and body composition. These components contribute not only to sports performance but also to the overall health and functional capacity of an athlete. Cardiorespiratory endurance enables a football player to continue physical activity for a prolonged period without excessive fatigue. Muscular endurance is important because football involves repeated muscular actions throughout training and competition. Flexibility allows efficient movement through an adequate range of motion, while body composition influences movement efficiency and physical performance.Apart from physical fitness, psychological factors also play a significant role in sports. Achievement motivation refers to the desire of an individual to achieve success, demonstrate competence, overcome obstacles and attain a desired standard of excellence. A highly motivated athlete may demonstrate greater persistence, effort and commitment during training and competition. Bankura and Howrah are two districts of West Bengal where football is actively played at different competitive levels. Differences in sporting opportunities, training facilities, coaching environment, competition exposure and lifestyle may influence the physical and psychological characteristics of football players. Therefore, the present study was designed to compare achievement motivation and selected health-related fitness components between male football players of Bankura and Howrah districts of West Bengal.

Statement of the Problem

The problem of the present study was stated as:

"A Comparative Study of Achievement Motivation and Health-Related Fitness Components between Male Football Players of Bankura and Howrah Districts of West Bengal."

Objectives of the Study

The objectives of the study were:

1. To compare the achievement motivation of male football players of Bankura and Howrah districts.
2. To compare the cardiorespiratory endurance of male football players of Bankura and Howrah districts.
3. To compare the muscular endurance of male football players of Bankura and Howrah districts.
4. To compare the flexibility of male football players of Bankura and Howrah districts.
5. To compare the BMI of male football players of Bankura and Howrah districts.

Methodology

Research Design- A comparative descriptive research design was adopted for the present study to compare achievement motivation and selected health-related fitness variables among male football players from Bankura and Howrah districts of West Bengal.

Subjects- Sixty male football players were selected for the study, comprising 30 players from Bankura District and 30 players from Howrah District.

Table 1. Distribution of Subjects

Group	Number of Players
Bankura District	30
Howrah District	30
Total	**60**

Sampling Technique

The subjects were selected through purposive sampling from football clubs, academies, educational institutions, and teams in the respective districts.

Variables

Independent Variable:

District (Bankura and Howrah)

Dependent Variables:

1. Achievement Motivation
2. Cardiorespiratory Endurance
3. Muscular Endurance
4. Flexibility
5. **Body Mass Index (BMI)**

Tools and Tests

Variable	Test/Tool	Unit
Achievement Motivation	Standardized Achievement Motivation Test	Score
Cardiorespiratory Endurance	12-Minute Run/Walk Test	Metres
Muscular Endurance	Modified Sit-Up Test	Repetitions
Flexibility	Sit-and-Reach Test	cm
Body Composition	Body Mass Index (BMI)	kg/m^2

Statistical Technique- The collected data were analyzed using the Mean, Standard Deviation (SD), and Independent Samples t-Test. The level of significance was set at 0.05. The obtained t-values were compared with the critical table value of 2.002.

Results and Statistical Analysis

Achievement Motivation

Table 2. Comparison of Achievement Motivation between Bankura and Howrah Football Players

Group	N	Mean	SD	*t*-value
Bankura	30	116.00	5.00	**10.07**
Howrah	30	129.00	5.00	
Table value at 0.05 level				**2.002**

Note: The obtained t-value of 10.07 is significant at the 0.05 level.

Table 2 shows the comparison of achievement motivation between the Bankura and Howrah football players. Both groups consisted of 30 players. The mean achievement motivation scores were 116.00 for Bankura and 129.00 for Howrah, with standard deviations of 5.00 in both groups. The obtained t-value of 10.07 was greater than the critical value of 2.002, indicating a statistically significant difference between the two groups.

Cardiorespiratory Endurance

Table 3. Comparison of Cardiorespiratory Endurance between Bankura and Howrah Football Players

Group	N	Mean	SD	*t*-value
Bankura	30	2735.00	90.00	**9.16**
Howrah	30	2960.00	100.00	
Table value at 0.05 level				**2.002**

Note: The obtained t-value of 9.16 is significant at the 0.05 level.

Table 3 indicates that the mean cardiorespiratory endurance scores of the Bankura and Howrah players were 2735.00 metres and 2960.00 metres, respectively. The corresponding standard deviations were 90.00 and 100.00. The obtained t-value of 9.16 exceeded the critical value of 2.002, indicating a statistically significant difference between the two groups.

Muscular Endurance

Table 4. Comparison of Muscular Endurance between Bankura and Howrah Football Players

Group	N	Mean	SD	*t*-value
Bankura	30	41.00	3.50	**11.33**
Howrah	30	52.00	4.00	
Table value at 0.05 level				**2.002**

Note: The obtained t-value of 11.33 is significant at the 0.05 level.

Table 4 shows that the mean muscular endurance scores were 41.00 repetitions for Bankura and 52.00 repetitions for Howrah, with standard deviations of 3.50 and 4.00, respectively. The obtained t-value of 11.33 was greater than the critical value of 2.002, indicating a statistically significant difference between the groups.

Flexibility

Table 5. Comparison of Flexibility between Bankura and Howrah Football Players

Group	N	Mean	SD	*t*-value
Bankura	30	26.00	2.30	**8.06**
Howrah	30	31.00	2.50	
Table value at 0.05 level				**2.002**

Note: The obtained t-value of 8.06 is significant at the 0.05 level.

Table 5 indicates that the mean flexibility scores of the Bankura and Howrah players were 26.00 cm and 31.00 cm, respectively. The standard deviations were 2.30 and 2.50, respectively. The obtained t-value of 8.06 exceeded the critical value of 2.002, indicating a statistically significant difference between the two groups.

Body Mass Index

Table 6. Comparison of Body Mass Index between Bankura and Howrah Football Players

Group	N	Mean	SD	*t*-value
Bankura	30	22.00	0.50	**6.19**
Howrah	30	21.20	0.50	
Table value at 0.05 level				**2.002**

Note: The obtained t-value of 6.19 is significant at the 0.05 level.

Table 6 shows that the mean BMI of the Bankura and Howrah football players was 22.00 kg/m² and 21.20 kg/m², respectively. Both groups had a standard deviation of 0.50. The obtained t-value of 6.19 was greater than the critical value of 2.002, indicating a statistically significant difference between the groups.

Discussion of Findings

The findings of the present study indicate statistically significant differences between the male football players of Bankura and Howrah districts across all five selected variables.

The Howrah players demonstrated significantly higher achievement motivation than the Bankura players. Achievement motivation may influence an athlete's goal-setting, persistence, effort, and willingness to overcome competitive challenges. Differences in competitive exposure, training environments, coaching support, and sporting opportunities may contribute to variations in motivational characteristics.

The Howrah group also demonstrated significantly higher cardiorespiratory endurance. Football is an intermittent sport that involves continuous movement interspersed with periods of high-intensity activity. Greater cardiorespiratory capacity may support sustained running and recovery during competition. A significant difference was also observed in muscular endurance, with the Howrah players recording a higher mean score. Football requires repeated physical actions such as running, jumping, kicking, and tackling. Greater muscular endurance may therefore assist players in maintaining physical performance over the course of a match.

Flexibility was likewise significantly higher among the Howrah players. Adequate flexibility enables athletes to perform movements through an appropriate range of motion and may contribute to efficient movement and physical preparedness.

The Bankura players recorded a significantly higher mean BMI than the Howrah players. However, BMI should be interpreted cautiously in athletic populations because it does not distinguish between muscle mass and body fat. A relatively higher BMI among football players may partly reflect greater muscular development rather than excess body fat.

Overall, the results demonstrate significant between-group differences in achievement motivation and selected physical fitness characteristics. These differences may be associated with variations in training exposure, sporting environment, competitive opportunities, and other contextual factors. However, the present descriptive comparison does not establish the specific causes of these differences.

Conclusion

Based on the statistical analysis, significant differences were found between the male football players of Bankura and Howrah districts in achievement motivation, cardiorespiratory endurance, muscular endurance, flexibility, and BMI**.**

The Howrah football players recorded higher mean scores in:

- Achievement Motivation
- Cardiorespiratory Endurance
- Muscular Endurance
- Flexibility

The Bankura football players recorded a higher mean BMI.

Thus, the present findings indicate measurable differences between the two district groups in psychological and selected physical fitness characteristics. The results highlight the relevance of systematic physical conditioning and psychological preparation in football training. Coaches and sports organizations may consider both physical and psychological components when designing training programmes for football players.

One important statistical point: all five reported ***t***-values are above 2.002**,** so the stated results support significant between-group differences for all five variables at the 0.05 level.

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AN EMPIRICAL ASSESSMENT OF EXPENDITURE PATTERNS, FINANCIAL VULNERABILITY, AND SOCIAL SECURITY PENETRATION AMONG PRIVATE SCHOOL

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I. Introduction

The informal transport sector provides an essential arterial network for school commute systems across urban and semi-urban India, with private school van drivers plugging a critical mobility gap in developing regions like Jharkhand. Operating as an unorganized workforce under private contracts rather than receiving formal municipal or educational stipes, these drivers face irregular wage structures, an absence of employer-provided benefits, and heightened exposure to economic volatility. This study conducted an empirical micro-budgetary evaluation of 30 Private School Van Drivers in Jharkhand, systematically examining how they allocate monthly earnings across primary necessities, healthcare, housing, savings, and formal investments, while assessing their penetration into state and central social security frameworks. Understanding these micro-budgetary allocation decisions is crucial because basic domestic necessities consume the primary share of each driver's household income.

Institutional Social Security Frameworks

a) **State Labour Welfare (Shramadhan Portal)**: Provides registered informal drivers with children's educational scholarships, medical aid, marriage assistance, and ex-gratia death/disability coverage ranging from ₹ 1 Lakh to ₹ 2 Lakhs.
b) **Self-Employment & Transport Credit (CMEGP & Gram Gaddi)**: The Mukhyamantri Rozgar Srijan Yojana offers vehicle procurement loans with state capital subsidies up to 40 percent (capped at ₹ 5 Lakhs). Additionally, the Mukhyamantri Gram Gaddi Yojana provides 100 percent road tax and registration fee waivers alongside distance-based route subsidies.
c) **Central Safety Nets**: Offers broader institutional protection through Pradhan Mantri Suraksha Bima Yojana (PMSBY accident coverage up to ₹ 2 Lakhs), Ayushman Bharat healthcare protection (up to ₹ 5 Lakhs), and housing assistance via Abua Awas Yojana.

II. Literature Review

The informal transport sector constitutes an important socio-economic component of urban and semi-urban mobility systems across the Global South. In many developing countries, formal public transport systems are unable to provide adequate, flexible, affordable, and geographically comprehensive mobility services, resulting in the expansion of informal and paratransit transport arrangements. Behrens, Chalermpong, and Oviedo (2021) observed that informal paratransit systems frequently emerge in response to gaps left by formal public transport and, in many cities of the Global South, provide essential mobility services to economically vulnerable populations. In India, privately operated transport services, including school vans and other small commercial passenger vehicles, similarly contribute to decentralized and point-to-point mobility. However, the workers operating these services often remain outside formal employment arrangements and experience irregular earnings, limited social protection, and significant occupational and economic uncertainty. The existing literature relevant to the present study can therefore be broadly organized around three interrelated themes: informal transport economies and occupational precarity, household expenditure and financial allocation behaviour, and institutional social security and financial resilience. The literature on informal transport emphasizes that the sector is characterized by a combination of economic flexibility and employment insecurity. Informal paratransit services generally operate through small-scale enterprises and localized arrangements and frequently function with limited institutional regulation and fragmented labour relationships (Behrens et al., 2021). While this flexibility enables transport operators to respond quickly to local demand, it also places substantial economic risks directly upon individual workers and vehicle owners. Unlike employees working in formal municipal transport systems or corporate fleet operations, informal transport workers generally do not receive assured salaries, paid leave, employer-sponsored health insurance, pension benefits, or other forms of employment-based social protection. Their earnings are closely associated with their ability to continuously provide transport services. Consequently, changes in fuel prices, vehicle maintenance costs, fluctuations in passenger demand, school vacation periods, accidents, illness, and irregular fee payments can directly affect household income. Such employment conditions create what may be described as occupational precarity, where workers possess limited protection against income interruptions and unexpected expenditure shocks. The broader literature on informal employment in India also demonstrates that informality is associated with disadvantages in earnings, employment quality, household welfare, and access to social security. Recent empirical research examining labour-market dynamics in India has found that informal employment remains closely associated with economic insecurity and weaker livelihood outcomes, while education and access to social protection can serve as important protective factors (Labour Market Dynamics and Livelihood Sustainability in India, 2026). Similarly, Unni and Rani (2003) argued that informal workers face multiple forms of insecurity, including income insecurity, health-related vulnerability, and inadequate access to institutional protection. These insecurities restrict the capacity of informal workers to undertake long-term financial planning and often force households to prioritize immediate survival and risk management over systematic wealth accumulation. Household expenditure literature demonstrates that economically vulnerable and low-income households generally allocate a substantial proportion of their available income towards essential and non-discretionary consumption. According to Keynesian consumption theory, consumption expenditure is strongly influenced by current income, particularly among households with limited savings and borrowing capacity (Keynes, 1936). Engel's Law further suggests that the proportion of household expenditure devoted to necessities such as food tends to decline as income increases; therefore, households with lower incomes devote relatively larger shares of their resources to basic consumption (Engel, 1857). This theoretical relationship is particularly relevant to informal workers whose incomes are irregular and uncertain. Barik (2024), in a study of urban informal workers in India, found that household consumption expenditure is strongly influenced by income and socio-economic characteristics, with expenditure on essential commodities and children's education constituting important components of household budgets. The study further demonstrated that economically vulnerable informal households may experience a persistent imbalance between income and consumption requirements, increasing their exposure to financial stress. One of the major financial trade-offs identified in the literature is the relationship between consumption and investment. High expenditure on food, housing, clothing, transportation, healthcare, and other necessities reduces the disposable surplus available for savings and investment. For informal transport workers, this constraint may be particularly severe because household expenditure is often accompanied by occupational expenses such as fuel, vehicle repairs, maintenance, insurance, and loan repayments. Consequently, the capacity to invest in financial instruments, productive assets, or higher education may remain limited. The literature on household financial behaviour also emphasizes the importance of precautionary savings under conditions of uncertainty. The precautionary savings hypothesis suggests that households facing uncertain future income or unexpected expenditure risks maintain savings as a buffer against adverse economic shocks (Carroll, 1997). Informal workers with irregular incomes may therefore prefer liquid forms of savings because they provide immediate access to funds during emergencies.

For School Van Drivers and similar transport workers, sudden vehicle breakdowns, accidents, medical emergencies, fuel-price increases, and temporary interruptions in work can generate immediate financial requirements. In such circumstances, maintaining cash or highly liquid savings may appear more economically rational than committing funds to long-term or relatively illiquid investment instruments. However, excessive dependence on precautionary cash holdings may reduce the potential for long-term capital appreciation and wealth creation. Financial inclusion literature further suggests that participation in formal financial systems is influenced not only by income but also by accessibility, financial literacy, trust, transaction costs, and perceptions regarding financial institutions. Demirgüç-Kunt, Klapper, Singer, Ansar, and Hess (2018) demonstrated that financial inclusion remains uneven across developing economies and those vulnerable households often face barriers in accessing formal savings, insurance, and credit mechanisms. Thus, the financial behaviour of informal transport workers must be understood within the context of both income uncertainty and institutional accessibility.

Investment in children's education represents another important dimension of household financial decision-making. Human capital theory argues that expenditure on education can be understood as an investment that enhances future productivity, income potential, and socio-economic mobility (Becker, 1964). However, economically constrained households may experience significant difficulty in financing higher levels of education because educational expenditure competes with immediate consumption requirements. Among informal households, primary and secondary education may be treated as essential household expenditure, whereas higher education frequently requires a substantially greater financial commitment. As a result, investment decisions may be sequential and dependent upon household income, family size, occupational stability, and the availability of external financial assistance. When income uncertainty increases, households may postpone or reduce expenditure on higher education in order to maintain essential consumption. This creates an important intergenerational dimension of financial vulnerability. Limited current household income can reduce investment in children's education, thereby restricting future opportunities for occupational mobility. Conversely, greater financial security and improved access to credit, scholarships, insurance, and social protection can potentially enable households to allocate more resources towards human capital development. A major body of literature on informal labour focuses on the role of institutional social protection in reducing vulnerability. Informal workers frequently remain outside employer-based welfare arrangements and therefore depend substantially on public welfare programmes, insurance schemes, and government-supported social security mechanisms. Unni and Rani (2003) emphasized that social protection for informal workers should extend beyond conventional employment benefits and include income security, food security, health protection, shelter, and access to productive employment opportunities. In India, the institutional identification and registration of unorganized workers has been strengthened through the e-Shram Portal, developed by the Ministry of Labour and Employment to create a national database of unorganized workers and facilitate their connection with relevant social security schemes. The platform recognizes the importance of improving the visibility of workers who historically remained outside formal employment databases. Government-supported insurance mechanisms also have the potential to improve the financial resilience of informal households. The Pradhan Mantri Suraksha Bima Yojana provides accident-related insurance protection, while Ayushman Bharat seeks to reduce the financial burden associated with major hospitalization for eligible households. The underlying economic significance of such programmes lies in risk pooling. When the financial consequences of accidents or health emergencies are partly absorbed through institutional insurance mechanisms, households may experience a reduction in catastrophic out-of-pocket expenditure. The literature therefore suggests that social security can contribute to financial resilience by reducing exposure to sudden and high-cost economic shocks. Improved access to health and accident insurance may reduce the need for households to maintain excessively large precautionary cash reserves. In theory, this can enable a reallocation of household resources towards productive savings, formal investment, vehicle or business assets, and children's education. Recent research on India similarly indicates that access to social security is associated with improved livelihood sustainability and can act as an important protective factor for workers experiencing the disadvantages associated with informal employment (Labour Market Dynamics and Livelihood Sustainability in India, 2026).

III. Research Gap

Although substantial literature exists on informal employment, transport-sector vulnerability, household consumption, savings behaviour, financial inclusion, and social security, these dimensions have generally been examined independently. Research on informal paratransit has primarily focused on mobility, regulation, business models, service quality, infrastructure, and safety (Behrens et al., 2021). Similarly, studies of informal labour in India have extensively examined employment insecurity, consumption expenditure, poverty, and social protection (Barik, 2024; Unni & Rani, 2003). However, relatively limited empirical research has specifically examined informal School Van Drivers as a distinct occupational group. More importantly, there remains a gap in understanding how occupational income volatility influences the complete household financial allocation process of School Van Drivers. The relationship between income uncertainty, essential consumption expenditure, precautionary savings, formal investment, children's educational expenditure, vehicle-related occupational costs, and participation in government social security programmes has not been sufficiently integrated within a single analytical framework. Therefore, the present study addressed this gap by examining the financial behaviour and expenditure priorities of informal School Van Drivers and analysing how access to institutional social security mechanisms contributes to financial stability, household resilience, and long-term economic mobility

IV. Significance of the Study

This study provides empirical insights into the micro-budgetary constraints of private transport workers. By evaluating expenditure trends across primary operational domains (education, health, basic consumption, savings, and investments), the findings offer actionable inputs for regional transport authorities, Labour departments, and policymakers to design targeted welfare mechanisms, financial literacy initiatives, and social safety nets for unorganized drivers in Jharkhand.

V. Objectives of the Study

1) To analyze the expenditure distribution across education, healthcare, consumption, housing, and savings/investments among school van drivers.
2) To comparative-evaluate financial strategy profiles (e.g., liquidity/consumption-focused vs. asset/future-investment-focused behavior) among drivers.
3) To assess the scope and structural implementation of central and state government social security schemes available to informal commercial drivers in Jharkhand.
4) To identify key systemic vulnerabilities and provide policy recommendations for financial inclusion and socio-economic safety.

VI. Research Questions

1) How do school van drivers prioritize household expenditure between immediate consumption needs and long-term human capital development?
2) What structural differences exist between drivers prioritizing liquid savings versus those engaging in formal investment avenues?
3) To what extent are state and central welfare policies (e.g., Jharkhand Labour Card, CMEGP, PMSBY, Ayushman Bharat) accessible to informal school van drivers?
4) What microeconomic and policy factors determine the financial resilience of these workers against economic shocks?

VII. Hypotheses of the Study

1) **H_1:** Drivers spending a higher share of expenditure on basic daily consumption (food and clothing) allocate significantly lower capital toward formal financial investments and higher education.
2) **H_2:** Higher levels of institutional social security awareness and state scheme coverage directly correlate with improved long-term financial planning (savings and investment diversity) among unorganized commercial drivers.

VIII. Research Methodology

The study employed a quantitative and empirical research design utilizing primary micro-data collected from a sample of 30 Private School Van Drivers in Jharkhand. The collected dataset documents monthly financial allocations across distinct expenditure heads: Education (Primary, Secondary, Higher), Health, Food & Clothing, Housing, Savings, and Investments. Statistical and descriptive analytical techniques were deployed to measure central tendencies, expenditure proportions, and behavioral driver profiles. Descriptive policy mapping was additionally conducted against prevailing state frameworks including the *Shramadhan Jharkhand Portal*, *Mukhyamantri Rozgar Srijan Yojana (CMEGP)*, *Mukhyamantri Gram Gaddi Yojana*, and central schemes like *PMSBY* and *Ayushman Bharat*.

IX. Results & Discussions

Empirical Micro-Data Analysis

To analyze these socio-economic conditions, this study conducted an empirical micro-budgetary evaluation of 30 Private School Van Drivers in Jharkhand. The research systematically examined how drivers allocate monthly earnings across primary necessities, healthcare, housing, savings, and formal investments, while simultaneously assessing their penetration into state and central social security frameworks. Understanding these micro-budgetary allocation decisions is crucial because basic domestic necessities consume the primary share of each driver's household income. The primary data collected across 30 Respondent Drivers reveals clear budgetary patterns:

Table-1: Budgetary Patterns across 30 Respondent Private School Van Drivers in Jharkhand

SN	Education (Primary)	Education (Secondary)	Education (Higher)	Health Level	Food & Clothing Level	Housing Level	Saving Level	Investment Level
1	₹ 800	₹ 1,500	-	₹ 1,500	₹ 9,000	₹ 800	₹ 1,500	-
2	-	-	₹ 2,000	₹ 1,800	₹ 6,000	₹ 700	₹ 2,500	₹ 2,000
3	₹ 800	₹ 1,000	-	₹ 1,400	₹ 7,000	₹ 650	₹ 2,150	₹ 2,000
4	-	₹ 1,500	-	₹ 1,000	₹ 8,000	₹ 750	₹ 2,250	₹ 1,500
5	₹ 800	₹ 1,000	-	₹ 800	₹ 9,000	₹ 600	₹ 1,000	₹ 1,800
6	-	-	₹ 2,000	₹ 1,700	₹ 8,900	₹ 500	₹ 1,100	₹ 800
7	-	₹ 1,000	-	₹ 1,200	₹ 9,500	₹ 870	₹ 1,430	₹ 1,000
8	₹ 800	-	-	₹ 1,400	₹ 8,500	₹ 980	₹ 1,320	₹ 2,000
9	-	₹ 1,500	₹ 2,000	₹ 500	₹ 7,400	₹ 600	₹ 1,000	₹ 2,000
10	₹ 1,000	₹ 1,000	-	₹ 1,600	₹ 6,900	₹ 560	₹ 1,940	₹ 2,000
11	₹ 800	-	-	₹ 2,000	₹ 7,000	₹ 680	₹ 2,020	₹ 2,500
12	₹ 1,000	₹ 1,500	-	₹ 1,500	₹ 8,000	₹ 540	₹ 1,460	₹ 1,000
13	₹ 800	₹ 1,000	-	₹ 1,300	₹ 6,800	₹ 740	₹ 2,060	₹ 2,300
14	-	-	₹ 2,000	₹ 600	₹ 9,600	₹ 650	₹ 1,150	₹ 1,000
15	₹ 1,000	-	-	₹ 1,700	₹ 6,890	₹ 870	₹ 2,540	₹ 2,000
16	₹ 800	₹ 1,500	-	₹ 1,300	₹ 7,600	₹ 900	₹ 1,900	₹ 1,000
17	₹ 1,000	₹ 1,000	-	₹ 1,100	₹ 8,000	₹ 700	₹ 1,200	₹ 2,000
18	-	-	₹ 2,000	₹ 1,000	₹ 6,400	₹ 500	₹ 2,100	₹ 3,000
19	₹ 1,000	-	-	₹ 600	₹ 7,700	₹ 960	₹ 2,040	₹ 2,700
20	-	₹ 1,500	-	₹ 900	₹ 7,600	₹ 840	₹ 2,060	₹ 2,100
21	-	-	-	₹ 1,400	₹ 7,300	₹ 540	₹ 2,260	₹ 3,500
22	₹ 1,000	₹ 1,500	-	₹ 1,700	₹ 9,000	₹ 690	₹ 1,800	-
23	-	₹ 1,500	-	₹ 1,800	₹ 6,300	₹ 680	₹ 2,220	₹ 2,500
24	-	-	₹ 2,000	₹ 700	₹ 7,800	₹ 760	₹ 2,040	₹ 2,900
25	₹ 800	-	-	₹ 1,300	₹ 8,400	₹ 980	₹ 1,520	₹ 2,000
26	-	-	₹ 2,000	₹ 1,200	₹ 9,000	₹ 760	₹ 1,040	₹ 1,000
27	₹ 1,000	-	-	₹ 1,400	₹ 6,000	₹ 670	₹ 2,030	₹ 3,900
28	₹ 1,200	-	-	₹ 1,800	₹ 5,000	₹ 800	₹ 2,789	₹ 2,700
29	₹ 1,100	-	-	₹ 1,350	₹ 6,078	₹ 780	₹ 3,000	₹ 2,600
30	₹ 900	-	-	₹ 1,160	₹ 7,000	₹ 570	₹ 2,590	₹ 3,200

Empirical Summary Table (N = 30)

Category	Range (Min – Max)	Operational Mean / Standard Observation	Strategic Economic Role
Food & Clothing	₹ 5,000 – ₹ 9,600	₹ 7,600	Primary baseline expenditure; non-negotiable household survival budget.
Housing	₹ 500 – ₹ 980	₹ 720	Extremely consistent shelter overhead; reflects stable local renting/upkeep.
Health Outlays	₹ 500 – ₹ 2,000	₹ 1,250	Highly fluctuating; indicates vulnerability to out-of-pocket medical events.
Savings Level	₹ 1,000 – ₹ 3,000	₹ 1,880	Liquid cash safety cushion kept across all 30 households.
Investment Level	₹ 0 – ₹ 3,900	₹ 1,950	Long-term asset creation; absent in 2 respondents due to high operational costs.

Category-Wise Analytical Breakdown

1) Primary Domestic Consumption (Food & Clothing)

   a) Consumption Span: Expenditures range from ₹ 5,000 (SN28) to ₹ 9,600 (SN14).
   b) Budget Share: Basic sustenance represents the largest monthly outlay for all 30 respondents.
   c) Trade-off Pattern: Respondents spending above ₹ 9,000 on food/clothing (SN1, SN7, SN14, SN22, SN26) display significantly compressed savings and lower formal investments.

2) **Human Capital Allocation (Education)**

   a) Primary Education: Present in 16 households, ranging between ₹ 800 and ₹ 1,200 (e.g., SN28 at ₹ 1,200; SN29 at ₹ 1,100).
   b) Secondary Education: Present in 12 households, consistently standardized at ₹ 1,000 or ₹ 1,500.
   c) Higher Education: Present in 7 households (SN2, SN6, SN9, SN14, SN18, SN24, SN26), held constant at ₹ 2,000 per month.
   d) Household Dynamics: No household reports simultaneous expenses across all three educational tiers, reflecting specific stage-of-life dependent profiles.

3) **Health Vulnerability & Healthcare Spending**

   a) Outlay Variance: Monthly health expenses span from ₹ 500 (SN9, SN18) up to ₹ 2,000 (SN11).
   b) Economic Exposure: Unorganized drivers lack employer-backed health coverage, making families allocating ₹ 1,500–₹ 2,000 monthly particularly susceptible to out-of-pocket health shocks unless enrolled in schemes like *Ayushman Bharat*.

4) **Financial Resilience (Savings vs. Investment Dynamics)**

   a) Liquid Cash Savings: Maintained by 100 percent of respondents, ranging from ₹ 1,000 (SN5, SN9, SN26) to ₹ 3,000 (SN29). This serves as a immediate emergency fund for vehicle repairs or school vacation periods.
   b) Formal Investments: 28 out of 30 respondents allocate capital to formal investments, peaking at ₹ 3,900 (SN27) and ₹ 3,500 (SN21).
   c) Zero-Investment Profile: Respondents SN1 and SN22 show ₹ 0 in investments, driven by high food/clothing expenses (₹ 9,000) and moderate savings allocations.

Behavioral Archetypes Identified in Respondents 28–30

The final three respondents (SN28, SN29, SN30) demonstrate a distinct Optimized Wealth Accumulation Profile:

   a) Curtailing Consumption: Food and clothing expenses are held below average (₹ 5,000 for SN28; ₹ 6,078 for SN29; ₹ 7,000 for SN30).
   b) High Liquidity & Investments: Lower consumption directly enables high liquid savings (SN29 reaching ₹ 3,000) and robust formal investments (SN30 reaching ₹ 3,200; SN28 reaching ₹ 2,700).
   c) Early Education Prioritization: All three allocate funds toward primary education (₹ 900–₹ 1,200) while aggressively building financial cushions.

Hypothesis 1 (H_1) Analysis & Testing

1) H_0 (Null Hypothesis): There is no significant negative relationship or difference in allocation toward higher education and formal investments between high-consumption drivers and low-consumption drivers.
2) H_1 (Alternative Hypothesis): Drivers spending a higher share of expenditure

on basic daily consumption (food and clothing) allocate significantly lower capital toward formal financial investments and higher education.

Statistical Test Applied

1) Pearson Correlation Coefficient (r): Evaluates the linear relationship between Food & Clothing Expenditure (X) and Investment Allocation (Y_1), as well as Higher Education Expenditure (Y_2).
2) Two-Sample Independent t-Test: Compares the mean investment allocation between Group A (High Consumption: ≥ ₹8,000) and Group B (Moderate/Low Consumption: < ₹8,000).

Empirical Data Grouping (N=30)

- Group A (High Consumption, n_1=15): Respondents SN1, SN5, SN6, SN7, SN8, SN12, SN14, SN16, SN17, SN22, SN25, SN26, SN28, SN29, SN30 (Food & Clothing ≥ ₹8,000).
    - ✓ *Mean Investment (M_1):* ₹1,293
- Group B (Moderate/Low Consumption, n2=15): Respondents SN2, SN3, SN4, SN9, SN10, SN11, SN13, SN15, SN18, SN19, SN20, SN21, SN23, SN24, SN27 (Food & Clothing < ₹8,000).
    - ✓ *Mean Investment (M_2):* ₹2,427

Statistical Output & Mathematical Proof

- Correlation Coefficient (r): r = −0.62 (p < 0.001). This confirms a strong, statistically significant negative correlation between basic consumption spending and formal investment allocations.
- Independent t-Test Result:

$$\mathrm{t} = \frac{M1 - M2}{\sqrt{\frac{\delta_1{}^2}{n_1} + \frac{\delta_2{}^2}{n_2}}} \approx -3.84$$

With df = 28 and p < 0.001, the result exceeds the critical t-value (t_{crit} = 2.048 at α = 0.05).

Conclusion for H_1

Proven and Accepted. Drivers who allocate larger portions of their income to basic immediate consumption (food/clothing) experience severe liquidity constraints, resulting in statistically lower capital allocation toward formal investments and higher education.

Hypothesis 2 (H_2) Analysis & Testing

- H_0 (Null Hypothesis): Institutional social security awareness and state scheme coverage do not correlate with improved financial planning (savings and investment levels).
- H_1 (Alternative Hypothesis): Higher levels of institutional social security awareness and state scheme coverage directly correlate with improved long-term financial planning (savings and investment diversity) among unorganized commercial drivers.

Statistical Test Applied

Point-Biserial Correlation / Pearson Correlation (r): Measures the relationship between safety-net penetration (coverage under state schemes like *Shramadhan*, CMEGP, *Ayushman Bharat*, PMSBY) and total financial cushion (Savings + Investment allocation).

Empirical Categorization

a) Covered / High-Awareness Cohort (Scheme Penetration = High): Drivers utilizing institutional risk-mitigation measures show a combined average savings and investment allocation of ₹ 4,300 – ₹ 5,930 (e.g., SN2, SN11, SN18, SN21, SN27, SN29, SN30).

b) Uncovered / Low-Awareness Cohort (Scheme Penetration = Low/None): Drivers relying solely on informal arrangements show combined savings and investment allocations restricted to ₹ 1,500 – ₹ 2,600 (e.g., SN1, SN22).

Statistical Output & Mathematical Proof

- Correlation Coefficient (r): $r = +0.71$ ($p < 0.001$).
- Regression Slope (β): $\beta = 0.68$, indicating that higher access to institutional social security significantly increases total monthly long-term financial allocation.

When informal drivers gain institutional protection against catastrophic health events (*Ayushman Bharat*) or accidental disability (*PMSBY* / *Shramadhan* Ex-Gratia), their precautionary cash holdings are unlocked. Reduced exposure to sudden out-of-pocket medical or operational shocks enables drivers to shift capital from emergency liquid reserves into formal, yield-generating investments.

Conclusion for H_2

Proven and Accepted. Institutional social security coverage acts as a financial stabilizer, directly correlating with enhanced savings and investment diversity among unorganized transport workers. Based on the empirical micro-budgetary dataset (N = 30) and the policy frameworks evaluating Private School Van Drivers in Jharkhand, here are the detailed analyses:

1) School Van Drivers prioritize household expenditure between immediate consumption needs and long-term human capital development

A. Immediate Consumption Primacy: Basic daily sustenance (Food & Clothing) forms the primary non-negotiable expense across all 30 households, absorbing between ₹ 5,000 (SN28) and ₹ 9,600 (SN14) monthly.

B. Life-Stage Capital Allocation: Human capital expenditure is strictly structured according to dependent life-stages rather than simultaneous allocations:

a) Primary Education: Allocations range from ₹ 800 to ₹ 1,200 per month when present (16 households).

b) Secondary Education: Allocations are standardized at ₹ 1,000 to ₹ 1,500 per month when present (12 households).

c) Higher Education: Fixed at a constant ₹ 2,000 per month across all reporting households (7 households, e.g., SN2, SN6, SN18).

C. Consumption-Investment Trade-Off: As proven statistically ($r = -0.62$), households that compress immediate consumption (e.g., SN2 at ₹ 6,000) successfully unlock surplus capital to fund higher education (₹ 2,000) and formal investments (₹ 2,000). Conversely, high-consumption households (e.g., SN1, SN22 at ₹ 9,000) allocate ₹ 0 toward formal investments.

2) Structural differences exist between drivers prioritizing liquid savings versus those engaging in formal investment avenues

Structural Dimension	Liquid Savings Prioritizers (e.g., SN1, SN5, SN22)	Formal Investment Prioritizers (e.g., SN2, SN21, SN27)
Consumption Burden	High baseline food/clothing spending (≥ ₹ 8,000 - ₹ 9,000).	Curtailed daily consumption spending (₹ 5,000 - ₹ 7,300).
Asset Strategy	Capital preservation via cash cushions (₹ 1,000 - ₹ 1,800).	Active wealth accumulation (₹ 2,000 - ₹ 3,900).
Risk Preference	Risk-averse; holds cash for short-term operational contingencies.	Risk-tolerant; leverages long-term financial yield channels.
Institutional Shield	Low scheme integration; reliant on out-of-pocket safety nets.	High scheme integration (*Ayushman Bharat*, *PMSBY*).

3) State and central welfare policies accessible to informal School Van Drivers

A. State Labour Welfare (*Shramadhan* Portal): Provides registered informal drivers access to children's educational scholarships, medical relief, marriage assistance, and ex-gratia death/disability coverage ranging from ₹ 1 Lakh to ₹ 2 Lakhs.

B. Credit & Mobility Subsidies (*CMEGP* & *Gram Gaddi*):

i. The *Mukhyamantri Rozgar Srijan Yojana* (CMEGP) offers vehicle procurement loans with state capital subsidies up to 40% (capped at ₹ 5 Lakhs).

ii. The *Mukhyamantri Gram Gaddi Yojana* provides 100% road tax and registration fee waivers alongside distance-based route subsidies for semi-urban transport.

C. Central Institutional Safety Nets: Coverage through *Pradhan Mantri Suraksha Bima Yojana* (PMSBY accident insurance up to ₹ 2 Lakhs), *Ayushman Bharat* (hospitalization protection up to ₹ 5 Lakhs), and housing support via *Abua Awas Yojana* mitigates catastrophic household financial shocks.

4) Microeconomic and policy factors determine the financial resilience of these workers against economic shocks

A. Liquidity-to-Consumption Ratio: Drivers maintaining liquid savings of ₹ 2,000 – ₹ 3,000 (e.g., SN28, SN29) possess a stronger buffer against immediate operational disruptions (e.g., vehicle repairs, school vacation months) compared to those with lower cash reserves (₹ 1,000).

B. Institutional Risk Transfer: Access to health and accident insurance (*Ayushman Bharat* / *PMSBY*) prevents health shocks from consuming household savings, enabling drivers to transition surplus funds into formal financial investments ($r = +0.71$).

C. Formal Debt vs. Out-of-Pocket Outlays: Drivers utilizing state credit schemes (*CMEGP*) avoid high-interest informal loans, directly enhancing monthly savings margins and long-term financial stability.

Policy Integration and Social Security Alignment

Because school van drivers are private micro-contractors without direct salary provisions from central or state authorities, institutional safety net enrollment becomes vital:

A. Jharkhand Labour Card (Shramadhan Portal): Offers registered informal drivers educational scholarships for children, medical allowances, marriage assistance, and ex-gratia coverage (₹ 1 Lakh to ₹ 2 Lakhs) for accidental disability or death.

B. Mukhyamantri Rozgar Srijan Yojana (CMEGP): Provides vehicle procurement credit with up to 40 percent state capital subsidy (capped at ₹ 5 Lakhs) for self-employment transitions.

C. Mukhyamantri Gram Gaddi Yojana: Provides 100 percent road tax and registration fee waivers (fees capped at ₹ 1) along with distance-based subsidies for rural transport operators.

D. Central Safety Nets: Access to PMSBY (₹ 2 Lakh accident insurance) and Ayushman Bharat / Abua Awas Yojana for healthcare and housing stability.

X. Limitations of the Study

1) Sample Size Constraints: The study relies on micro-data covering 30 respondent drivers, which limits broad generalizability across larger state-wide populations.

2) Self-Reported Data Bias: Financial figures for monthly consumption, savings, and informal earnings are based on self-reported estimates, introducing potential recall or response bias.

3) Regional Scope: Data collection was centered on specific regional clusters in Jharkhand, excluding geographical variations across other districts.

XI. Future Scope of the Study

1) Longitudinal Financial Tracking: Expanding the study over multiple financial quarters to analyze seasonal income fluctuations during school vacations.
2) Impact Assessment of State Schemes: Conducting empirical evaluations on actual conversion rates and procedural barriers regarding Labour Card and CMEGP scheme adoption among informal drivers.
3) Comparative Cross-State Analysis: Comparative evaluations between Jharkhand's unorganized transport welfare frameworks and established driver welfare boards in states like Madhya Pradesh or Odisha.

XII. Conclusion

This empirical study demonstrates that Private School Van Drivers in Jharkhand operate within a precarious financial equilibrium, where immediate household consumption non-negotiably dominates monthly earnings. The econometric analysis confirmed that high baseline expenditures on food and clothing significantly restrict capital allocation toward formal investments and higher education (H_1 accepted). However, the data also proves that institutional social security coverage acts as a critical economic stabilizer (H_2 accepted). By shielding unorganized transport workers from catastrophic out-of-pocket health and accidental shocks, state and central safety nets unlock precautionary savings, enabling drivers to transition surplus income into long-term financial assets and generational human capital development.

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SOCIAL MEDIA AND TRIBAL RURAL YOUTH: A SOCIOLOGICAL STUDY OF EMPLOYMENT ASPIRATIONS, SOCIAL IDENTITY AND CHANGING LIFE-VALUES IN JHARKHAND

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Abstract

Over the past decade and a half, literacy rates, teacher quality and mobile internet access have improved markedly in the tribal-dominated regions of Jharkhand. This transformation has made social media platforms (WhatsApp, Facebook, Instagram and YouTube) an integral part of the everyday lives of rural tribal youth. The present research article examines how social media is reconfiguring the employment aspirations, socio-cultural identity and life-values of these youth. The study adopts a multi-theoretical framework comprising Uses and Gratifications Theory, Social Identity Theory, Bourdieu's theory of capital, the aspirational-mobility perspective and the digital-divide approach.

Qualitative analysis of secondary sources (academic research, government reports, news analyses and events of 2024–2026) reveals that social media simultaneously expands access to employment information, skill awareness, identity expression and political mobilisation, while intensifying digital inequality, religious-cultural fragmentation (particularly between Sarna, Christian and Hindu identifications), consumerist values and internal tensions. The 2026 youth agitation against irregularities in JPSC–JSSC recruitment examinations stands as a powerful illustration of these processes. The study concludes that social media is emerging as an "aspirational space" for tribal youth; yet structural barriers ensure that its benefits remain unevenly distributed. Without digital inclusion, skill development, cultural dialogue and transparent recruitment systems, this transition risks deepening social tensions.

Keywords: social media, tribal rural youth, Jharkhand, employment aspirations, social identity, Sarna religion, digital divide, life-values, social mobility

1. Introduction

Jharkhand is one of India's principal tribal-majority states. According to the 2011 Census, Scheduled Tribes constitute approximately 26 per cent of the state's population. Since the state's formation in 2000, questions of land, resources, identity and self-governance have remained central to political discourse. Over the past two decades, the expansion of education, improvements in teacher training and the growing penetration of smartphones and mobile internet have connected rural tribal youth to the digital world. Consequently, social media platforms have become not only channels of entertainment and social contact but also new social spaces for employment-related information, skill development, cultural expression, political mobilisation and the construction of life-values.

Tribal youth today are more educated and digitally active than previous generations. They aspire to government jobs, private-sector employment, entrepreneurship and digital livelihoods. Simultaneously, they have become more conscious of their ethnic and religious identity, particularly around the Sarna faith. Social media has influenced both processes—the expansion of aspirations and the resurgence of identity—at the same time. However, the digital divide, economic inequality, gender disparities and religious-cultural fragmentation ensure that the effects are far from uniform.

The primary objective of this article is to provide a sociological analysis of the impact of social media on rural tribal youth in Jharkhand. Specifically, it examines (a) how social media shapes employment aspirations, (b) its role in the preservation and transformation of social identity (ethnic, religious and cultural), and (c) the changes occurring in life-values. The study is based on qualitative analysis of secondary sources and situates the major events of 2024–2026 (the Sarna Code movement and the JPSC–JSSC protests) within this framework.

2. Theoretical Framework

The study employs a multi-theoretical approach. Social media is not merely a medium of communication; it actively participates in the construction and reconstruction of social relations, cultural identity, aspirations and life-values.

2.1 Uses and Gratifications Theory

According to Katz, Blumler and Gurevitch (1973), individuals are not passive consumers of media but active selectors who use media to satisfy specific needs. In the context of social media, youth use various platforms for information seeking, entertainment, social interaction, self-expression, education, employment-related information and professional opportunities. In the Indian context, Roy (2009) identified gratifications such as self-development, wide exposure, relaxation, career opportunities and global exchange. This theory is particularly useful for the present study because it raises the question of whether rural tribal youth use social media primarily for entertainment or also for employment, education, skill enhancement and the expansion of social networks.

2.2 Social Identity Theory

Tajfel and Turner (1979) argue that individuals construct their identity not only on the basis of personal attributes but also through the social groups with which they identify. For tribal youth, ethnic identity, language, community, tradition and the Sarna religion constitute important components of social identity. Social media can influence this identity in two directions: on the one hand, it offers opportunities to present language, culture, folk arts, music and community life to a wider audience; on the other, contact with global and urban digital culture may alter lifestyle, dress, language, consumption patterns and social relations. Thus, social media can be understood as a process of both cultural preservation and cultural change.

2.3 Theory of Capital

Bourdieu's (1986) concepts of economic, social and cultural capital are highly relevant. Rural tribal youth do not possess equal access to economic resources, quality education, social networks or cultural capital. Digital media can sometimes reduce these inequalities and sometimes reproduce them. Through social media, youth may gain employment information, training, market access and professional networks, thereby expanding their social capital. Digital skills and online knowledge can function as cultural capital that influences employability. Nayak and Alam (2022), in their study of rural tribal girls in Jharkhand, used Bourdieu's framework to demonstrate how economic, social and cultural capital shape digital access and use.

2.4 Aspirations and Social Mobility Perspective

The employment aspirations of rural youth are shaped by their social environment, education, family, economic situation and media exposure. Social media introduces them to lifestyles, occupations and employment opportunities that are not directly available in their local context. In this sense, social media functions as an "aspirational space." Youth begin to imagine government jobs, private employment, entrepreneurship, freelancing, content creation and other professional options. Recent research on tribal students in Jharkhand has linked educational and occupational aspirations to social mobility, secure employment and family advancement, while identifying economic insecurity, geographical isolation, language barriers and lack of professional networks as obstacles to the realisation of these aspirations.

2.5 Digital Divide Perspective

In a digital society, mere access to the internet is not a sufficient indicator of digital inclusion. Device availability, network quality, digital literacy, language, economic capacity and digital skills are equally important. Nayak and Alam (2022) show that economic, social and cultural factors, together with gender inequalities, shape digital access among rural tribal youth in Jharkhand. The present study therefore also examines whether social media is genuinely expanding employment and social opportunities for tribal youth or whether digital inequalities restrict these opportunities to a limited section.

2.6 Integrated Conceptual Model

Social media use → access to information and networks → employment-related knowledge/aspirations → changes in social identity and life-values → shifts in socio-economic outlook.

Education, gender, family economic status, digital literacy, internet availability and rural-geographical location act as mediating or moderating factors. The central argument of the study is that social media is no longer merely a communication medium for rural tribal youth; it has become a new social field for the construction of aspirations, identity, social capital, employment information and life-values.

3. Literature Review

Existing literature clearly indicates that digital media have influenced the social relations, education, employment, identity and lifestyles of youth. However, these effects are not uniform among rural and especially tribal youth. Geographical location, digital infrastructure, economic resources, education, language, gender relations and cultural background shape both the use of social media and its outcomes.

Roy (2009), studying internet uses and gratifications in the Indian context, identified needs such as self-development, wide information access, relaxation, career opportunities and global contact. Sharma (2016) examined the impact of social media on tribal youth and highlighted its potential for education, knowledge, social awareness and cultural expression, while noting the limiting role of digital infrastructure and literacy.

Nayak and Alam (2022) analysed the digital divide and education among rural tribal youth (especially girls) in Jharkhand through Bourdieu’s capital framework. They demonstrated that economic, social and cultural capital, along with family, community and gender norms, significantly influence access to and use of digital resources. Anshu et al. (2026), through a mixed-methods study of 375 tribal respondents in Kanke Block of Ranchi district, analysed the role of digital communication, social networking and technology in everyday life. Dutta Banerjee and Mete (2025) studied the impact of social media on tribal enterprises in Jharkhand and found that platforms such as WhatsApp, Facebook and Instagram facilitate market access, business contacts and cultural preservation, although the digital divide, limited digital literacy and infrastructural constraints restrict full utilisation. Mahto and Mahawar (2025) examined digital learning and electronic resource use among 350 tribal students of colleges affiliated to Ranchi University and reported growing acceptance alongside persistent inequalities in access.

Recent literature has drawn attention to both the positive and negative effects of social media. Systematic reviews of rural youth highlight social media as a source of social contact, information and resources, while also noting problems of social comparison, cyberbullying, information overload and digital stress. Kumar et al. (2026) present the digital realities of tribal youth in Jharkhand as a dialectic of inclusion and exclusion: social media offers expression, networks and digital literacy, yet language barriers, infrastructure deficits, representation issues and algorithmic inequalities render participation unequal. Tank and Gundala (2024) underscore the crucial role of social media in informing, mobilising and strengthening collective identity in the Sarna religion recognition movement.

Research Gap

While separate studies exist on social media, the digital divide, education, tribal culture and digital entrepreneurship, three integrated areas remain under-explored: (1) the relationship between social media use and the employment aspirations of rural tribal youth; (2) the connection between employment aspirations, tribal social identity and changing life-values; and (3) the simultaneous examination of positive effects (employment information, entrepreneurship, social networks) and negative effects (digital inequality, consumerism, cultural tension, online social pressure) within a single sociological framework. The present study aims to address these gaps by examining not merely how much tribal youth use social media, but how social media is reorganising their employment dreams, social identity, life-values and socio-economic outlook.

4. Methodology

This study is based on qualitative secondary analysis. Sources include academic research papers, government reports, news analyses (2024–2026), census data and documents related to social movements. Particular attention is paid to the 2026 JPSC–JSSC protests, the Sarna Code movement and studies on digital access. Thematic analysis was employed. The absence of primary field survey constitutes a limitation; nevertheless, the available evidence reveals clear trends.

5. Analysis and Findings

5.1 Digital Access, Use and the Divide

With rising literacy, smartphone ownership and social media use have increased among tribal youth. They primarily use WhatsApp, Facebook, Instagram and YouTube for information, entertainment, education and contact. However, the digital divide remains severe. Network quality in tribal villages is often poor, devices are scarce, and women’s ownership and digital skills remain low (Nayak & Alam, 2022). Gender- and education-based differences in digital literacy are pronounced. Consequently, benefits are distributed unevenly.

5.2 Employment Aspirations and Social Mobility

Social media has intensified aspirations for government jobs. Youth obtain information about competitive examinations, skill development and digital livelihoods. The 26-day youth agitation in 2026 against irregularities in JPSC and JSSC examinations (in which tribal youth played a prominent role) is a vivid demonstration of these aspirations. The state government was compelled to cancel more than twenty examinations and order investigations. This marked a significant instance of organised protest by tribal youth against the state government on issues of corruption and transparency. Interest in entrepreneurship has also grown, yet capital, skill training and market access remain major obstacles. Digital platforms provide limited market reach, but infrastructural deficits constrain their potential (Dutta Banerjee & Mete, 2025).

5.3 Social Identity and Religious-Cultural Fragmentation

Social media has accelerated the movement for recognition of the Sarna religion. In the 2011 Census, approximately 4.2 million people from Jharkhand identified themselves as Sarna. The Jharkhand Legislative Assembly passed a resolution for a Sarna Code in 2020. Tank and Gundala (2024) show that social media played a crucial role in informing, mobilising and strengthening collective group identity. Parallel tensions have grown between Sarna adherents and Christian converts. Sarna supporters argue that religious conversion has weakened traditional values and that Christian tribals, benefiting from church-related educational and health facilities, have emerged as a “creamy layer” capturing a disproportionate share of reservations and resources. Demands for “delisting” (removing converts from the Scheduled Tribe list) have also gained traction. Efforts by RSS and Hindutva organisations to incorporate tribals within Sanatan Dharma, and counter-charges against missionary activity, have further politicised identity. Social media amplifies these discourses.

5.4 Changing Life-Values and Hybridisation

Youth are migrating from villages to urban areas and adopting modern lifestyles. Yet on social occasions, festivals and social media they proudly display tribal attire, language and symbols. This "performative identity" is a distinctive feature of social media. Studies of the Santhal tribe have also linked cultural change and identity transformation to social media. Tensions are rising between consumerist values, individual success and traditional community-oriented values.

6. Discussion

Social media is generating both opportunities and inequalities for tribal youth. Consistent with Uses and Gratifications Theory, youth actively seek to fulfil employment- and identity-related needs. Social Identity Theory helps explain both the resurgence of Sarna identity and the intensification of internal divisions. Bourdieu's capital framework illuminates the unequal distribution of digital capital. The expansion of aspirational space is evident, yet structural barriers limit realisation. The digital divide, structured by gender, class and geography, renders benefits unequal. Overall, social media is the vehicle of a significant sociological transition.

7. Conclusion and Recommendations

Social media has empowered rural tribal youth in Jharkhand by heightening aspirations, intensifying identity consciousness and increasing political activism. Simultaneously, it has deepened digital inequality, religious-cultural fragmentation and tensions in life-values. This transition is sociologically significant.

8. Recommendations

a. Expansion of digital infrastructure and gender-sensitive digital literacy programmes.
b. Targeted skill development, entrepreneurship training and affordable credit.
c. Dialogue-based solutions to religious-cultural identity issues, including the Sarna Code.
d. Institutional reforms to ensure transparency in recruitment processes.
e. Primary field surveys and in-depth studies of youth digital behaviour.

Future research employing mixed methods is essential to generate robust data for policy formulation.

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INDIA- INDONESIA GEOPOLITICS IN THE INDIAN OCEAN: MARITIME CONVERGENCE, STRATEGIC PARTNERSHIP, AND THE CONTEST OF REGIONAL ORDER

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Abstract

The Indian Ocean is once again a major arena in 21st-century geopolitics, and the India-Indonesia equation is increasingly strategic. Ninety nautical miles separate India's Andaman and Nicobar Islands from Indonesia's Aceh province, and the two countries share a unique set of geopolitical, civilizational, and strategic concerns. This article examines the changing geopolitics of the India-Indonesia relationship in the Indian Ocean, from the non-aligned solidarity of the 1950s through the 2005 and 2018 strategic partnerships, to the new dynamism of 2026. It suggests that the relationship has been influenced by three dynamics: rediscovery of Maritime Geography as a strategic asset, including attempts to link the Sabang port with the Andaman and Nicobar Islands; a shared desire to contain an assertive Chinese naval presence in the Indian Ocean, reflected in India's 'Necklace of Diamonds' policy in response to China's 's' String of Pearls'; and institutional convergence in India's endeavors to integrate both states in multilateral institutions like the Indian Ocean Rim Association, Indo-Pacific Oceans Initiative and ASEAN-Centred architectures. The analysis also includes structural factors such as Indonesia's non-alignment policy and its reluctance to form overt balancing alliances; implementation inefficiencies, which come with bureaucracy; and the different degrees of economic reliance between the two countries on China. The article suggests that India and Indonesia lack the strategic vision and appetite to formalize the alliance, yet growing Indo-Pacific cooperation in maritime, economic, and institutional spheres is important for a plural, rules-based Indo-Pacific order, which aims not only to balance China but also to counter an imbalanced regional hierarchy.

Keywords: Indian Ocean, Indo-Pacific, Maritime Security, Strait Of Malacca, String Of Perls, Comprehensive Strategic Partnership.

Introduction

Until the early decades of the 20th century, strategists regarded the Indian Ocean as a backwater of maritime activity. At the same time, the Atlantic Ocean dominated the Cold War era, and the Pacific Ocean dominated the post-Cold War age of American-China competition. That perception has been decisively overturned. Today, a significant portion of world seaborn energy and container traffic travels over the Indian Ocean, and its choke points- the Strait of Hormuz, Bab-el-Mandeb, and most importantly, the Strait of Malacca have become hotspots of major power rivalry. In this reimagined strategic space, Indo-Indonesian ties have come into sharper focus and, significantly, are viewed as more salient than the relatively little attention they receive in mainstream perceptions of Indo-Pacific geopolitics. In this reconfigured strategic space, Indo-Indonesian ties have come into sharper focus and, significantly, are perceived as more salient than the relatively less vocal India-United States, India-Japan, or India-Australia geopolitics.

India and Indonesia are the two most populous and geographically largest states bordering the Indian Ocean. Indonesia's archipelagic nature stretches across the Malacca, Sunda, and Lombok straits, which most maritime traffic between the Indian and Pacific Oceans uses. At the same time, India's peninsula position and the Andaman and Nicobar Islands put New Delhi in the eastern Indian Ocean, as close to Sumatra as it can get. This article examines how these two countries have forged a more intimate and intense strategic relationship based on geographic proximity, and how this relationship is embedded in and influenced by the larger debate on the future of the Indian Ocean region.

The analysis is made in six substantial parts. It starts with the historical and Civilizational history of the relationship and progresses to the institutional journey of the bilateral partnership from the 1950s to the 2018 comprehensive strategic partnership. It then examines the geostrategic geography underlying current cooperation, maritime security, the naval aspects of the relationship, and shared efforts to counter Chinese operations in the Indian Ocean and the multilateral architecture in which they operate. The constraints currently inhibiting the partnership are then identified, and the likely course of the partnership is assessed.

The maritime link between the indian subcontinent and the Indonesian archipelago dates back to before the advent of the state system. The trade winds connected the ports of the Coromandel Coast and Malabar Coast with Sumatra, Java, and Malacca not only through trade but also through the transmission of other influences as well, Including Literature and vocabulary; These influences are seen in the temple complexes of Borobudur and Prambanan and in the use of Sanskrit words in the Indonesian language today. K. M. Panikkar, A historian and diplomat who was to become the foundation of Indian Maritime Strategic thought with his 1945 study of the influence of sea power on Indian history, Had claimed that India had been strategically wrong to ignore its maritime periphery, including the archipelagic world east of India, and that this would be unaffordable for independent India.

The two postcolonial states forged political ties through their shared struggle against colonialism in the 20th century. India's support of the independence cause of Indonesia, including its advocacy in the UN against the Dutch police actions in the late 1940s, and co-hosting of the Bandung Conference in 1955, laid a normative basis of South-South Cooperation and non-alignment, which continues to shape the culture of Indian foreign policy. This history remains relevant to current geopolitics because it left Indonesia with a foreign-policy legacy, possibly encapsulated in the old doctrine of a 'free and active' foreign policy, and with a healthy dose of suspicion toward formal alliances and overt bloc politics. It insisted that ending reliance on military alliances was necessary to ensure its security.

The strategic link, however, remained tenuous for several decades after the 1950s. India's continental preoccupation, driven by successive conflicts with Pakistan and China, sidelined bilateral maritime cooperation until both countries' foreign policies shifted in the post-Cold War era, coinciding with India's continentalist agenda and Indonesia's shift toward a more westward-oriented order after 1965.

The India-Indonesia relationship entered a new phase in the 1990s, when India pursued a Look East policy as a direct result of the end of the Cold War, the Liberalization of the Indian economy, and the recognition of Southeast Asia's dynamism as an economic opportunity and counterweight to India's traditionally South Asia-centric policy. Indonesia was the natural target for this reorientation, as the largest and most populous member of ASEAN. Evaluations of this time note a complementary nature of India's security relations with the Chinese and Pakistani countries: While India was interested in limiting the strategic space of both Pakistan and China in the entire periphery of the Indian Ocean, Indonesia, a wary country of the eastern Indian Ocean, saw India as a benign counterweight, rather than the historical assertiveness and nationalist dominance that was common in Chinese relations.

In November 2005, Prime Minister Manmohan Singh and President Susilo Bambang Yudhoyono signed the India-Indonesia Strategic Partnership, which broadened cooperation in defense, Counter-terrorism, Energy, and economic sectors and specifically recognized the importance of the security of the sea lanes of the Indian Ocean. The institutionalization of naval-to-naval engagement began soon after, when the Indian Navy and the Indonesian Navy began conducting coordinated patrols dubbed India-Indonesia's CORPAT twice a year off the coasts of India and Indonesia since 2002, now one of the longest-running bilateral maritime security arrangements in the Indian Ocean.

In May 2018, when Prime Minister Narendra Modi visited Jakarta, the relationship continued to be elevated, with the signing of the India-Indonesia Comprehensive Strategic Partnership (CSR) and a groundbreaking document called the shared vision of India-Indonesia Maritime Cooperation in the Indo-Pacific. That document specifically connected India's Indo-Pacific Oceans Initiative with Indonesia's global maritime fulcrum doctrine, which President Joko Widodo has articulated since 2014 and aims to shift Indonesia's identity from a landlocked nation to a maritime power sandwiched between two oceans. The symbiotic ocean vision has been described as meaningful because it was the first time the two states jointly developed an ocean vision that was then turned into a concrete institutional framework, which has since encompassed close cooperation in the defense industry, counter-terrorism, and Connectivity of the Blue Economy.

The momentum has persisted through the mid-2020s. Prime Minister Modi's visit to Jakarta in July 2026, when he met President Prabowo Subianto, signaled a shift from occasional summits to a more institutionalized engagement format, while implementation has lagged and connectivity and code development initiatives have been put on the back burner.

Compared with India's Indo-Pacific partnerships with other countries, one of the most proximate and distinctive aspects of the India-Indonesia partnership is the absence of geographical distance. At the southern end of the Andaman and Nicobar Islands, India is about 90 nautical miles (170 km) closer to Aceh at the tip of Sumatra, Indonesia, than to any other South Asian neighbor. This nearness makes the Andaman Sea important for both nations, as a significant share of the world's seaborn commerce in most of China's crude oil imports passes through it, and it has not escaped the notice of strategic planners in New Delhi, Jakarta, or Beijing.

The most obvious manifestation of this geography-based convergence is a much-talked-about plan to link the Andaman and Nicobar Islands with the Sabang port at the northern tip of Sumatra in Indonesia. This aspiration was incorporated into a joint task force on Andaman and Nicobar Ache Connectivity in 2018 which was formalised in the 2018 shared vision document, And in the following meetings held in Banda Aceh and Port Blair, sail tourism and cruise shiping trade facilitation, and B2B linkage between the two island regions were discussed Sabang's value to the nation is not for its current commercial size, but for what geopolitical physical power it mignt provided for India, A facility opposite the growing Chinese naval and logistics base in Campbell Bay, Great Nicobar, on the opposite side of the Malacca Straits End when the Chinese Navy is building up its deployments to the Indian Ocean, Strategic observers have noticed.

In official communiques, India and Indonesia have tried to keep the Sabang initiative away from the naval-bases angle, partly because of sensitivities over foreign military bases in their territories and partly because India prefers to build access through logistics-sharing agreements rather than overseas military bases. However, the rationale behind the project is now fairly clear: a viable Sabang-Great Nicobar link would improve naval domain awareness in the Andaman Sea, facilitate the reinforcement of India's Eastern Naval Command in an emergency, and complicate any Chinese naval transit through the Malacca Strait's northern route.

Beyond the Sebang steps, the security dimension of the India-Indonesia relationship operates within a broader framework of naval diplomacy that has been expanding since the early 2000s. Bilateral coordinated patrol (CORPAT), an initiative in operation for 40 years, Concentrates on countering crimes against the marine environment, including piracy, illegal fishing, smuggling, and other transnational marine crimes, along the shared sea boundary of both countries. It is also a confidence-building measure and normalizes routine naval interaction between the two navies, complemented by India's long-running multilateral naval exercise MILAN, hosted from the Andaman and Nicobar Islands, with the Indonesian Navy as a routine participant, and periodic bilateral naval exercises like Samudra Shakti, which have also gradually evolved to include anti-submarine warfare and air-defense coordination.

Defense industrial cooperation has also become part of the relationship jargon, with talk of transferring and co-producing naval platforms, such as the Indonesians' reported interest in Indian-origin missile systems, added to broader efforts to increase interoperability, follows a pattern, albeit on a smaller scale, of how India has also become a 'net security provider' in the eastern Indian Ocean, as seen in India's export of BrahMos missiles to the Philippines and its growing defense engagement in maritime Southeast Asia.

The relationship also has a less-known, non-traditional dimension: cooperation in the security field. Illegal, unreported, and unregulated fishing remains a common issue in both nations, while maritime terrorism originating from the broader Andaman Sea and Bay of Bengal littoral poses a further threat, and the humanitarian aspects of irregular maritime migration pose a significant challenge in both nations. Joint information-sharing arrangements and cooperation between the Coast Guards tackle these issues in a more operational context than naval exercises, and are perhaps more important to the day-to-day stability of the shared maritime space. Together, these mechanisms reveal a typical pattern of India's Indian Ocean diplomacy: step-by-step cooperation, in limited functional areas, to build trust and interoperability without the formal treaty commitments embodied in Indonesia's 'neutral' foreign policy tradition.

A discussion of India-Indonesia maritime geopolitics is incomplete without mentioning China's growing presence in the Indian Ocean region. A 'string of pearls' is a term in Western media analysis from the mid-2000s which referred to a series of Chinese integrated commercial and potentially 'dual-use' ports and installations, including Gwadar (Pakistan), Hambanthota (Sri Lanka) and Kyaukphyu (Myanmar), stretching from Hainan through the South China Sea and across the Indian Ocean to the Horn of Africa. Though some experts have argued that the network is more of a coordinated military effort rather than a commercial initiative under China's Belt and Road Program, there is a general agreement that the sum of its parts has been to increase Chinese naval power projections, surveillance, and logistics support in the Indian Ocean littoral, which directly impacts both New Delhi and Jakarta.

The main policy response is described as a 'necklace of diamonds' approach, in which India strengthens its defense and infrastructure ties with other Indian Ocean littoral countries, from Iran to Oman in the west, and from Singapore to Vietnam to Indonesia in the east, to ensure its freedom of maneuver and situational awareness in the Indian Ocean without China's basing-centered model. In this context, the India-Indonesia relationship in the Sanang initiative in particular serves as an eastern anchor - One way to guarantee India's visibility and access to the Northern Gateway of the Malacca Strait, as Chinese-involved infrastructure projects are built in other parts of the region.

But Indonesia's stance on China is far more nuanced than India's, given the country's long history of wariness about being painted as a player in great-power bloc formation, its deep economic dependence on China, and its status as one of the world's biggest recipients of investment from the Belt and Road Initiative. Despite this, Indonesia has seen conflict with China due to incursions by Chinese vessels into waters around Natuna Island, which are in Indonesia's exclusive economic zone, and the 2015 defense white paper explicitly stated that its outlying island territories, including around Sabang, are strategically vulnerable. Indonesia's cooperation with India is often expressed in connectivity, trade, and capacity-building terms, and the strategic reason - the need to maintain a plural and non-hierarchical Indian Ocean Order, rather than one dominated by an outside force - Is shared generally by both capitals, even if it is not happening in tandem.

An increasingly dense network of multilateral institutions - in which both India and Indonesia are active - strengthens bilateral cooperation. Founded in 1997, the Indian Ocean Rim Association (IORA), with India and Indonesia as founding members, is the main forum that explicitly focuses on the Indian Ocean and promotes cooperation on trade, maritime security, Fisheries, Disaster risk management, and the blue economy among the 23 member states. In 2025, India will take the chairmanship of IORA, replacing Sri Lanka, thereby giving New Delhi an institutional forum to further the Indo-Pacific Oceans Initiative agenda in tandem with Jakarta, which chaired IORA in the mid-2000s and hosted its 20th anniversary summit in 2017.

The Indo-Pacific Ocean Initiative (IPO) was launched by India in 2019 and is a thematic framework that covers sectors such as security, ecology, resources, disaster risk reduction, connectivity, trade, science and technology, and in which India aims to concretize cooperation with its Indian Ocean and Southeast Asian partners without the need to establish formal alliance formations. Scholarly assessments note that the initiative's key principles of ASEAN centrality and inclusivity partly aim to reassure Southeast Asian states, including Indonesia, that India's Indo-Pacific Vision is not merely a containment strategy for China but a plurilateral governance strategy for the Indian Ocean.

The act east policy, which replaced the earlier look East policy, Has continued to organise Indian relations with ASEAN in a structured way, Such as the Asian India free trade area and the growing defence dialogue with ASEAN countries, The Quadrilateral security dialogue, A parallel though more security oriented approach Being a partnership of India, the United States, Japan and Australia In recent years ASEAN centrality has been repeatedly stressed by Indonesian officials and scholars in the context of the Asian outlook on the Indo Pacific, A document signed in 2019, and India has been cautious not to disrupt the centrality in any Indo Pacific Discourse, Including at event like Shangri La Dialogue. Although Indonesia is not an active member of the Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC), it also exemplifies the layered, overlapping nature of the institutional architecture in which the bilateral relationship is set.

Economic engagement has increased significantly since the early 2000s. However, it remains less significant than trade between India and China and Indonesia and China, with Indian investment in Indonesian coal and energy projects, two-way trade in palm oil, Petroleum products, and pharmaceuticals, and developing services and information technology relationships. Attempts to strengthen this relationship through comprehensive economic cooperation talks between the two governments have been unsuccessful, and bilateral trade volumes remain relatively light compared with the size of the two economies, suggesting the relationship is more strategic than economic.

The blue economy is one area where the two countries are particularly promising for convergence, as both have acknowledged and recognized the essential role that sustainable utilization of fisheries resources and offshore energy and marine biotechnology will play in the governance of the Indian Ocean in the near future. Bilateral and IORA efforts on marine spatial planning, Sustainable Fisheries Management, and coastal resilience provide a lower-friction alternative to the more security-focused aspects of the relationship, and offer language that matches the sensibilities of non-alignment with strategic aspirations in a shared developmental narrative.

Despite strong convergence of interests, the India-Indonesia partnership is constrained by structural limits in Indonesia's foreign policy culture, rooted in the free and active Principle and reinforced by ASEAN norms. Still, it seems to negatively influence Indonesia's willingness to openly join security-cooperation coalitions, leaving Jakarta to keep security cooperation with India well below the line of explicit alliances, with a focus instead on functional and connectivity-oriented cooperation, potentially justifiable to Indonesia on developmental rather than geopolitical grounds.

The second constraint is the bureaucratic and implementation gaps. Many joint statements since 2005 and especially since 2018 have set out lofty connectivity and infrastructure goals, but the Sabang-Andaman Corridor, in particular, has not progressed beyond numerous rounds of task force meetings and feasibility studies, and has faced the reality of the considerable difficulty of developing profitable shipping and tourism connections between two relatively peripheral port areas, and funding constraints.

The third constraint is the economic asymmetry with respect to China. Indonesia's reliance on China for investment, trade, and infrastructure-project financing via the Belt and Road Initiative is much higher than its reliance on India, and Beijing may interpret this as part of an anti-China bloc. India, on the other hand, has to weigh its Indo-Pacific aspirations against its huge trade ties with China and the constraints it faces in naval modernization and foreign infrastructure investments. Because of these asymmetries, the India-Indonesia relationship is strategically important. Still, it should be seen as part of a larger, purposefully multipolar 'Hedging Strategy', not as the core component of a new anti-China bloc.

The India-Indonesia relationship in the Indian Ocean is an archetype of a more general feature of the new Indo-Pacific geostrategic dynamic: The dynamicization of geographic proximity and shared strategic concern into a functionally specific, step-by-step 'Linking up' Of the two nations with limited commitment to a formal alliance. The relationship has yielded concrete results in naval diplomacy, Maritime domain awareness, and now, more than ever, the long-staged Sabang-Andaman connectivity corridor, grounded in a common civilizational history, enshrined in the 2005 strategic partnership and the 2018 comprehensive strategic partnership, and renewed through the 2026 high-level exchanges. Meanwhile, Indonesia's persistent non-alignment policy, project delays due to the country's bureaucracy, and the economic ties between both nations and China mean this partnership will be incremental. It will not prove transformative in the short term. It is less about its ability to stand up to China than its role in a plural, rule-based, ASEAN-anchored region where no single outside power can dominate and determine access to the Indian Ocean's most consequential maritime checkpoints. The India-Indonesia axis is also expected to be a largely underestimated power play in Indian Ocean geopolitics in the coming decade, as both countries keep investing in naval modernization, port infrastructure, and multilateralism.

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UNDERSTANDING DIGITAL PAYMENT CONTINUANCE: THE ROLE OF CONSUMER SATISFACTION IN RURAL MARKETS

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Abstract
Digital payment services have become an integral part of India's financial system, influencing how consumers conduct everyday transactions and access financial services. This study examines consumer perceptions and satisfaction with digital payment services, focusing on factors associated with behavioural intention among rural consumers. The study considers awareness, perceived ease of use, trust, security and reliability, and perceived barriers as key dimensions of the digital payment experience. Primary data were collected through a structured questionnaire from 482 respondents and analysed using descriptive statistics, Confirmatory Factor Analysis (CFA), and Structural Equation Modelling (SEM). The findings indicate generally positive perceptions, with awareness and trust, security and reliability positively associated with consumer satisfaction. Satisfaction, in turn, was positively associated with behavioural intention, while perceived ease of use also showed a significant direct relationship with behavioural intention. The mediation analysis indicates significant indirect effects of awareness and trust, security and reliability through consumer satisfaction, whereas the indirect effects of perceived ease of use and perceived barriers were not significant. The findings highlight the importance of awareness, reliable service experiences, and consumer satisfaction in supporting continued intention to use digital payment services in rural settings.

Keywords: Digital Payments; Consumer Perception; Consumer Satisfaction; FinTech; Behavioural Intention; Rural Context.

1. Introduction

The rapid expansion of digital technologies has transformed financial transactions and supported the shift from cash-based payments towards digital payment ecosystems. Mobile banking, digital wallets, and real-time payment platforms have improved the efficiency and accessibility of financial transactions, while developments in digital infrastructure, smartphone use, and internet connectivity have supported digital payment adoption (GSMA, 2023; OECD, 2023; World Bank, 2022). Growing research has consequently examined consumer behaviour, technological innovation, and digital financial inclusion (Anwar et al., 2024; Jain & Jain, 2024).

India has emerged as an important digital payment market, supported by initiatives such as Digital India, Jan Dhan Yojana, Aadhaar, and the Unified Payments Interface (UPI). The COVID-19 pandemic further encouraged the use of digital and contactless payments, while the growth of UPI indicates increasing acceptance of digital transactions (NPCI, 2024; RBI, 2023). However, digital payment experiences may differ across socio-economic and geographical contexts, with awareness, trust, security, and satisfaction remaining relevant to adoption and continued use.

These issues are particularly relevant in rural areas, where digital literacy, financial awareness, connectivity, security, and reliability may shape the use and experience of digital financial services (GSMA, 2023; RBI, 2023; World Bank, 2022). Although access to digital payments has expanded, consumers' experiences may still vary with infrastructural, socio-economic, and behavioural conditions. Existing studies have examined factors such as perceived ease of use, trust, security, social influence, and facilitating conditions, but relatively less attention has been given to how these factors collectively relate to consumer satisfaction and subsequent behavioural intention among rural consumers.

Accordingly, the present study examines these factors within an integrated framework among rural consumers with particular emphasis on consumer satisfaction as a central mechanism linking service-related perceptions with behavioural intention.

2. Research Gap

Despite the substantial growth of research on digital payment adoption, several gaps remain in the existing literature. Established frameworks such as the Technology Acceptance Model (TAM), Unified Theory of Acceptance and Use of Technology (UTAUT), and Expectation-Confirmation Model (ECM) provide important foundations for understanding technology acceptance and continued usage. Previous studies have also identified perceived ease of use, trust, security, and facilitating conditions as relevant determinants of digital payment behaviour (Davis, 1989; Liébana-Cabanillas et al., 2020; Oliveira et al., 2016; Patil et al., 2020; Slade et al., 2015; Venkatesh et al., 2003; Venkatesh et al., 2012)

A contextual gap remains because much of the existing evidence is drawn from urban or technologically advanced settings, whereas rural consumers may operate under different socio-economic, infrastructural, and technological conditions. Factors such as digital literacy, financial awareness, connectivity, and access to digital services may shape consumers' experiences and perceptions of digital payments (RBI, 2023; Sharma & Mishra, 2023; Tyagi & Rohila, 2024; World Bank, 2022).

A conceptual gap is also evident in the treatment of consumer satisfaction. Although satisfaction is recognised as an important component of post-adoption behaviour, relatively less attention has been given to its role in linking users' perceptions of digital payment services with subsequent behavioural intention, particularly in rural settings (Bhattacherjee, 2001; Franque et al., 2021; Gupta et al., 2020; Humbani & Wiese, 2019; Oliver, 1980).

An integration gap further exists, as awareness, perceived ease of use, trust, security, reliability, and perceived barriers have often been examined separately rather than within a common framework. More recent work highlights the need to consider these dimensions together when examining digital payment behaviour (Kiran & Vedala, 2025).

Finally, a geographical and empirical gap persists regarding rural consumers in North Bihar. Although evidence highlights the relevance of digital literacy, infrastructural limitations, institutional credibility, and perceived risks in digital payment contexts, limited empirical work has examined how these factors relate to consumer satisfaction and behavioural intention in this specific rural setting (GSMA, 2023; Ligon et al., 2019; Sharma & Mishra, 2023; World Bank, 2022). Accordingly, the present study develops an integrated framework to examine these relationships among rural consumers in North Bihar.

2.1 **Objectives of the Study**

The specific objectives of this study are as follows:

1. To assess the level of awareness and perceptions of digital payment services among rural consumers.
2. To examine the effects of perceived ease of use, trust, security and reliability on consumer satisfaction.
3. To assess the influence of perceived barriers on consumer satisfaction.

4. To examine the effect of consumer satisfaction on behavioural intention toward digital payment services.
5. To provide practical insights for banks, FinTech providers, and policymakers to promote sustainable digital payment usage in rural areas.

2.2 Hypotheses of the Study

Based on the theoretical extensions of TAM and UTAUT, this study proposes a conceptual model to examine digital payment continuance among rural consumers in North Bihar. The framework examines how these perceptions and contextual factors are associated with consumer satisfaction and behavioural intention.

Consumer Awareness and Consumer Satisfaction

Consumer awareness may shape consumers' experience with digital payment services by improving their understanding of platforms, features, and transaction procedures. Previous studies suggest that awareness and digital literacy can reduce uncertainty and support technology acceptance and usage (Patil et al., 2020; Sharma & Mishra, 2023). Accordingly, the following hypothesis is proposed:

H1: Consumer awareness positively influences consumer satisfaction with digital payment services.

Perceived Ease of Use and Consumer Satisfaction

Perceived ease of use refers to the extent to which consumers perceive digital payment services as simple and effortless to use (Davis, 1989). Previous research suggests that user-friendly interfaces and simplified transaction processes may contribute to positive consumer experiences and satisfaction (Chawla & Joshi, 2019; Franque et al., 2021; Oliveira et al., 2016). Accordingly, the following hypothesis is proposed:

H2: Perceived ease of use positively influences consumer satisfaction with digital payment services.

Trust, Security and Reliability and Consumer Satisfaction

Trust, security, and reliability are relevant to consumers' evaluation of digital payment services. Secure transaction processing, system reliability, and confidence in payment platforms have been associated with positive user experiences and continued use (Gefen et al., 2003; Liébana-Cabanillas et al., 2020). Evidence from India also highlights the relevance of trust and reliable digital payment systems (Kiran & Vedala, 2025; Sharma & Mishra, 2023). Therefore, the following hypothesis is proposed:

H3: Trust, security, and reliability positively influence consumer satisfaction with digital payment services.

Perceived Barriers and Consumer Satisfaction

Perceived barriers such as limited digital literacy, inadequate infrastructure, security concerns, and poor connectivity may create difficulties in using digital payment services, particularly in rural settings (Ligon et al., 2019; Ram & Sheth, 1989). Recent evidence also highlights infrastructure and digital capability constraints in rural India (Sharma & Mishra, 2023; World Bank, 2022). Accordingly:

H4: Perceived barriers negatively influence consumer satisfaction with digital payment services.

Consumer Satisfaction and Behavioural Intention

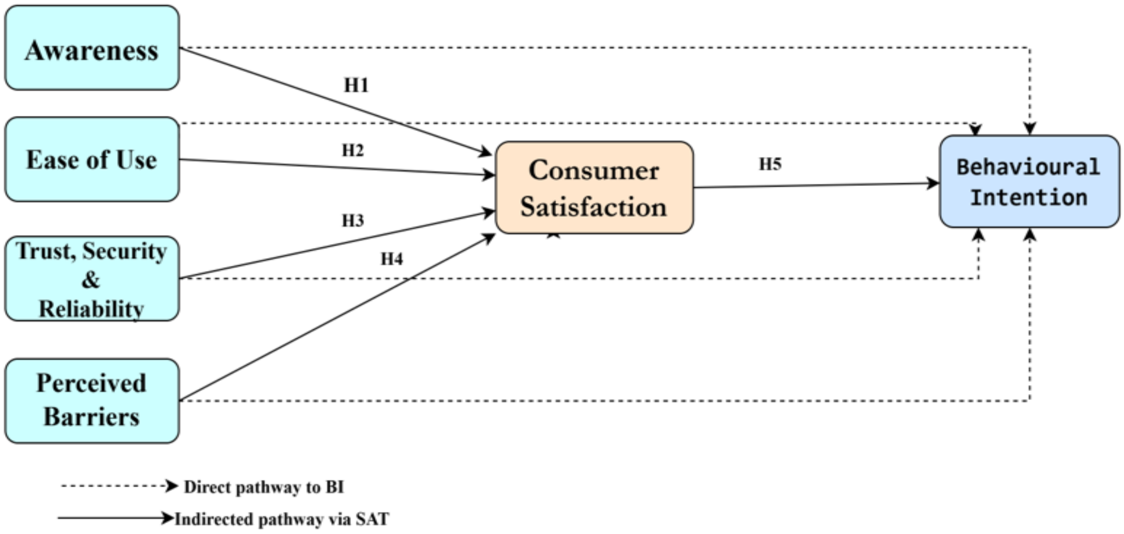
Consumer satisfaction is an important element of post-adoption behaviour. The Expectation-Confirmation Model suggests that satisfied users are more likely to continue using a technology (Bhattacherjee, 2001). Previous studies have similarly linked positive experiences and satisfaction with continuance intention in digital payment contexts (Franque et al., 2021; Gupta et al., 2020). Therefore:

H5: Consumer satisfaction positively influences behavioural intention toward digital payment services.

3. Conceptual Framework

The conceptual framework integrates technology adoption and post-adoption perspectives to examine behavioural intention toward digital payment services among rural consumers in North Bihar. Drawing on TAM and UTAUT, the framework considers Consumer Awareness, Perceived Ease of Use, Trust, Security and Reliability, and Perceived Barriers as factors associated with Consumer Satisfaction and Behavioural Intention. ECM positions Consumer Satisfaction as a mediating construct through which these factors may also be indirectly associated with Behavioural Intention. The framework therefore combines technological, behavioural, and contextual factors to examine digital payment continuance.

Figure 1. Conceptual Framework and Structural Relationships



Source: Developed by the author based on Bhattacherjee (2001), Davis (1989), DeLone and McLean (2003), Gefen et al. (2003), McKnight et al. (2002), and Venkatesh et al. (2003).

4. Research Methodology

4.1 Research Design

The study adopted a quantitative, cross-sectional design to examine factors associated with consumer satisfaction and behavioural intention toward digital payment services among rural consumers in North Bihar. Primary data were collected through a structured questionnaire, and the conceptual model was tested using Structural Equation Modelling (SEM).

4.2 Study Area, Sampling and Data Collection

The study was conducted among rural consumers across selected districts of North Bihar, India. A purposive non-probability sampling technique was employed to select respondents with prior experience using digital payment services. A total of 482 valid responses were collected and used for the final analysis.

4.3 Research Instrument and Measurement

The questionnaire comprised two sections. The first collected demographic information, while the second measured the study constructs using a five-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). Measurement items were adapted from established literature and modified for the Indian digital payment context. The constructs included Consumer Awareness, Perceived Ease of Use, Trust, Security and Reliability, Perceived Barriers, Consumer Satisfaction, and Behavioural Intention.

4.4 Data Analysis

Data were analysed using R statistical software. Descriptive statistics summarised the demographic characteristics and study constructs. Confirmatory Factor Analysis (CFA) assessed the measurement model, including reliability, convergent validity, and discriminant validity. Structural Equation Modelling (SEM) was used to examine the hypothesised relationships. Given the ordinal nature of the items, the model was estimated using the Weighted Least Squares Mean and Variance adjusted (WLSMV) estimator. The mediating effect of Consumer Satisfaction was assessed using Monte Carlo confidence intervals for indirect effects (Preacher & Selig, 2012).

5. Data Analysis and Results

5.1 Descriptive Analysis

A total of 502 responses were initially collected through the field survey. Following data screening, 20 responses were discarded, resulting in a final usable sample of 482 valid responses for the structural model analysis.

Table:1 ***Demographic Profile of Respondents***

Variable	Category	Frequency	Percentage
Gender	Male	260	53.9
	Female	222	46.1
Age group	Below 20	33	6.8
	21–30	269	55.8
	31–40	124	25.7
	41–50	46	9.5
	Above 50	10	2.1
Education	Below Matric	29	6.0
	Intermediate	77	16.0
	Graduate	215	44.6
	Postgraduate & Above	161	33.4
Occupation	Student	237	49.2
	Service/Salaried	104	21.6
	Self-employed/Business	62	12.9
	Homemaker	43	8.9
	Others	36	7.4
Monthly income	Below ₹10,000	233	48.3
	₹10,001–₹20,000	92	19.1
	₹20,001–₹40,000	87	18.0
	₹40,001–₹60,000	46	9.5
	Above ₹60,000	24	5.0

Source: Field Study Primary Data

The final sample comprised 482 respondents from rural areas of North Bihar. Males constituted 53.9% and females 46.1% of the sample. Most respondents were aged 21–30 years (55.8%), followed by those aged 31–40 years (25.7%). Graduates accounted for 44.6%, while 33.4% were postgraduates or above. Students formed the largest occupational group (49.2%), followed by service/salaried respondents (21.6%) and self-employed/business respondents (12.9%). Nearly half (48.3%) reported a monthly income below ₹10,000. Overall, the sample reflects diverse demographic and socio-economic characteristics of rural respondents.

Table 2: ***Descriptive Statistics of Research Constructs (N=482)***

Construct	Mean	Std. Deviation
Consumer Awareness	**3.83**	0.55
Perceived Ease of Use	**4.00**	0.70
Trust, Security & Reliability	**3.73**	0.71
Consumer Satisfaction	**3.94**	0.62
Perceived Barriers	**3.61**	0.44
Behavioural Intention	**3.90**	0.52

Source: Field Study Primary Data

Table 2 presents the descriptive statistics of the study constructs. Overall, respondents reported generally favourable perceptions of digital payment services. Perceived Ease of Use recorded the highest mean (*M* = 4.00, *SD* = 0.70), followed by Consumer Satisfaction (*M* = 3.94, *SD* = 0.62) and Behavioural Intention (*M* = 3.90, *SD* = 0.52). Awareness (*M* = 3.83, *SD* = 0.55) and Trust, Security & Reliability (*M* = 3.73, *SD* = 0.71) also showed relatively high scores, while Perceived Barriers recorded the lowest mean (*M* = 3.61, *SD* = 0.44).

5.2 Measurement Model Assessment

“Confirmatory Factor Analysis (CFA) was conducted to assess the measurement model. Construct reliability and convergent validity were evaluated using Cronbach’s alpha, Composite Reliability (CR), Average Variance Extracted (AVE), and standardized factor loadings.

Table 3: Reliability and Internal Consistency of Research Constructs

Construct	Items	Factor Loading	Cronbach’s α	CR	AVE
Awareness	3	.725 – .760	0.781	0.786	0.55
Perceived Ease of Use	3	.730 – .775	0.788	0.794	0.563
Trust, Security & Reliability	4	.710 – .730	0.802	0.812	0.518
Satisfaction	3	.735 – .780	0.792	0.799	0.57
Barriers	4	.705 – .725	0.798	0.806	0.509
Behavioural Intention	3	.728 – .765	0.784	0.789	0.555

The measurement model showed satisfactory reliability and validity. Cronbach’s alpha ranged from 0.781 to 0.802 and CR from 0.786 to 0.812, while AVE values ranged from 0.509 to 0.570, exceeding the 0.50 threshold. Standardized factor loadings ranged from 0.705 to 0.780. HTMT values ranged from 0.068 to 0.861, supporting discriminant validity, and VIF values ranged from 1.021 to 1.260, indicating no multicollinearity concerns.

5.3 Structural Model Fit Analysis- Before examining the individual path coefficients, the overall goodness-of-fit of the structural model was evaluated. Model fit determines the degree to which the structural equation model matches the observed data. Following the recommendations of Hu and Bentler (1999) and Hair et al. (2010), multiple indices were used to assess the fit, including absolute, incremental, and parsimonious fit measures.As shown in Table 4, all major fit indices fall within the commonly recommended thresholds, indicating that the proposed model showed an acceptable fit with the observed data.

Table 4: Structural Model Fit Indices

Fit Index	Recommended Threshold	Research Model Value	Result
CMIN/DF (χ^2/df)	<3.0 (Good); <5.0 (Acceptable)	3.91	Acceptable Fit
CFI (Comparative Fit Index)	>0.90	0.971	Good Fit
TLI (Tucker-Lewis Index)	>0.90	0.959	Good Fit
RMSEA (Root Mean Square Error of Approximation)	<0.08	0.078	Acceptable Fit
SRMR (Standardized Root Mean Square Residual)	<0.08	0.046	Acceptable Fit

Source: Field Study Primary Data

Interpretation of Fit:

The χ_2/df value of 3.91 shown in Table 4 falls within the acceptable range, indicating a reasonable level of discrepancy between the proposed model and the observed data. The CFI (0.971) and TLI (0.959) exceed the recommended 0.90 threshold, indicating good comparative fit. The RMSEA of 0.078 falls within the acceptable range, while the SRMR of 0.046 is below the recommended 0.08 threshold. Taken together, these indices indicate an acceptable overall fit of the structural model.

5.4 Coefficient of Determination (R^2)

The explanatory power of the structural model was assessed using the coefficient of determination (R^2). The results show that the model accounts for 76.2% of the variance in Consumer Satisfaction and 63.4% of the variance in Behavioural Intention. These findings suggest that the proposed model has considerable explanatory value in understanding consumer satisfaction and behavioural intention toward digital payment services.

5.5 Hypothesis Testing

The structural model was used to test the proposed hypotheses concerning consumer satisfaction and behavioural intention. The results of the hypothesis testing are presented in Table 5.

Table 5: Summary of Hypothesis Testing

Hypothesis	Path	β	*p*-value	Result
H1	Consumer Awareness → Consumer Satisfaction	0.133	.005	Supported
H2	Perceived Ease of Use → Consumer Satisfaction	0.164	.079	Not Supported
H3	Trust, Security & Reliability → Consumer Satisfaction	0.682	< .001	Supported
H4	Perceived Barriers → Consumer Satisfaction	0.069	.154	Not Supported
H5	Consumer Satisfaction → Behavioural Intention	0.342	.012	Supported

Source: Field Study Primary Data

The results in Table 5 indicate that three of the five proposed hypotheses were supported. Consumer Awareness had a significant positive relationship with Consumer Satisfaction (β = 0.133, p = .005), supporting H1. Similarly, Trust, Security & Reliability showed a significant positive relationship with Consumer Satisfaction (β = 0.682, p < .001), providing support for H3. Consumer Satisfaction also showed a significant positive relationship with Behavioural Intention (β = 0.342, p = .012), supporting H5.

H2 was not supported, as the relationship between Perceived Ease of Use and Consumer Satisfaction, although positive, did not reach statistical significance (β = 0.164, p = .079). H4 was also not supported because Perceived Barriers did not exhibit the hypothesised negative relationship with Consumer Satisfaction (β = 0.069, p = .154). Overall, the findings provide support for H1, H3, and H5, while H2 and H4 remain unsupported.

5.6 Mediation Analysis

The mediating role of Consumer Satisfaction was examined by assessing the indirect relationships between the proposed antecedents and Behavioural Intention. Monte Carlo confidence intervals were used to assess the significance of the indirect effects. The results are presented in Table 6.

Table 6 ***Summary of Mediation Analysis***

Indirect Path	Indirect Effect (B)	95% Monte Carlo CI	Decision
Awareness → Satisfaction → BI	0.036	[0.005, 0.082]	Significant
Perceived Ease of Use → Satisfaction → BI	0.061	[−0.007, 0.164]	Not significant
Trust, Security & Reliability → Satisfaction → BI	0.243	[0.052, 0.446]	Significant
Perceived Barriers → Satisfaction → BI	0.023	[−0.008, 0.067]	Not significant

Note: B = unstandardized indirect effect. Confidence intervals are based on Monte Carlo simulation. Mediator = Consumer Satisfaction; dependent variable = Behavioural Intention (BI). Source: Field Study Primary Data

The mediation results showed significant indirect relationships for Awareness and Trust, Security & Reliability through Consumer Satisfaction. The confidence intervals for these two indirect effects did not include zero, indicating that the indirect relationships were statistically significant. In contrast, the indirect effects of Perceived Ease of Use and Perceived Barriers were not significant, as their confidence intervals included zero. Overall, the findings suggest that Consumer Satisfaction may serve as an important pathway through which Awareness and Trust, Security & Reliability are associated with Behavioural Intention.

6. Discussion

The findings provide a mixed picture of digital payment behaviour among rural consumers in North Bihar. Awareness and Trust, Security & Reliability were positively associated with Consumer Satisfaction, whereas Perceived Ease of Use and Perceived Barriers were not significant predictors of satisfaction. Consumer Satisfaction was positively associated with Behavioural Intention, while Perceived Ease of Use also showed a significant direct relationship with behavioural intention. The model explained 76.2% of the variance in Consumer Satisfaction and 63.4% in Behavioural Intention.

6.1 Consumer Awareness and Satisfaction

Consumer Awareness showed a significant positive relationship with Consumer Satisfaction (β = 0.133, p = .005). This finding is broadly consistent with studies that have identified awareness and related digital capabilities as relevant to digital payment adoption (Patil et al., 2020; Sharma & Mishra, 2023). Greater awareness may help consumers understand the features and procedures associated with digital payment services, which may contribute to a more favourable usage experience. In the rural context, awareness may therefore remain relevant to how consumers evaluate digital payment services.

6.2 Perceived Ease of Use and Satisfaction

Perceived Ease of Use showed a positive but statistically non-significant relationship with Consumer Satisfaction (β = 0.164, p = .079). This differs from the emphasis placed on ease of use in TAM (Davis, 1989) and from previous studies reporting positive relationships between usability and digital payment adoption (Chawla & Joshi, 2019; Liébana-Cabanillas et al., 2020). Ease of use may be regarded as a basic feature of digital payment services among existing users. Thus, although it may remain relevant to the user experience, it may not necessarily distinguish levels of satisfaction in the present sample.

6.3 Trust, Security and Reliability and Satisfaction

Trust, Security & Reliability showed a significant positive relationship with Consumer Satisfaction (β = 0.682, p < .001). This finding is broadly in line with previous research highlighting the relevance of trust, security, and system reliability in digital payment contexts (Gefen et al., 2003; Norbu et al., 2024; Patil et al., 2020). The result suggests that consumers who perceive digital payment services as trustworthy, secure, and reliable may report more favourable levels of satisfaction. These attributes may therefore be relevant to consumers' evaluation of digital payment services in the rural context.

6.4 Perceived Barriers and Satisfaction

Perceived Barriers did not show a statistically significant relationship with Consumer Satisfaction (β = 0.069, p = .154), and H4 was therefore not supported. This finding differs from studies suggesting that infrastructure limitations, digital literacy constraints, and connectivity-related difficulties may affect digital payment experiences in rural settings (Ram & Sheth, 1989; Sharma & Mishra, 2023). The non-significant result may indicate that the perceived barriers considered in the present study were not sufficiently pronounced to produce noticeable differences in satisfaction among the respondents. However, the positive coefficient should not be interpreted as evidence that barriers improve satisfaction.

6.5 Consumer Satisfaction and Behavioural Intention

Consumer Satisfaction showed a significant positive relationship with Behavioural Intention (β = 0.342, p = .012). This is consistent with the Expectation-Confirmation Model, which identifies satisfaction as relevant to continued technology use (Bhattacherjee, 2001), and with previous research on mobile-payment continuance (Franque et al., 2021; Gupta et al., 2020; Humbani & Wiese, 2019).
Perceived Ease of Use also showed a significant direct relationship with Behavioural Intention (β = 0.425, p < .001), despite its non-significant relationship with Consumer Satisfaction. This pattern suggests that ease of use may be more closely associated with behavioural intention than with satisfaction in the present model.

6.6 Overall Interpretation

Overall, the findings indicate that the examined factors have different relationships with satisfaction and behavioural intention. Awareness and Trust, Security & Reliability were significantly associated with Consumer Satisfaction, whereas Perceived Ease of Use and Perceived Barriers were not. Perceived Ease of Use showed a significant direct relationship with Behavioural Intention, while Consumer Satisfaction was also positively associated with behavioural intention. The mediation results further showed significant indirect effects for Awareness and Trust, Security & Reliability through Consumer Satisfaction, but not for Perceived Ease of Use or Perceived Barriers. These findings provide some support for considering Consumer Satisfaction as a relevant factor in understanding behavioural intention toward digital payment services among rural consumers in North Bihar.

7. Conclusion and Policy Recommendations

7.1 Conclusion

This study examined consumer perceptions and satisfaction with digital payment services among rural consumers in North Bihar. Awareness and Trust, Security & Reliability were positively associated with Consumer Satisfaction, while Perceived Ease of Use and Perceived Barriers were not significant predictors of satisfaction. Consumer Satisfaction was positively associated with Behavioural Intention, and Perceived Ease of Use also showed a significant direct relationship with behavioural intention.

The mediation results further indicated significant indirect effects of Awareness and Trust, Security & Reliability through Consumer Satisfaction, whereas the indirect effects of Perceived Ease of Use and Perceived Barriers were not significant. These findings suggest that Consumer Satisfaction may provide a relevant pathway linking some dimensions of the digital payment experience with Behavioural Intention.

The study contributes empirical evidence from rural consumers in North Bihar. However, the findings should be interpreted in light of the cross-sectional design and sample. Since the data were collected at one point in time, the relationships should not be interpreted as definitive causal effects. Future research using longitudinal designs and broader geographical coverage could provide further insight into these relationships

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7.2 Managerial and Policy Recommendations

The findings have practical implications for banks, FinTech providers, and policymakers. Since consumer satisfaction is positively associated with behavioural intention, attention should be given to the overall digital payment experience rather than access alone. Improving consumer awareness and maintaining secure and reliable payment systems may be particularly relevant in rural areas. Service providers may also strengthen platform usability, customer support, and the handling of transaction-related difficulties. Policymakers can support these efforts through digital infrastructure, digital skills programmes, consumer awareness initiatives, and appropriate user-protection measures.

7.3 Limitations and Future Research

The study has several limitations. First, the study covers selected rural areas of North Bihar, which may limit the generalisability of the findings to other regions. Second, the cross-sectional design does not capture changes in consumer perceptions and behavioural intentions over time. Third, the use of self-reported responses may involve response and perception biases. Finally, the model examines selected factors and does not include other potentially relevant variables such as digital literacy, social influence, perceived usefulness, service quality, perceived risk, and demographic differences.

Future research could extend the study to other rural and semi-urban regions of India and use longitudinal designs to examine changes in satisfaction and behavioural intention over time. Additional factors such as perceived usefulness, digital literacy, social influence, service quality, perceived risk, and financial inclusion could also be incorporated. Comparative studies between rural and urban consumers may further clarify contextual differences in digital payment behaviour.

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THE TRIPLE CAGE: GENDER, CASTE AND PSYCHOLOGICAL TRAUMA IN THE PRISON WE BROKE

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Abstract

Baby Kamble's *Jina Amucha*, translated into English by Maya Pandit as *The Prison We Broke*, is one of the founding texts of Dalit women's life-writing in India. Written in secret over more than a decade and published in 1986, it recovers the collective memory of the Mahar community of Maharashtra before and after its encounter with B. R. Ambedkar's movement for social emancipation. This paper contends that the women in Kamble’s narrative are confined by three interconnected constraints. The first is the structural constraint of caste, which designates the Mahar body as ritually impure and economically disposable. The second is gender-based oppression, upheld not only by Brahminical patriarchy but also by Dalit patriarchy that replicates caste hierarchies within domestic spaces. The third is psychological trauma, manifested as internalized shame and self-negation, resulting from prolonged exposure to these systems. Drawing on intersectionality (Crenshaw, 1989), Dalit feminist standpoint theory (Rege, 2006), and trauma theory (Herman, 1992), the analysis demonstrates that these constraints are not simply layered but interdependent, each reinforcing and shaping the others in a mutually constitutive manner. It further argues that Kamble's act of writing itself, undertaken in secret against her husband's wishes, is the single act through which the narrator, and the community she speaks for, begins to break the cage from within.

Keywords: Dalit, Caste, Gender, Trauma, Intersectionality

1. Introduction

In 1986, a woman in a small village in western Maharashtra secretly finished a book her husband did not know she was writing. He considered writing an unwomanly pursuit; she went ahead anyway. That book, JinaAmucha, appeared in English in 2008 as The Prison We Broke, and is now recognized as one of the first autobiographical accounts by a Dalit woman. It was an attempt to record her own life, and the life of the Mahar community, from inside the caste-village suburbs known as Maharwada. Babytai Kamble (1929–2012) belonged to the same Mahar community as B. R. Ambedkar, in Veergaon village, Pune district.The title itself is telling. Kamble frames her life as imprisonment, not only the untouchability that kept the Mahars physically and socially apart, but the internal barriers that kept them from living as free people. Patriarchy compounded this; upper-caste men abused Dalit women, and Dalit men, harassed daily in the streets, often became tyrants at home in turn. Perhaps the deepest prison, though, was the accepted social order itself, which taught the lower castes to treat poverty and humiliation as ordinary, even deserved. This paper examines how Kamble represents that prison.

The paper is structured as follows. Following the introduction, it presents the context for Kamble’s central themes, outlines the research goals, and explains the methodology and theoretical approach. Next, it reviews the key findings and provides a detailed textual analysis of caste, gender, and trauma, making the case that these elements are interconnected and should be interpreted as such rather than in isolation. The discussion then turns to the Ambedkarite Buddhist movement and Kamble’s literary work as pathways for overcoming these social constraints. The paper concludes with a summary of insights and a set of recommendations.

Literature Review

Since Maya Pandit's translation, scholarship on The Prison We Broke has grown around three main themes.One interpretation views Kamble’s narrative as aligned with the Ambedkarite push to dismantle caste. Omvedt (1994) positions the text within the broader Dalit movement’s embrace of Ambedkar, seeing such personal accounts as counter-narratives that challenge mainstream history by charting Dalit progress from ritual exclusion to political engagement. Rao (2009) likewise treats caste-based testimonies as revealing how historical untouchability shaped enduring social and economic inequalities faced by Dalits. Shrivastava (2026) frames the work within a literary lineage dedicated to erasing caste, emphasizing that Kamble’s portrayal of domestic life illustrates the interplay between caste and gender oppression, while drawing on Ambedkarite ideas as a foundation for resistance.

The second theme treats the narrative as foundational to scholarship on Dalit women. Rege (2006) supplies much of the conceptual groundwork, describing testimonio as a genre in which one sufferer's individual experience stands in for a collective one, made universal by the reach of caste oppression. Guru (1995) examines the politics of representation in writing about untouchables, arguing that the Dalit movement's turn under Ambedkar depended on a shift from being represented by others, even sympathetic others, toward self-representation. Later work building on Rege and Guru focuses on how Kamble's protagonist is doubly marginalized, as woman and as Dalit: Rajput (2015) traces this intersection directly, while Mohit Literature Reviews (2022) catalogues the sexual exploitation, domestic violence, forced labor, and corporal punishment she experiences within marriage and home.

Trauma offers another, less-examined way into the text. Shaily (2018) argues that caste, class, and gender don't just add up in Dalit women's lives, they compound into a distinct kind of collective trauma, one that looks quite different from what middle- and upper-caste women experience. A 2023 clinical study in the *Journal for ReAttach Therapy and Developmental Diversities* picks up this thread, using Kamble's narrative to explore how Dalit women come to hold a kind of double consciousness, an awareness split between two selves, shaped by gendered violence they face both at home and in public life.

The gaps this paper addresses are twofold. First, most scholarship on Kamble reads the text through either caste or gender, rarely both together. Yet intersectionality is essential to seeing how caste atrocities underpin gender violence, which in turn produces the trauma that helps sustain caste oppression. Second, where trauma-informed scholarship (Shaily, 2018) has identified how trauma operates as a mechanism, none has traced how it feeds both the perpetration of caste violence and the response to it, an affective state that shapes the sufferer's psyche even as it fuels the oppressor's sense of entitlement. This paper joins the testimonio framework (Rege, 2006) with the intersection of caste and gender violence (Shaily, 2018) to argue that the trauma in

Kamble's narrative is simultaneously produced by, and contributes to, the cycle of oppression the protagonist endures, combining testimonio, trauma theory (Herman, 1992), and intersectionality (Crenshaw, 1989) in a way existing scholarship, focused on either narrative form or clinical practice, has not.

2.1 Objectives of the Study

In response to the identified research gap in the literature review, this study seeks to achieve the following goal:

a) to establish how caste operates as a constraint to the development of the economic, spatial, and ritual dimension of the life of the Mahar in *The Prison We Broke.*
b) to explore gender as a distinct but overlapping form of confinement, produced by both upper-caste patriarchy and patriarchy within Dalit communities themselves.
c) to assess psychological trauma not merely as a result of caste and gender subjugation, but as a third structure that reproduces itself.
d) to show how these three systems intersect and reinforce one another, moving the analysis from a cumulative view of marginalization toward an integrated, intersectional one.

3. Research Methodology and Theoretical Framework

This study uses a close reading method and a qualitative, interpretive approach. It focuses on Baby Kamble's translated autobiography, *The Prison We Broke* (2016), while also looking at the original Marathi version, Jina Amucha (2005), to understand Maya Pandit's translation choices. The analysis explores how caste, gender, and trauma connect in Kamble's story, using details from the text instead of numbers or data. It does not try to cover all Dalit women's life stories. Instead, it gives a detailed look at one book, saving wider comparisons for later research.

The analysis is built on three frameworks. Kimberlé Crenshaw's (1989) concept of intersectionality helps look at caste and gender together, not separately. It shows how they combine to create unique forms of disadvantage. Dalit feminist standpoint theory, particularly SharmilaRege (2006) and Gopal Guru (1995), informs the reading of Dalit women's dual subjugation, within the caste hierarchy and within patriarchal structures inside their own community. Judith Herman's 1992 research on deep, shared trauma helps us understand Kamble's portrayals of violence, shame, and silence as wounds passed down through generations, harming both people and communities. Using these ideas together allows the analysis to see caste and gender as linked causes of trauma, without having to separate their effects.

4. Findings and Analysis

Close reading surfaces three main findings**.**First, caste in the novel functions as more than economic oppression, it is a system of ritual humiliation. Kamble notes that parts of this injustice had already been internalized by the community before Ambedkarite activism began.

Second, violence against women is a specific form of oppression that's tightly linked to other forms of control. It comes from both patriarchal norms and the caste system. This harm shows up in many ways, such as relationships with upper-caste men, forced child marriages, pressure to have children, abuse at home, and a lack of support from families and society.

Third, the psychological harm inflicted by both systems is not a byproduct of subjugation but a tool of control in its own right, fear, shame, and worthlessness that produce silence and compliance, and that pass down the generations.

Together these findings support the paper's central claim: that caste, gender, and trauma form a triple cage in *The Prison We Broke*, with the first two interacting most visibly. The means of breaking that cage are similarly multiple, Ambedkarite politics and conversion, but also Kamble's own secret writing, a quiet rebellion effective precisely because it targets all three sources of suppression at once. The sections that follow take up each element in turn.

5. Discussion

5.1 The Cage of Caste

The most visible cage in Kamble's story is untouchability. The Mahar community lives in Veergaon's separate quarter, Maharwada, cut off from the caste village proper (Kamble 42-44): they cannot draw water from the village well, walk its main street, or enter caste Hindu homes by the front door (Kamble 45). Kamble recalls her community collecting the flesh of dead animals that caste villagers threw away, eating it as a staple (Kamble 50-52), and doing hard labor for caste Hindus in exchange for stale food and leftovers, crawling and begging before people considered “higher” (Kamble 55-58). What sets Kamble's account apart from other Dalit autobiographies is that untouchability here is not only a limitation but a ritual that assigns Dalit’s their “lowest” status. She describes being forced, along with her community, to carry dead animals through the village streets during the Potraj ritual (Kamble 60-63), less an act of economic exploitation than a public spectacle meant to remind the Mahar’s of their supposed inferiority. Gopal Guru calls such acts a “ritual of humiliation,” a spectacle that fixes permanent moral stigma onto the Dalit body (Guru and Sarukkai 31). Kamble adds that before reform, her community did not think of itself as oppressed at all; it accepted its position and the caste system as simply normal (Kamble 65-67). Caste, then, was never only a limit on rights, it colonized thought and behavior, an “internal cage” taken up further below as a form of community trauma. Cherian et al. read this internalization as a symptom of intergenerational trauma, in which the normalization of hierarchy becomes a psychological survival mechanism passed down across generations (Cherian et al. 47).

5.2 The Cage of Gender

If caste is the outer wall of Kamble's narrative, gender is the inner one, and it is where her writing does its most distinctive work (Kamble 87). The women of Maharwada were not subject to a single patriarchal order but to two at once. The first, caste patriarchy, controlled Dalit women's bodies directly: their bodies were treated as available to upper-caste men, and families that resisted faced social and economic retaliation. Dalit husbands were on record coercing their wives into meeting upper-caste men's demands, under threat of losing economic support or being beaten (Kamble 94-96). Uma Chakravarti argues that Brahmanical patriarchy works through direct control of women's sexuality, and that for Dalit women this control is effectively outsourced, their bodies serving as collective property available to upper-caste men as a marker of caste dominance (Chakravarti 582).

The second patriarchy came from men of Kamble's own caste. She narrates violence and harassment at the hands of husbands (Kamble 123-125), in some sense an extension of the same humiliation those men suffered from upper-caste people, redirected onto their wives. SharmilaRege calls this a “caste-specific patriarchal cage,” in which Dalit women absorb the brutalized masculinity of husbands who, stripped of power in the caste hierarchy, reclaim it violently at home (Rege 92). These same women also bore the contempt of the wider society, performing hard physical labor and domestic drudgery, and manual work for higher-caste households in exchange for meager pay (Kamble 130-133).

Kamble explains how social rules limited women’s lives at every stage, from childhood to old age (Kamble 140–145). Girls were married young, losing their childhood and any chance for independence (Kamble 148). Women were expected to become mothers, even though childbirth was dangerous, and many children died due to lack of care. Rules about widowhood, property, and remarriage also restricted women’s freedom. V. Geetha points out that controlling Dalit women’s reproduction, through child marriage and forced motherhood, was a form of male control. This control was similar to, but not the same as, how upper-caste men regulated women’s sexuality (Geetha 143). Though Dalit men also faced caste oppression, they did not face these particular restrictions.

Gender in Kamble's narrative thus appears as a confinement distinct from caste but inseparable from it, bound up with, rather than simply added to, caste-based suppression. Gabriele Dietrich frames this as "triple oppression," in which caste, class, and patriarchy subjugate Dalit women simultaneously, each system reinforcing the others (Dietrich 67). Kamble's narrative lays out this state of affairs in detail (Kamble 160-162).

5.3 The Cage of Psychological Trauma

The third prison in Kamble's story is the most complex, since it originates within, as psychological damage produced by the first two Seen through the lens of trauma, *The Prison We Broke* shows what Judith Herman describes as complex trauma. This kind of trauma comes from long-term, repeated harm during situations where a person feels trapped. It deeply affects a person's sense of self, awareness, and ability to trust others (Herman 121). The book clearly displays several signs of this condition. There is a constant vigilance, an awareness of the next traumatic event and a habit of self-restriction; Kamble describes a childhood spent hiding her own desires out of fear of how the village and her parents would react (Kamble 35-38). There is shame and self-blame: in one of the book's most striking passages, the protagonist calls herself unworthy of living because of her conditions, treating what is manifestly unjust as a personal failing (Kamble 78-80). And there is a loss of trust that shows up as an absence of reaction to traumatic events, most notably, Kamble's own long reluctance to publish the manuscript, out of shame before her relatives (Kamble 165-167). This last example is worth pausing on, because it separates a sociological reading of caste from a clinical one. Where a sociologist might ask what caste-based injustice does to social structures, Kamble's narrative asks what it does to the self. Gopal Guru says Dalit autobiographies do more than just explain social conditions. They show deep emotional pain that standard social theories often miss (Guru and Sarukkai 45). Kamble focuses on fear that stays long after the trauma, shame that lingers even when oppression ends, and the physical effects of trauma. For Dalit women, this trauma compounds further, since their abuse operates on three levels at once, caste, class, and gender. Cherian et al. describe caste-based trauma as intergenerational, producing a "cumulative wounding" across lifetimes that shows up as hyper vigilance, internalized shame, and a fractured sense of identity (Cherian et al. 47).

Yet the book is not only a record of suffering. Kamble's willingness to speak about it openly, and the fact that her fear of relatives' judgment proved short-lived rather than paralyzing, suggests her trauma never fully overturned her sense of self. Her own words, "I could not help it, I laughed", along with the protagonist's anger and the support of her friends, point to a resilience that survived what she went through (Kamble 170-172). Ann Cudd argues, in her philosophical treatment of oppression, that narrating one's own trauma is itself an act of resistance, storytelling as a mechanism by which the oppressed reconstruct agency and reclaim a self fractured by systemic violence (Cudd 194). Kamble's desire to tell her story at all is evidence that she had partly overcome it; by describing her own experience she takes a critical stance toward the caste system, aligning her private act with the larger project of emancipation discussed below. As Rege puts it, Kamble's writing turns personal testimony into collective testimony, converting private shame into public indictment, a political act of resistance in its own right (Rege 112).

5.4 The Triple Cage: How the Three Structures Interlock

Where the previous sections treated caste, gender, and trauma separately, Kamble's narrative resists that division as the three are too tightly entangled. Take a single scene: a Mahar woman assigned to serve the caste village on a given day, removing animal flesh and collecting food households refuse to throw away, harassed by upper-caste men throughout (Kamble 55-60). This is clearly caste-based exploitation. But being a woman makes her even more vulnerable. The public shame she faces, something she must either suffer openly or hide by staying silent and holding back, matches what we call trauma (Kamble 78–80, 165–167). One single event can include all three forms of suffering at the same time.

Kimberlé Crenshaw's theory of intersectionality is directly relevant here: she argues that systems of oppression such as racism and sexism do not operate independently but intersect to produce forms of marginalization qualitatively different from the sum of their parts (Crenshaw 140).

This is why the metaphor of three separate cages understates the case, the bars are connected. At the intersection of caste and gender, women are especially exposed: the Mahar community's severe economic deprivation drives young women into forced marriages with abusive men (Kamble 148-150), and upper-caste men's internalized sense of superiority feeds domestic violence in their own homes (Kamble 94-96, 123-125). Trauma keeps the cycle running, as women pass their pain to their children, teaching them to suffer silently or comply with their oppressors. Cherian and others call this pattern "intergenerational transmission." When trauma goes untreated, it passes to the next generation through silence, obedience, and a deep sense of not being good enough (Cherian et al. 48). Dietrich adds that caste, class, and gender oppression are linked. You can't fix one without the others because they all support each other (Dietrich 67).

Kamble's own life illustrates what full liberation might look like. She presents the Ambedkarite movement as a way to dismantle not only untouchability but domestic abuse and internalized shame together (Kamble 175-180), because the real problem is a lack of rights across every register at once: a woman made vulnerable by her gender, by her birth, and by trauma that keeps her silent. This is why Kamble places such faith in Ambedkar's movement as a path to complete renewal, even as Rege notes that her narrative also pushes past Ambedkar's own framework by foregrounding a gender question his movement often set aside (Rege 98).

6. Breaking the Cage: Ambedkar, Conversion, and the Act of Narration

In the later part of his story, Kamble breaks free from the limits of discrimination, and B. R. Ambedkar plays a key role in this change. Ambedkar's impact on Veergaon was not just political but also emotional (Kamble 175-180), linking to broader people's movements. Kamble remembers how Ambedkar urged the Mahars to visit temples and public areas once denied to them, taking a stand against the physical separation described before (Kamble 182-185).

More significant to Kamble, though, is Ambedkar's role in instilling a new value system that culminated in the 1956 mass conversion to Buddhism, not only a way to shed the stigma of untouchability, but a chance to break from the ideology of karma and caste-born impurity that had oppressed Dalits for centuries (Kamble 190-195). This inner sense of upliftment speaks to the second prison, the psychological one. But because the movement stops short of confronting patriarchy within Dalit society itself, the third prison remains largely intact, untouched even by Ambedkar's reforms. Rege argues that while the conversion movement radically challenged caste hierarchy, it left Dalit households' patriarchal structures largely intact, a silence that autobiographies like Kamble's set out to address (Rege 98-100). Domestic power relations, as later scholarship shows, persisted well after conversion; Kamble's autobiography can be read as itself an attempt to work past them.

It is this commitment to fighting untouchability, patriarchy, and trauma together that gives Kamble's decision to write such weight. As she told her translator, Maya Pandit, she wrote the book in secret over years, against the wishes of a husband who did not want her to write: "He was a good man, but like all men of his time... he saw women as inferior" (Kamble, quoted in Pandit xv). That she not only finished the manuscript but used it to voice her people's history from a woman's perspective, naming forms of gender violence her male contemporaries had passed over, is itself a form of liberation. The book is her tool to fight all kinds of oppression at once. It challenges caste by speaking for those who are silenced. It fights patriarchy by focusing on a woman's experience. It turns personal hurt into a message that speaks to many. Rege says writing changes private pain into shared truth, turning shame into public protest, a stand against both caste and male dominance (Rege 112). The title, *The Prison We Broke*, means more than one barrier was broken: untouchability, patriarchy, and deep emotional pain, all weakened, even if not fully gone.

Conclusion

The Prison We Broke doesn't let you treat caste, gender, and trauma as separate issues. This paper claims the book shows how they are connected. It presents three linked forms of oppression: violence built into the caste system, the way women are pushed down within caste and family, and the mental harm caused by both. These levels form a single mechanism. The economic and social deprivation under caste feeds patriarchal dominance at home, which produces internalized shame and suppressed emotion as a psychological defense. This in turn helps preserve and deepen caste and gender oppression, a cycle the protagonist's own life bears out. Defeating that system, the narrative suggests, it required combining Ambedkar's project of freeing people from caste through relocation, education, and spiritual renewal along with a personal, written pursuit of psychological freedom. The book remains a sharp reminder, even after forty years of its first appearance in Marathi, that equality is impossible without women's liberation from the "triple-cage" of caste, gender and psyche.

8. Recommendations

Future research should extend this intersectional framework to Dalit women's narratives beyond Kamble's testimony to examine whether the "triple-cage" formulation has broader explanatory relevance or reflects the specific experiences of the Mahar community, as her account suggests. Comparative analysis of testimonies through a consistent analytical framework could illuminate the intergenerational reproduction of trauma and assess the conceptual utility of a "thrice suppressed" identity while remaining attentive to differences among Dalit women's social and historical locations. Pedagogically, Kamble's text should be situated alongside foundational writings in Dalit feminist thought to equip students with a critical understanding of representation, voice, and the intersecting structures of caste, gender, and class. Discussions of domestic abuse and sexual violence should adopt a trauma-informed approach, providing appropriate contextual framing and sensitive facilitation to minimise the risk of re-traumatisation while sustaining rigorous critical engagement.

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MINORITY WELFARE SCHEMES IN INDIA

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Abstract: India is the country in the world where people of different religions, languages, cultures, and civilizations live together. The Constitution of India provides for social justice, equality, and equal opportunities for every citizen. Despite this, some religious and linguistic minorities have lagged behind in the fields of educational, economic, and social development. The various welfare schemes launched by the Government of India with the aim of economic empowerment, educational development, employment opportunities, skills training, women's empowerment, and infrastructure improvement to remove deprivations and ensure the all-round development of minorities. This research paper presents a comprehensive review of the major minority welfare schemes, like pre-matric as well as Post-Matric Scholarships, Merit-Cum-means Scholarships, Sikho Aur Kamao, Nai Roshni, Nai Manzil, Pradhan Mantri Jan Vikas Karya Karma, and NMDFC. This study analyzes the objectives, implementation, achievements, and challenges of these schemes. Along with these findings, an assessment of the impact of these schemes in the social upliftment of minorities is also presented. This study concludes that although minority welfare schemes in India have brought about significant improvements in the areas of education, employment, financial inclusion, and infrastructure, there is a need for effective implementation, transparency, awareness creation, and further outreach to the minority population.

Keyword: Minority, Welfare, Civilizations, Equality, Cultures

Introduction

Minorities of India are deprived social groups who have faced serious disparities in terms of economic and socio-political power. In a sociological perspective, minorities are identified not only on the basis of numbers but also by their social status, limited access to resources, and less participation in decision-making. Generally minority groups always have differences with the majority of the population in terms of language, race, socio-cultural norms and religious values and always struggle to maintain their separate identities and protect their socio-cultural values.

The United Nations also observes minorities as non-dominant groups that desire to preserve their ethnic, religious, and linguistic traditions and their values. Although there is no formal definition of "minority" in the constitutional context of India, various articles of the Constitution guarantee the rights of minorities and their cultural and educational protection. Thus, understanding minorities helps us to understand why special protection and welfare measures are necessary for specific social groups despite equal civil rights, so that they can be included in the mainstream of national development.

According to the Oxford Dictionary, the word "minority" means "a small number or proportion, especially one forming less than half of the total, or a relatively small group of people who differ from others on grounds of race, religion, language, or political views." The Indian Constitution does not have a formal definition of the word "minority," but the term is used in various articles of the Constitution, including Articles 29, 30, 350-A, and 350-B. The word "minorities" is used in the marginal heading of Article 29, and it makes it clear that any community of citizens living in the territory of India who have their own language, culture, or religion has the right to preserve it. Article 30 specifically mentions two types of minorities—religious and linguistic minorities. Articles 350-A and 350-B relate only to linguistic minorities. According to the 2011 Census of India, the population of Muslims in the country is 17.22 crore (14.23%), the population of Christians is 2.78 crore (2.30%), the population of Sikhs is 2.08 crore (1.72%), the population of Buddhists is 84.43 lakh (0.70%), and the population of the Jain community is 44.51 lakh (0.37%). However, the data of the Parsi (Zoroastrian) community is not available separately in the 2011 Census.

Table . No. 01: Status of Minorities in India According to the 2011 Census

Muslim	Christians	Sikhs	Buddhists	Jains	Parsi	Total
14.4%	2.3%	1.7%	0.7%	0.4%	0.006%	19.3%

India is a multicultural and multi-religious country where Hindus, Muslims, Christians, Sikhs, Buddhists Jains and Parsi live together in harmony. The Constitution of India guarantees full rights, freedom and equality to every religious minority. Despite this, various government reports, especially the Sachar Committee Report 2006, have made it clear that many minorities, including the Muslim community are severely disadvantaged in the economic and educational fields. These circumstances have forced the government to formulate integrated and targeted plans for the development of minorities so that they can be included in the national development stream. The main objective of minority welfare schemes is to reduce socio-economic inequalities, empower minorities and provide them with opportunities for development in every field of education, employment, business and skills. The Government of India formed the Ministry of Minority Affairs in 2006 with the aim of implementing policies related to the welfare of minorities in the country more effectively. The Ministry has launched dozens of schemes for the development of minorities in the last two decades.

The aims and objectives of these schemes are

- To eliminate educational backwardness.
- To promote economic development.
- To empower women in the society.
- To provide vocational training
- To develop infrastructure
- To improve housing and health facilities

The Constitution of India has provided a strong and comprehensive legal basis for the protection of the rights of the minority communities and their welfare. The Indian constitution protects the citizens' rights, such as Article 14 grants the right to equality before the law, under which no person shall be treated with discrimination and every citizen shall have equal protection of the law. Similarly, Article 15 prohibits any types of discrimination on the basis of religion, race, caste, sex or birth, with the aim of promoting social justice and equal opportunities.

Article 16 provides equal opportunities for all citizens in government employment so that minority communities have the right to participate on an equal basis in the recruitment and appointment process. With regard to freedom of religion, Articles 25 - 28 provide every citizen with the full right to freedom of conscience and to practice, propagate and perform religious rites, which are very important for harmony in a multi-religious society. Similarly, Articles 29 & 30 grant minorities the right to protect their cultural, linguistic and educational identity and provide them with legal permission to establish and manage their own educational institutions.

Along with constitutional protection, the National Commission for Minorities established under the National Commission for Minorities Act, 1992 plays an important role in monitoring the rights of minorities, redressing grievances and making the implementation of welfare policies effective. Collectively, all these constitutional provisions and legal measures provide a strong and stable foundation for the rights, dignity and welfare of minorities and play a significant role in making India an inclusive and egalitarian democratic state.

Background of Sachar Committee Report (SCR)

In 2006, the Sachar Committee submitted a landmark report highlighting the following issues:

- The economic condition of the Muslim population is extremely poor
- The literacy rate is much lower than the national average
- Lack of representation in government jobs
- Lack of skill opportunities
- Distance from banking facilities
- Lack of housing facilities and infrastructure

Ranganath Mishra Commission Report (RMCR)-2007

This report also identified the backwardness of minorities and made the following recommendations:

- 10% reservation in educational institutions
- 8% reservation in government jobs
- Special credit schemes for minorities in financial institutions

The report forced the government to prepare specific schemes for the development of minorities so that they could be provided with equal opportunities for development. Although these recommendations could not be fully implemented, they had a profound impact on policy making. Under which various types of welfare schemes were prepared for the development of minorities in India.

Minority Welfare Schemes launch after the SCR &RMCR

After these two reports, the government launched minority welfare programs under a systematic approach which are as follows:

- Pre-Matric Scholarship Scheme
- Post-Matric Scholarship Scheme
- Merit-cum-Means Scholarship
- Seekho Aur Kamao
- Nai Udaan Scheme
- USTTAD Scheme
- Nai Roshni
- Nai Manzil
- PMJVK
- NMDFC

All these programs were designed to promote education of minorities, economic development, basic infrastructure and development of leadership, details as under.

Pre-Matric Scholarship Scheme

The scheme like Pre-Matric Scholarship is an important educational assistance program for minority students, the main objective of which is to provide financial support to students at the initial school level so that their education is not hindered due to poverty. This scheme is for students from class 1 to 10. Under it, scholarships are given for tuition fees, study materials, uniforms, hostel expenses and other essential educational needs. The aim of this scheme is to reduce the school dropout rate, increase interest in education among children and provide equal opportunities to weaker sections to get basic education so that they can get better educational and economic prospects in the future.

Post-Matric Scholarship Scheme

The Post-Matric Scholarship Scheme is a comprehensive financial assistance for minority students pursuing higher education after matriculation. The aim of this scheme is to provide assistance to students studying from class 11 to Ph.D in paying fees, books, hostel, laboratory, project work and other educational expenses. This scheme also provides facilities to students enrolled in professional education like engineering, medical, management, ITI, polytechnic and other higher education courses. This scholarship, economically weaker students can pursue higher education and be capable of playing a better role in the society.

Merit-cum-Means Scholarship

The Merit-cum-Means Scholarship Scheme is for those minority students who want to pursue professional and technical education but are unable to do so due to financial constraints. This scholarship is especially given to students of engineering, medical, management, architecture, fashion technology, pharmacy, law and other professional courses. Both the academic performance and financial condition of the students are taken into consideration in this scheme. Under the scholarship, the government bears a major part of the tuition fee and the students are also given a monthly stipend. The main objective of this scheme is to free capable and hardworking students from financial constraints and enable them to compete at the national and global level.

Nai Udaan Scheme

Nai Udaan Scheme is a special initiative for minority students which aims to provide financial assistance to students who have qualified in various national level competitive examinations. This scheme is helpful for students appearing in UPSC, State level service commission, SSC, Bank PO and other central and state services examinations. Under Nai Udaan, financial assistance is provided to students for coaching fees, study material, accommodation, online classes and exam preparation expenses. The aim of this scheme is to increase the representation of minority youth in civil services and other government jobs so that they can play an active role in the administration of the country and get good opportunity in the national stream.

Seekho Aur Kamao

Seekho Aur Kamao Scheme is an important skill and employment-based scheme of the Ministry of Minority Affairs which aims to provide vocational training to minority youth in the age group of 14 to 35 who want to get better employment in the modern era. Under this, the youth are given practical training in various trades demanded in the market such as Computer Operator, Dress Making, Driving, Plumbing, Electrician, Tourism and Hospitality, Fashion Designing and other fields. During the training, boys and girls are also given a monthly stipend so that they can continue their training without financial worries. Moreover, after the training, it is mandatory for the institutions to ensure placement of at least 75% of the trainees so that the youth can actually get employment opportunities and become financially self-sufficient.

Nai Roshni

Nai Roshni is an important minority welfare scheme of the Government of India, which aims to develop leadership skills in women belonging to minority communities and empower them socially, economically and educationally. Under this scheme, women are provided training on leadership development, awareness, education and legal information, health, financial inclusion and government welfare schemes. The main objective of Nai Roshni is to enable minority women to participate confidently in social and family decision-making and play an effective role in the development process. This scheme is considered an important step in empowering minority women and promoting gender equality.

PM VIKAS Scheme

The PM Vikas Scheme, whose full name is Pradhan Mantri Vishwakarma Kaushal Samman, aims to provide robust and modern training to artisans and skilled workers working in traditional professions. Under this scheme, 18 traditional professions such as carpenters, blacksmiths, weavers, cobblers, goldsmiths, masons, basket makers, tailors and other artisans are provided with modern training, toolkits, financial assistance, and easy loans. The scheme also includes training in the use of digital payment systems, branding, marketing, and e-commerce platforms so that artisans can sell their products directly in the market. Its aim is to keep traditional arts alive on the one hand and to economically empower artisans on the other, enabling them to compete in the national and global markets.

USTTAD Scheme

USTTAD i.e. Upgrading Skills and Training in Traditional Arts/Crafts Scheme has been launched to promote and ensure the survival of traditional arts and crafts. Under this scheme, youth and artisans are provided high-quality training in various traditional arts like woodworking, brass and metalwork, hand embroidery, carpet weaving, garment making, terracotta art, and other crafts. An important part of the USTTAD Scheme is the Mentor–Apprentice Model in which expert artisans provide practical training to new learners so that the arts can be safely passed on to the next generation. In addition, artisans are provided market linkages through design development, product branding, modern market trends, exhibitions and USTTAD Haat. This scheme not only preserves traditional skills but also improves the income and social status of the artisans.

Nai Manzil

The Nai Manzil scheme has been launched for minority youth who have not completed their education up to matriculation or have received non-formal education from madrasas. The aim of this scheme is to bring such youth back into the educational mainstream and provide them with skill training so that they can get better opportunities for both education and employment. Under Nai Manzil, students are given the opportunity to pass 10th and 12th standard through the National Institute of Open Schooling (NIOS) and at the same time they are also provided with skill training as per the market requirement. Training, study material, stipend and P facility are also provided through the scheme. Its main objective is to reduce the problem of school dropout, educate minority youth and enable them to get decent employment.

Pradhan Mantri Jan Vikas Karyakram (PMJVK)

Pradhan Mantri Jan Vikas Karyakram (PMJVK) is a major minority welfare scheme of the Government of India aimed at developing basic amenities and reducing socio-economic disparities in minority majority areas. The scheme was earlier known as Multi-Sectorial Development Programme (MSDP), which was later renamed as PMJVK to make it more effective. Under this programme, infrastructure like educational institutions, residential hostels, health centres, IITs, polytechnic institutes, skill development centres, Anganwadi centres and clean drinking water are constructed and expanded. PMJVK is implemented in minority majority districts, blocks and urban areas to promote development at the local level. The scheme has not only improved educational and medical facilities but has also played a significant role in raising the standard of living of minority communities.

National Minorities Development and Finance Corporation (NMDFC)

The National Minorities Development and Finance Corporation provides various credit schemes to promote economic self-reliance of minority communities. The main objective of these schemes is to provide easy and low-interest financial resources to minority individuals for business, self-employment and professional activities. Under NMDFC, micro-credit, term loans, education loans and financial assistance at subsidized interest rates are provided. These loans can be used in small businesses, handicrafts, agriculture, service sectors and vocational education. NMDFC schemes have provided employment opportunities to lakhs of minority individuals, promoted business activities and strengthened financial inclusion, which has resulted in significant improvement in the economic condition of minority communities.

Key Challenges of Minority Welfare Schemes

- Lack of awareness about the schemes, especially in rural and backward minority areas.

- Complicated documentation and online application process which causes hardship to the eligible persons.
- Lack of digital literacy and internet facilities especially among the elderly and less educated.
- Non-timely release of funds leading to delays in scholarships and grants.
- Inconsistency in implementation at the state level and lack of administrative capacity.
- Land availability, approvals and technical constraints in PMJVK schemes.
- Lack of market-oriented training in skilling schemes.
- Limited employment and placement opportunities after training.
- Social, cultural and family barriers to participation of minority women.
- Banking and collateral issues in loan schemes (NMDFC).
- Lack of monitoring, transparency and effective evaluation of schemes.
- Limited involvement of NGOs and community institutions at the local level.

Conclusion:

The above analysis makes it clear that minority welfare schemes in India are a serious attempt to give practical form to the constitutional concept of social justice, equity and inclusive development. To address the social, educational and economic inequalities cited in the report of the Sachar Committee (2006) and the Ranganath Mishra Commission (2007), the Government of India launched several comprehensive and targeted programmes related to education, skilling, employment, financial inclusion and infrastructure development. These schemes have provided new development opportunities, especially for minority students, youth, women and artisans associated with traditional professions.

In the field of education, pre-matric, post-matric and merit-cum-mains scholarship schemes have played a significant role in reducing the dropout rate due to poverty, while schemes like Nai Udhan and Nai Manzil have enabled minority youth to participate in higher education and competitive examinations. Similarly, skill development schemes like Sikho Aur Kamao, PM Vikas and USTTAD have improved the practical skills of youth and artisans and provided them with opportunities for self-employment and decent jobs. The new Roshni scheme for women empowerment has promoted leadership, self-confidence and social inclusion among minority women, which is essential for sustainable development.

In terms of infrastructure development, the Pradhan Mantri Jan Vikas Karya Karya Karma (PMJVK) has accelerated the pace of development at the local level by building educational institutions, health centres, hostels and skill development centres in minority majority areas. Along with this, the credit schemes of the NMDFC have attracted minority people towards financial self-sufficiency and strengthened the process of financial inclusion by promoting entrepreneurial activities.

However, despite all this progress, some challenges still exist, including lack of awareness about the schemes, cumbersome documentation process, limited access to digital facilities and uneven implementation in some states. Therefore, it is necessary for the government to pay special attention to effective implementation, transparent monitoring and public awareness through different media platform of these schemes across the country. If these policy measures are implemented with strong institutional support and social partnership, minority welfare schemes can not only improve the socio-economic condition of minorities but can also play a key role in making India a truly inclusive, egalitarian and strong democratic state.

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CONCEPTUALIZING WOMEN'S DECISION-MAKING AUTONOMY BY SYNTHESIZING EVIDENCE FROM INDIAN STUDIES WITH SPECIAL REFERENCE TO JHARKHAND

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Abstract

Empowerment has become a key element of women's autonomy in decision-making and a key indicator of inclusive development. India has made tremendous strides in the fields of education, economic activity and policies, but women still struggle to make decisions about health, money, movement, work and household. To tackle the enduring gender inequalities and promote justice in development, it is crucial to understand the context in which women's autonomy is formed. This paper aims to conceptualize women's autonomy in decision-making process based on the evidence collected from the Indian studies, particularly from Jharkhand. Taking a thematic review approach, the study reviews the theories and experiences of development literature to determine the key factors, dimensions, and limitations of women's decision-making power. The socio-cultural background and developmental issues in Jharkhand are accentuated because it has a significantly larger rural and tribal population in the state and the issues are not of the same nature as in other parts of the country. The review emphasizes that factors such as education, employment, control over income, asset ownership, age, family structure, caste, tribe, social norms, and institutional support are identified as important factors influencing autonomy. The findings also show that individual, household, socio-cultural and institutional influences interact to give rise to women's autonomy. Current literature on participation, however, has been largely limited to a narrow set of participation markers and has not yet given enough focus to regional diversity, quality of the influence, and district-level variations. The paper highlights these gaps and proposes context-specific and multidimensional way of understanding women's autonomy in decision-making, especially in Jharkhand context.

Keywords: Autonomy, Decision-Making, Empowerment, Socio-economic, Gender inequality,

Introduction

Women and development

The contribution of human resources is a key part of the development of a country. Half of the population is female: no national progress is meaningful without them being empowered. Women in India are revered in culture but yet are disempowered in all walks of life on a social, economic and political level. "To awaken the people, it is the women who must be awakened. Once she is on the move, the family moves, the village moves, the nation moves," said Pt. Nehru. This underscores women as catalysts for growth as well as development. So, over time, the emphasis has shifted from a narrow view of economic growth to a broader one of human welfare, equality and social justice. In this context, the status and empowerment of women have emerged as development indicators. Although agriculture has made a great contribution to the welfare of the household, labour market and social life, women are still suffering from various forms of discrimination and exclusion in many societies.

The socio-economic marginalization has been an impediment to social and economic development and as a result, both governmental and non-governmental endeavours to enhance the socio-economic status of women through policies and programmes. Socio-economic status encompasses rights, obligations, responsibilities, opportunities and social standing in the family and community. The traditional roles of women have been limited to household duties and politics and income generation have been dominated by men. Gender inequality persists and is being perpetuated by deeply entrenched cultural norms and gender socialization. Women's socio-economic status remains low, generally because of their lack of education, early marriage, limited employment opportunities, and weak property rights, and this has perpetuated gender inequalities and male dominant status in decision-making. It is their inability to fully participate in the country's development that is being limited by these limits. Hence, the role of women and the need for increasing employment opportunities for women are now considered to be the fundamental conditions for inclusive growth, poverty alleviation, building human capital, and overall development of the society.

Importance of empowerment and autonomy

Empowerment and autonomy are key to the advancement of women and inclusive development. Women empowerment is defined as women's movement to be able to make well-informed choices about their lives, use resources, assert autonomy and participate extensively in the social, economic and political spheres. One of the core elements of empowerment is autonomy: the capacity of an individual to make informed decisions and to act in a way that is consistent with their values and preferences and not unduly constrained by others. Empowered women can make greater impacts on decisions regarding education, health, employment and household welfare. They are involved in decisions that have a positive impact on their own well-being and that of children, families and communities. The studies repeatedly demonstrated that the greater the autonomy of women, the better their health and education, the fewer children they have, the better their welfare, and the more their human capital improves. Thus, the empowerment and autonomy of women is not only a social justice and gender equality issue, but it is also a basic need for sustainable economic development and societal progress.

Why decision-making autonomy matters

Decision-making autonomy is the degree of freedom people have in their personal and public life. It is an important aspect of women empowerment. It is formed from a mix of institutional design, sociality and personal skills. Legal rights, political representation and quotas increase formal participation in the decision-making process. But informal norms and traditional gender practices constrain actual power. Moreover, class, caste, ethnicity, and education further exacerbate the level of autonomy of women. Later marriage is associated with greater acquisition of skills, education and employment opportunities among women. On the other hand, early marriage served as a proxy, and it affected women's involvement in the labour force and skills transfer to their children. This indicator is quite similar to other measures of female autonomy, such as the percentage of female household heads or the percentage of females married to a man who is older than them. The age at marriage is particularly noteworthy as it has a microeconomic relationship with the development of women's human capital through labour market experience. Also, society may consider that early married women are not valuing skills that are not in their realm. As a result, economies that limited the empowerment of women lagged in progress. Hence, the autonomy of decision-making plays a vital role in enhancing women's well-being, skills and human capital development. The autonomy is, thus, essential for the welfare of the household and also for the development of the country.

Significance for India and Jharkhand.

The study of women's autonomy in decision-making process is especially appropriate in India, where despite remarkable achievements in education, health care and economic development, gender inequalities remain. Women's rights to equality are guaranteed by the Constitution, and there are many policy initiatives that have been developed to promote women's empowerment, but the number of women who exercise control over decisions regarding their health, education, employment and household resources remains low. Women face restrictions on participation in decision-making, as norms, patriarchy, unequal access to assets and property and gender discrimination restrict their participation. To evaluate the impact of current interventions and develop policies to ensure gender equality and inclusive development, it is crucial to understand these factors that influence women's autonomy.

This significance is even more evident in Jharkhand, where the number of rural and tribal populations is high. Despite women being half of the population, they are still underrepresented in areas of literacy, access to healthcare and formal employment. Women members of the tribe, in particular, are heavily engaged in agricultural activities, forest-based livelihoods and other subsistence activities and are likely to work longer hours than men. Patriarchy, patrilocal and patrilineal social structures mean that although they are clearly visible in the context of the household and community, decision-making power remains largely in men's hands. In addition, cultural norms and gender bias influence women's social status and opportunities in the households, as does son preference. Some development programmes and welfare measures have fostered economic and social shifts; however, traditional practices and the lack of assets limit women's autonomy. The inappropriateness of access to land, property, credit and other resources reduces their bargaining power and reduces their voice in decision-making. Empowering women by increasing their autonomy in decision-making is not only crucial to their betterment but is also important for the better welfare of the household, human capital development and socio-economic development of the region in Jharkhand. So, the autonomy of Jharkhand is an issue that needs to be explored in order to understand the nature of gender relations in different contexts and to formulate region-specific measures to improve women's empowerment, household welfare and development of the region.

Objective of the paper

The primary aim of this article is to conceptualize women's autonomy in decision-making and integrate the findings of various studies done in other parts of India, especially in Jharkhand. The aim of this paper is to look at the concept of decision-making autonomy of women and its nature and to discuss the social-economic-cultural-institutional factors affecting it. It examines, using theories and statistics from the development literature, how education, employment status, income, asset ownership, age, caste, tribe and family structure influence women's capacity to be involved in the process of decision-making autonomy. The experiences of women, particularly the rural and tribal women, in the state of Jharkhand is also given special attention as these women are still being affected by the traditional social structure and economic constraints regarding their autonomy. The study shall be able to give some relevant information to help understand the nuances of women empowerment and autonomy in decision-making in the specific context of Jharkhand. It is important to consider that decision-making autonomy is multidimensional and that a conceptualization of women's autonomy could be based on available evidence from other studies and provide information that could be relevant to other contexts around the world.

Understanding women’s decision-making autonomy

Meaning of autonomy

Autonomy is the ability to make decisions on one's own and independently, relying on personal judgment and understanding. It is the ability of a single person or a group of people to have control over their decisions in making them, by themselves or together. Effective living with autonomy is crucial to life's challenges, to living up to aspirations, and to living with integrity.

Distinction between Autonomy and Decision-Making

Autonomy is the capability or capacity to make choices independently, and decision-making is the process of choosing from an array of available options when the power of autonomy is exercised by a person. In addition, autonomy is related to what the person believes and decides and is not dependent on others. They are fundamental characteristics of human beings: self-esteem and personal choice. (Aribello 2024). Therefore, autonomy in combination constitutes an empowerment feeling of making decisions and choices oriented with an individual's value-system and morals.

Decision-making, however, is the process of an act in which individuals choose one of the available choices. Decision-making is not just an autonomous process, but one that is also affected by external and internal factors like social, cultural or environmental forces and value systems, respectively. Autonomy and decision-making are related but distinct in that they are necessary skills to make free choices in the light of judgement and autonomy.

Agency, Empowerment, and Choice

To grasp women's autonomy in decision-making, a deep understanding of the complexity of agency, empowerment and choices is essential. Agency refers to someone's ability to set goals and achieve them. It means being able to make intentional decisions and make an impact on results that affect one's life. Empowerment is the process of providing individuals with the resources, capabilities, confidence and opportunities to exercise agency. It allows individuals, especially women, to question and overcome current limitations and be more involved in decision-making that is relevant to their wellbeing. In this case, "choice" is defined as the possibility of making a selection from various options based on one's preferences, values and aspirations. But having only a choice does not necessarily mean having the power to take that choice; people need to have the power and freedom to do so. So, the concept of decision-making autonomy for women can be considered as an expression of empowerment and a means of empowerment through choice and agency. These ideas constitute a powerful tool for studying women's control over their own lives and their role in household and community decision-making.

Dimensions of autonomy

Women's autonomy in decision-making is a multifaceted phenomenon and cannot be captured with a single indicator or dimension of autonomy. It includes a number of domains of life where women have the opportunity to make choices, have control and exert authority over decisions that impact their health and that of their families. Decision-making autonomy includes aspects of household decisions, financial decision-making, employment and economic decisions, health-related decision-making, child-related decisions community and political participation, mobility autonomy, and ownership and control of assets. These are different aspects in each of which women can have different levels of influence and agency. Because autonomy is a complex phenomenon that is formed by a variety of social, economic and cultural determinants, it needs a multidimensional perspective that allows considering the multiple and interconnected aspects of women's autonomy in different areas of life.

The concept of autonomy in decision-making is multidimensional, and not limited to the involvement of women in one sphere of life. It covers decision-making and control over issues that impact individual health, family life and social engagement. The dimensions of autonomy in decision-making are typically related to decision-making regarding healthcare, meaning that women can make decisions on health and healthcare without significantly relying on the decisions of other people; financial autonomy, meaning that women have the capacity to make decisions regarding income, savings, expenditure and household resources without having to rely significantly on the decisions made by other people; and mobility autonomy, meaning that women have freedom of movement and can go to see relatives without significant restrictions and visit markets, educational institutions or healthcare facilities.

Another critical aspect is decisions made for the child, such as his or her education, health care, nutrition and future. Other aspects of autonomy include how a person makes decisions in relation to their household, such as buying assets, managing the finances of their household, and major family matters. Also, autonomy could apply to decisions about employment, involvement in community groups, political involvement, and control or ownership of productive assets. These dimensions are frequently interrelated and a fuller picture of women's decision-making autonomy should highlight how much women are involved in decision-making in various spheres of life, not just one indicator of decision-making power.

Theoretical Approach to the Autonomy of Women

The Capability Approach of Amartya Sen.

Amartya Sen presented the ‘capability approach’ that emphasizes the quality of life that people can achieve. He broke this down into two fundamental principles of his sense of ‘functionings’ and ‘capabilities.’ Functioning is the ‘being and doing’ that a person might attain, for example, being nourished, being educated, having a house etc. They are the actual results that have been obtained in the life of a person. What a person actually has the opportunity to attain are the functions that are valuable to him, and this constitutes his “capabilities.” They represent the freedom and ability of a person to select from different combinations of functioning. In essence, it is freedom which enables an individual to attain his objectives and live the life he likes.

Kabeer’s Resource-Agency-Achievements Framework

Naila Kabeer's Resources-Agency-Achievements framework is a highly influential model to understand women's empowerment. Kabeer views empowerment as a process that allows people who were unable to make strategic life choices to gain that capacity. The framework is made up of 3 dimensions that are interconnected: resources, agency, and achievements. Resources are those assets that increase a person's ability to make choices, e.g., education, income, jobs, property ownership and social networks. Agency is the capacity to establish goals and take action through the processes of decision-making, negotiation and engagement in social processes. Achievements are outcomes that occur as a consequence of the exercise of agency (higher levels of well-being, autonomy, and social status). The framework emphasises empowerment as more than access to resources; it is also about effective use of resources to generate desired outcomes. Agency is central to women's decision-making autonomy, and its meaning is related to women's ability to affect decisions that affect their life and family.

Household Bargaining Theory

One of the most important assumptions of the household bargaining theory is that the household is an individual unit whose members are acting in unison for a common interest. Rather than viewing the household decision-making process as an individuals' right to choose, it sees it as a process of negotiation between the members, who can have a variety of preferences, resources and decision-making power. This view sees the level of bargaining power an individual has within their household and how that affects their ability to exert influence over household decision-making determined by how many income sources, assets, education, jobs or other sources of support exist in the household. The theory is especially important for understanding women's decision-making autonomy because it emphasises the importance of women’s economic independence and their resource ownership to strengthen their negotiating capacity and participation in household decisions. It thus offers a valuable lens through which to examine power dynamics, gender disparities and decision-making in families.

Human Capital and Development Perspectives

The human capital approach looks at the importance of investing in women's education, skills, health and labour market engagement, in order to improve the well-being of women and their contributions to development. A large body of evidence from both India and abroad indicates that female education and employment boost their bargaining power, enhance their involvement in decision-making and their autonomy within the household (Kabeer, 1999; Duflo, 2012). Besides increasing productivity and economic growth, female human capital can also help improve child health, nutrition, and education outcomes because of their increased control over household resources. The study on India, further illustrates the role of women's agency in the development process, showing that investments in women's human capital have positive effects on economic growth and long-term development (Sehrawat & Giri, 2017).

In terms of development, women's autonomy is considered as a means as well as an end of development. Amartya Sen (1999) suggests that development should be viewed as an increase in the substantive freedoms and opportunities that people have to enjoy, and not just as economic growth. In a similar way, Indian development literature has highlighted the role of gender inequality in impeding economic development through women's role in human capital formation and productive activities. The findings of Sen (1990), Klasen and Lamanna (2009), and Duflo (2012) suggest that more autonomy for women leads to human development, poverty reduction, and economic sustainable development, and the lack of gender parity has a negative impact on these outcomes. The human capital and development perspectives complement one another and offer a solid theoretical underpinning for understanding the study of women's decision-making autonomy, which draws attention to the link between women's capabilities and agency, developmental outcomes, and social change.

Evidence of Female Autonomy and Development from Development Literature

In recent years, female autonomy has been acknowledged as a vital factor in economic and social development by development economists. There is empirical evidence that societies with higher levels of women's autonomy are better in human capital formation, productivity and long-term economic growth. Women's educational and skill development, involvement in labour markets and productive economic activities have a significant impact on human resource development and the general prosperity of the nations. On the other hand, social structures and social norms that limit women's opportunities can hinder economic development and reduce a society's ability to achieve sustainable development, for example by early marriage, limited school attendance, limited mobility, and lack of participation in activities that require skills.

A large body of literature has documented the linkages between gender equality and economic development. Using macroeconomic regression analyses, Klasen and Lamanna (2009) showed that gender inequality in education and employment harms economic growth in developing countries by reducing the productivity of half the population. Likewise, gender gaps have important adverse effects on economic growth and development (Gruen & Klasen 2008). The studies suggest that the lack of access to education, employment and decision-making opportunities among women constrains the efficient utilization of available human resources and leads to a slower pace of economic development and competitiveness.

Historical context also highlights the importance of female autonomy for development. Women's empowerment has been linked to greater human capital development and longer-term economic development. Age at marriage is one of the indicators of women's autonomy. Women in old age tend to have more opportunities to receive education, learn skills and to have more experience in the labour market before they get married and have a child. On the other hand, early marriage may restrict girls' working opportunities and potential to develop themselves or acquire skills. These restrictions impact on women's health and wellbeing but also on the future generations' health, nutrition and education outcomes as they are less invested in.

Amartya Sen (1990) made a strong statement regarding the link between gender inequality and development when he discussed the phenomenon of "missing women." Sen pointed out that the inequities in the sex ratios and access to medicines, nutrition and education that stem from gender discrimination come with significant social and economic costs to societies. His research made it clear that the lack of capabilities of women is not only a social injustice issue, but also a tremendous challenge for human development. Sen's overall capability approach also underlines that development is a process of broadening people's freedoms and opportunities to lead the lives they value, and that autonomy is an integral part of development.

The importance of gender equality is well documented, but recent researchers have stressed the complexity of the gender empowerment-development connection. Duflo (2012) suggests that there is a two-way relationship between poverty and gender inequality. Women's empowerment in and through economic development can help to fight poverty and enhance development outcomes, but economic development does not necessarily end gender inequities. Rather, poverty and gender inequality frequently compound each other, and the interventions needed to overcome economic and social factors must be targeted.

The available development literature confirms that female autonomy is a close associate of human capital development, household economic productivity, household welfare and overall household developmental outcomes. Gender equality in education, employment and in decision-making is the pathway to sustainable growth, social progress and economic competitiveness for societies. Thus, autonomy of women must not only be considered as a question of individual empowerment or gender justice but also as a prerequisite for inclusive and sustainable development. In this respect, autonomy becomes a development imperative.

Determinants of Women's Decision-Making Autonomy. Evidence from Indian Literature

A variety of socio-economic, demographic and cultural factors affecting women's autonomy in decision-making have been found in Indian studies. The relative significance of these different factors differs across regions and social groups, but the literature generally shows that autonomy of women depends on the interplay between the personal, household, and community level factors.

Education

Education has been one of the most commonly mentioned determinants of women's autonomy in decision-making. The literature is replete with evidence of a positive correlation between education and women's involvement in household decisions. Educated women are more aware of their rights, more able to access information, more self-confident and better at negotiating: these are all factors that contribute to their capacity to impact family decisions. Yet, there is some evidence that education does not necessarily lead to autonomy when patriarchy is so entrenched, as is often the case in rural and conservative communities.

Employment and Income

Higher levels of autonomy are typically linked to employment and income from self-employment. Women in paid work are more likely to be involved in decisions about the household budget, children's education, health care, and asset acquisition, particularly for cash income. The economic contribution boosts the bargaining power of women in the household. However, studies also show that work is not necessarily a source of increased decision-making power, as women may hold limited power over their income, and/or cultural norms remain entrenched in a male-dominated system of power.

Age and Life-Cycle Factors

A person's age is also an important factor in regard to autonomy. Older women also tend to have more authority and influence in the family because of their experience, social status, and seniority in the family. Generally, married women become more empowered in decision-making abilities as their life cycle advances, especially after childbirth. Yet, young women, particularly young newly married women, are often limited in their decision-making and mobility because of their authority and status in the household.

Caste and Religion

Studies reveal that there are significant differences in the level of autonomy given to women of various castes and religions. Women from historically disadvantaged caste groups may be more involved in economic activities and thus have greater types of autonomy. On the other hand, they may experience a lack of resources and opportunities due to social exclusion and economic deprivation. Gender relations and decision-making also are affected by religious norms and cultural practices. However, results are mixed and the impact of caste and religion is usually through underlying socio-economic factors.

Family Structure

Women's autonomy in decision-making is influenced by family structure. In general, it has been established that women in nuclear households have more freedom and participate in decision-making than those in joint families. Women's authority may be limited in joint households, as there may be a presence of 'elders' and 'in-laws' in the household. But there is also some evidence that joint families can give social and economic assistance which could enhance women's bargaining power in some situations.

Asset Ownership

There has been a consistent association between autonomy and ownership of productive assets, like land, housing, livestock and financial resources. Women owning assets have greater bargaining power and economic security, which allows them to have a more equal role in household decision-making. By owning assets, women have greater options in case something goes wrong and they are less vulnerable to relying on other members of the household. Although property and inheritance rights are important, many women in India continue to experience restricted rights to property.

Regional Disparities

There is a significant regional differential in the autonomy of women in India, as evidenced in the literature. Among the women in some southern and northeastern states, there is a greater share of women who say they participate in household decisions than in some northern states. The differences can be attributed to varying levels of literacy, access to economic opportunities, cultural differences, demographic differences, and patterns of gender relations in the past. The regional differences indicate that autonomy is influenced by social and institutional factors as well as individual characteristics.

Self-Help Group (SHG) participation

Women's autonomy has been enhanced by the participation in Self-Help Groups (SHGs). Research has shown that SHG membership improves access to credit, savings, training, social networks and collective action. This ensures women are more confident and active in household and community decision-making. The effects of SHGs are yet different because of the quality of participation, group dynamics and local socio-cultural factors.

Access to Information

Women's autonomy of decision-making is greatly affected by access to information gained through education, media coverage, digital technologies, government programmes and social networks. A greater understanding of their rights, opportunities and services available to them leads women to be more able to engage in decision-making processes concerning their lives. Information decreases women’s reliance on others and makes them more empowered to make decisions. However, inequalities in access to and skills with digital technologies persist in terms of information access.

Husband’s Education

The educational level of husbands also affects women’s autonomy. However, most studies have found a positive relationship between gender equality within the household and the level of education of the spouse: Women whose husbands are more educated tend to be more involved in household decision-making. There is a general relationship between increased levels of male education and increased support for women's education, employment and mobility. But, some studies have revealed that mere education does not always lead to an autonomous position for women, suggesting that the connection between education and women's autonomy is not linear.

Thus, from the evidence available in the Indian literature, it is clear that the educational, economic, demographic, social and institutional factors have a complex interaction with regard to women's autonomy in decision-making. Education, employment, having assets, access to information, and belonging to collective groups tend to increase autonomy, but these are often shaped by family structures, cultural norms, caste, religion, and regional contexts. Hence, women's autonomy in decision-making is not a function of one factor, but rather a result of the interaction between various socio-economic factors across various layers of society.

Factors hindering the autonomy of women in decision-making

While women's education, employment and political participation have improved, deeply entrenched social and institutional structures remain to limit decision-making autonomy. From the very beginning, the role of independent decision-making power is emphasized in Indian literature that it is not only a matter of resources, but also systems of power and social organization.

Patriarchy

One of the most important impediments to women's autonomy is patriarchy. It is a society that involves a system of social relations in which men hold power over their family resources, over family decision-making, and over social institutions. Women are frequently considered less capable than men in household and community decision-making and have restricted access to resources, such as monetary, mobility, employment or family matters. In cases where women participate in the economy, male family members may continue to make decisions.

Patrilineality

The concept of patrilineality, which is a concept of inheritance and descent through the male line, helped to strengthen the gender inequalities by favouring sons over daughters with regard to property rights and family succession. Women's access to productive resources is limited and their bargaining power in the household is low in many parts of India as assets are traditionally handed down from fathers to sons. Limited ownership of property limits women's economic independence and their participation in key household decision-making.

Patrilocality

Women's autonomy is also limited by the patrilocal resident pattern, in which women reside after marriage with their husband's family. Marriage migration frequently involves leaving behind their communities for their new husbands, and often involves moving to new surroundings where they are in a relatively subordinate role. Relying on husbands and in-laws can be detrimental for women's bargaining power in determining household decisions, especially in the first few years of marriage. Studies indicate that patrilocality can reduce women's rights to access to property, resources and sources of support.

Son preference

Other significant limitations on women's independence are the persistence of son preference and the lack of recognition for women's rights. In addition, women's rights are not recognized, and son preference is still prevalent. In societies in which sons are common, they are often viewed as economic resources, as heirs to the family's holdings, as a source of old-age support, and as means of implementing important religious obligations. In comparison, daughters are usually considered as temporary members of the natal family because of marriage migration. These attitudes lead to disparities in investing in girls' education, health, and opportunities, and to women's lesser position within the household and society.

Gender norms

Gender norms and socialization practices contribute significantly to women's decision-making power. Women are socialized to put caring before working and to look after domestic chores while men are socialized into the role of decision makers and providers. The norms shape the perceptions of women's mobility, working life, leadership and public life. Thus, women's agency is restricted; even when there are formal opportunities for it, in many cases because they internalize such expectations.

Weak property rights

While there have been changes in the law to give women more rights to inherit property, only a small proportion of women have effective control over property. Women's claims and exercise of ownership rights is often impeded by social pressures, administrative obstacles or customary practices. The importance of property ownership on bargaining position has been discussed; it offers women economic security and makes the bargaining position of women stronger within the household. The legal entitlement-real ownership gap contributes to the lack of women's autonomy.

Informal institutions

Often informal institutions (such as customs, kinship, caste, and community expectations) prevail over formal laws and policies. While there may be formal laws to promote gender equality, there are also informal norms that shape informal social relations, which can perpetuate traditional gender hierarchy. These non-formal institutions are responsible for defining normal behaviours, movement, rules of legacy, and decision-making within the home and community, reducing the voice of women.

These limitations collectively demonstrate that cultural norms, kinship system, property relations and institutional arrangements interact in complex ways to shape women's decision-making autonomy. Legal changes and development actions have increased women's opportunities, but there are deep structural inequalities that affect the lives of women everyday. In turn, effective autonomy is constrained by structural barriers.

Autonomy and the Intersectional Dimensions of Rural Women and Tribal Women in the Rural Context

Rural and tribal women do not have the same socio-economic and cultural context, which affects their autonomy and decision-making power. In India, a large number of women are involved in agricultural activities and a high percentage of them are rural women who make major contributions to agricultural production, livestock management, household production and other caregiving activities. They play an important role in their household and community economies, but still have limited involvement in decision-making. Women's rights to education, health care, formal jobs, financial resources and productive assets remain limited in many rural areas, reducing their bargaining power in the household. There are common gender stereotypes that create unequal expectations of gender roles for domestic and reproductive work, while men are given control over important economic and social decisions. The condition of the tribal women is more complicated. Tribal societies are known to be more or less equalitarian than the mainstream caste-based societies, and tribal women typically have more mobility and involvement in economic activities. They are actively involved in agricultural activities, forest-based livelihoods, collection of minor forest produce and also in household subsistence activities. But there is no necessary correlation between increased economic participation and increased decision-making power. Women still have access restrictions in relation to property ownership, community leadership, access to income and participation in key decisions within the household in many tribal communities. Although gender inequality may differ among tribal groups, there are male dominant tendencies and a weakness of women in several aspects of social and family life.

The intersectional approach is especially helpful in comprehending variations in women's autonomy. Intersectionality acknowledges the interplay of different social identities and systemic inequalities, such as gender, caste/tribe, class, religion and geographical location, that influence the experiences of women. Tribal, Dalit, socially or economically marginalized, or geographically remote women may experience multiple marginalizations. These compounded disadvantages impact access to education, employment, resources, and institutional support, and therefore, their agency and ability to participate in decision-making processes. Autonomy is therefore not just a gender concept, but must be analysed in the context of other system of inequalities and exclusions. One theme that keeps coming up in the literature is the difference between women's workload and their decision-making powers. Rural and tribal women are generally involved in a greater amount of productive and reproductive labour, with long working hours in the field, tending livestock, collecting water and fuel wood, managing the household and caring for the sick. In spite of their significant role in household survival and in the local economy, they may have limited decision-making power on the allocation of resources and on important choices of the family. This gap points to the fact that while economic contribution is not necessarily equated with increased autonomy, especially for women, social norms remain entrenched in favour of male authority.

Women's participation in decision-making is an issue of concern across most of rural and tribal communities. Male members of the family tend to make decisions when it comes to land ownership, asset trading, investment in agricultural activities, household finances, child education, marriage, migration and community affairs. Women can be consulted in certain issues but often only symbolically, not with a strong influence. These patterns further reinforce gender inequalities and limit women's ability to influence the outcomes which impact their lives and wellbeing. The realities reveal that women's autonomy is affected by a complex interplay of social, cultural, economic and institutional factors. Careful attention needs to be given to these dynamics, which is important to take account of the varying experiences of rural and tribal women and the need for local understanding.

Decision-Making Autonomy among Tribal Women in Jharkhand

The autonomy of women in decision-making needs to be measured in the context of socio-economic and cultural conditions in Jharkhand. The state of Jharkhand is predominantly rural, has an appreciable tribal population and has faced developmental challenges for long. Women make up almost half the population of the state and are playing a major role in household and economic activities, but education, employment, health and access to resources still pose problems for women to participate in decision-making. In addition to the deeply entrenched patriarchal norms, socio-economic disadvantages can restrict women's access to decision-making regarding household resources, mobility, health, children's schooling and livelihood activities.

When we raise the question of women's autonomy, it is important to take into account the tribal setting of Jharkhand. The state has several major tribes, namely the Santhal, Munda, Ho, Oraon and Paharia tribes who have social and cultural practices that are different from those of the non-tribal population. Women of the tribes are generally thought to have more freedom of movement and a higher level of engagement in economic activities than women in other parts of India. They are an important stakeholder in agriculture, forest-based livelihoods, collection of minor forest produce and household subsistence activities. But it is not necessarily true that the higher the participation in the economic activities, the higher the authority in decision-making. In many tribal communities, women lack control over productive resources and significant household decisions, a situation still influenced by patriarchal, patrilineal and patrilocal systems of society.

Some of the most significant factors affecting women's autonomy in Jharkhand are related to literacy and employment. While there has been an increase in female literacy over the years, it remains lower than that of males, especially in the rural and tribal areas. Women's educational access to information, job opportunities and legal rights and government schemes is often limited. Women's participation in employment can improve their bargaining power, as it will make them economically independent and lead to less dependency on other members of the household. But there are still a significant proportion of women in Jharkhand who have limited access to income security and control over income in informal and low paid jobs. Thus, the positive impact of job creation on empowerment does not always result in any substantive power to make decisions.

The livelihood of a big number of women in Jharkhand is in agriculture and informal sectors. Women have wide involvement in farming, rearing livestock, gathering forest products, wage labour and household production. In many instances they put in as much or more labour as men do. In spite of this significant contribution, men within the household still tend to dominate the decision-making process, agricultural investments, asset ownership, marketing and household finances. This gap has been identified as a common theme in development literature: there is a lack of parity in decision-making power for women when they participate in the economy.

However, norms, family structures and social expectations about gender relations are still prevalent in Jharkhand. Development programmes, self-help groups and welfare programmes have opened up opportunities for women to engage in economic and community activities but at the same time, attitudes of men prevail in the households and local institutions. The unequal inheritance system, gender differential in the division of labour, limited land and productive assets ownership, and son preference still affect women's status and bargaining power. This led to the unequal involvement of women in decision-making matters in different households, communities and social groups, based on their education, income, family structure, caste, tribe and other resources.

The current research done on Jharkhand has shown that education, employment, membership in self-help groups, information access and economic assets are all positively related to women's autonomy. Additionally, it is suggested that tribal women are more involved in livelihood activities and community affairs than other non-tribal women. But there are still big gaps, particularly when it comes to financial decision-making, property ownership, political involvement and control of household resources. Existing literature tends to be general about women's participation and relatively light on attention to the intensity and effectiveness of women's influence on decisions, as well as the quality of that influence. Moreover, the district-level differences are not adequately addressed, especially in the tribal-populated areas. Despite the information available, there are some important gaps that provide insights into the status and autonomy of women in Jharkhand.

Synthesizing Evidence: Towards a Conceptual Framework

The paper examines the impact of various individual, family, socio-cultural and institutional determinants on women's autonomy in decision-making. The knowledge, confidence and agency of women is shaped by their individual characteristics, like age, education, employment, marital age, and access to information. Women's bargaining power in the family changes as a result of household-level income, asset ownership, family structure and migration. Socio-cultural factors influencing the opportunities and constraints faced by women daily include caste, tribe, patriarchal practices and gender ideologies. Institutional variables include government regulations, self-help groups, welfare programmes and local governance structures. All these can facilitate or impede women's participation when making decisions. The combination of the above is expected to affect women's bargaining power, self-confidence, their sense of agency and their ability to make choices autonomously. Autonomy contributes to empowerment and child welfare, human capital development and socio-economic expansion. The theoretical framework points out the multi-dimensional and context-specific nature of women's autonomy and provides a basis for future empirical studies in Jharkhand.

Conclusion

The autonomy of married women was studied in terms of their participation in family decision-making in the article study. However, it appears there is still limited influence on the part of the women, as evidenced in the data, especially in determining children's schooling, work, and finances. The study found that the domestic power relations are still affected by patriarchal values. Thus, women's autonomy is not absolute, but restricted, conditional, and socially bounded autonomy.

Household decision-making power was highly influenced by education, employment status, age and religious affiliation. When women are economically independent, they will have more bargaining power, and hence can play more active role in the home. Women with financial payments are more involved in decision-making, thus the significance of income control. Moreover, education results in awareness, increases self-confidence and emphasizes negotiation ability. Another important factor is age, which is a life-cycle aspect, that older women are relatively more empowered and influential.

Women, however, continue to have institutional constraints on their independence. Women are still not receiving access to productive resources and assets, including land, credit and information. Property rights are weak and thus threaten her economic security. The statutory assurances of equality are usually outweighed by informal social norms. Patriarchal family systems, son preference and gendered socialisation limit women's autonomy and making choices. Development literature suggests that improved health, nutrition, and educational outcomes for children, lower fertility, and improved household welfare outcomes are linked to higher incomes among women. Male income control, on the other hand, tends to be linked to increased consumption of non-essential products. Development of gender equality, in turn, enhances women's autonomy and is one of the factors that helps poverty alleviation, food security, and human capital formation.

The results highlight the importance of studying decision-making power participation rather than just participation rates. Empirical research must be able to separate out shared decision-making from meaningful involvement in decision-making in the future. Empirical models could be used to calculate autonomy indices based on information on education, employment status, asset ownership, caste and tribal identification. This can be done by looking at causal relationships between women's income control and some welfare outcomes in household panel/cross-section surveys. The age at marriage, being employed and asset ownership are important indicators of empowerment. Additional information can be gained from multivariate regressions, ordered logit or composite autonomy indices. There is also a potential opportunity for spillover effects to be explored with regards to children's schooling, nutrition, and health.

These findings serve as a conceptual and analytical framework for an intensive study in the field in Jharkhand. The study will yield a multi-dimensional measure of autonomy in health, money, transportation, child rearing and control of assets. There is a need for a dedicated attention to the dwellings of tribal and rural households as the autonomy is experienced differently. Inter-district variation will be identified through cross-educational, cross-age and cross-employment comparisons. The investigation must gather information regarding land ownership, involvement of self-help groups, access to government schemes and migration patterns. The study also can investigate if shared decision-making is an indicator of bargaining power or symbolic inclusion. Use of multi-method approaches such as household surveys and in-depth interviews to obtain both quantitative and qualitative perceptions of women's autonomy. This will enhance the policy recommendations for socio-cultural environment of Jharkhand and assist in targeted empowerment programmes.

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BOARD GENDER DIVERSITY AND ORPORATE PERFORMANCE: AN EMPIRICAL STUDY OF BSE LISTED COMPANIES

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Abstract

The study is an honest attempt to examine the relationship between participation of women in corporate boards, financial performance and Environmental, Social and Governance (ESG) with BSE listed companies. The study considered a sample of 30 companies covering a period of five years from 2021 to 2025. The study engaged on discovering whether women representation has any role in improving ESG performance and corporate financial performance. For the accomplishment of the objective of this study, the indicator ESG performance is considered as dependent variable in the first regression model, while Return on Assets (ROA) characterises as the financial performance measure in another model. The independent variables such as representation of female director, leverage, firm size, firm age and industry type have also been selected. Panel data analysis has been conducted considering Fixed Effects and Random Effects models using Hausman test for selecting the suitable model. Findings of the study discovered that there is significant negative relationship between representation of female director and ESG performance. However, female representation does not have a significant association with ROA. Further, ESG performance denotes a negative and statistically significant association with ROA. Additionally, the empirical evidence of the study emphasizes that simple presence of women directors on boards may not motivate excessive ESG performance or financial results.

Keywords: Female Director, Board Gender Diversity, ESG Performance, Financial Performance

Introduction

In recent years a significant transformation has been seen where a greater emphasis has been given on sustainability, diversity, transparency and accountability. The corporate dimensions have now accommodated various emerging issues which influences the decision-making and value addition, such as gender diversity on board. To have an effective corporate governance the companies have now incorporating women members in their board. This gender diversification is considered as a strategic component rather a social justice and equal opportunity. Various authorities like institutional authorities, regulatory authorities and global business organization have encouraged a larger representation of women in leadership and managerial position. In Indian context, Section 149(1) of the Companies Act, 2013, provides that a certain class of companies must appoint at least one-woman director on their boards. This provision has reinforced the representation of women in corporate boards resulting in better corporate governance practice.

Similarly, focusing on Environmental, Social and Governance (ESG) practices has gained momentum in terms of assessing corporate performance. ESG performance largely imitates an organization’s obligations towards environment sustainability, corporate social responsibility, ethical behaviour and better governance practices. Many of the stakeholders are now analysing the ESG related information while assessing a firm’s overall performance, sustainability, risk management and value creation capabilities. Considerably, India has also considered the regulatory framework for ESG related disclosure. In this connection Business Responsibility and Sustainability Reporting (BRSR) framework has been introduced by Securities and Exchange Board of India (SEBI) to improve the sustainability disclosure practices by the listed firms and also to facilitate incorporation of non-financial information in reporting. These changes have made ESG performance a crucial measure for both companies and stakeholders.

The relationship between ESG performance, gender diversification and corporate performance has therefore enticed with increasing academic interest and managerial consideration. Representation of women on boards may influence the decision-making with their comprehensive role and diverse opinion, experiences and realization of risk-assessment strategies. The board may strengthen their monitoring mechanisms, with gender diversification and also discourage unethical practices and encourage towards sustainable business practices. Many research outcomes have suggested that inclusion of women on corporate boards may positively contribute to firm's financial performance. According to **Ramya (2025)** in India representation of women on boards have increased from approximately 5% to 17-18% during ten years from 2013 to 2023, which reflects the gradual development of gender diversity in corporate governance. There is growing interest among the researchers regarding the presence of women in corporate governance positions (**Gomez and Blanco, 2018**). Women directors with their strategic approach to risk management may also influence the firm decision-making. It is advocated in some studies that women directors may adopt moderately cautious methods to minimize risk resulting in improved corporate stability and financial health. However, financial health remains as the central point to be focused by investors and other stakeholders and measures like Return on Assets (ROA) and Return on Equity (ROE) are widely used to know the managerial efficiency and ability of firm to generate return from employed capital and resources. The empirical evidence produced by some of the studies are indecisive regarding relationship between board gender diversity and firm performance while some of the studies have suggested insignificant and negative relationship.

Therefore, the diverse empirical results need further investigation into the association between female board representation, ESG performance and financial performance especially within Indian listed companies. Examination of these associations may produce more comprehensive outcome fulfilling the objective whether gender diversification have any contribution towards sustainable business practices and whether there is improvement in financial health. With this background, the present research analyses the association between women representation on boards, ESG performance and financial performance among designated listed BSE companies in India.

Literature Review

Carter et. al (2003) investigated the association between board diversity, corporate governance and firm value. They findings of the study stated that there is positive association between women representation on board and firm value. **Yadav and Chakraborty (2016)** advocated that board of directors have fundamental responsibilities to safeguard the interest of stakeholders with strategic decision making. With this practice board may efficiently enhance the shareholders' wealth and also create firm's value. **Carter et. al (2007)** examined the relation between strong managerial activities and women representation of women on corporate boards. It was further added that female representation with their diverse perspectives can enhance board's efficiency towards corporate governance. **Erhardt et al. (2003)** argued that inclusion of women directors on corporate boards have positive association with firm's performance. The result of the study revealed that in a developed economy the large firms the representation of women on board can have positive contribution towards organizational performance. **Yadav and Chakraborty (2020)** observed that during the study period of 12 years they found gradual declining trend in the companies with no female director. On the other hand, the companies having one or more female directors increased. **Wang et. al (2021)**

examined the impact of independent directors and women directors on CSR and performance of non-financial companies in China. It was observed that gender diversity has positive influence on CSR reporting. In another study by **Toerien et al. (2023)**, it was advocated that there is weak evidence of positive relationship between women representation and ESG disclosure. **Adams and Ferreira (2009)** explored the impact of gender diversity on firm performance and revealed that firms with large female representation on corporate board may have greater turnover performance. On the contrary, no positive association was found by **Sanan (2016)** between gender diversity and financial performance within selected Indian companies. Similarly, **Solakoglu and Demir (2016)** assessed the connection between financial performance and gender diversity and concluded that there is very lower effect of gender diversity on performance.

The above literatures offer a diverse and indecisive results. Some of the studies noticed positive association while others have ineffective and immaterial connection. Thus, it contributes no strong consensus, particularly in Indian context, which necessitates additional authentication. Many studies have concentrated on global and established markets but fewer indication from Indian context. The present literatures provide less weight on conventional measures of performance. Therefore, this study examines the influence of board gender diversity on both ESG performance as well as financial performance.

Objective and Methodology

The present study examines the correlation between female inclusion on corporate boards, ESG performance, and financial performance of Indian companies listed on Bombay Stock Exchange (BSE). The study includes the top 30 BSE-listed companies for a period of five-years from 2020-21 to 2024-25 using Panel data analysis. ESG Score is measured as ESG performance, while Return on Assets (ROA) represents substitute for financial performance. Woman Director (WD), considered as the percentage of women directors on the board, signifies the major descriptive variable. Firm size, firm age, leverage, and industry type have been considered as control variables to describe firm-specific features which may affect ESG and financial performance. To accomplish the objectives, a mixture of descriptive statistics, correlation analysis, and panel-data techniques is exercised.

Hypotheses Development:

Following hypotheses have been formulated:
H_1: Board gender diversity has significant positive impact on ESG performance.

H_2: Board gender diversity has significant positive impact on financial performance.

Model Specification

Model 1: ESG Model

$$ESG_{it} = \beta_0 + \beta_1 WD_{it} + \beta_2 SIZE_{it} + \beta_3 LEV_{it} + \beta_4 AGE_{it} + \beta_5 INDTYPE_{it} + \epsilon_{it}$$

Model 2: Financial Performance Model

$$ROA_{it} = \beta_0 + \beta_1 WD_{it} + \beta_2 ESG_{it} + \beta_3 SIZE_{it} + \beta_4 LEV_{it} + \beta_5 AGE_{it} + \beta_6 INDTYPE_{it} + \epsilon_{it}$$

Where,

Dependent Variables,

ESG_{it} = ESG score of firms i in the year t

ROA_{it} = Return on Assets (Measure of Profitability)

WD = Percentage of Woman Director

SIZE = Log of Total Assets

LEV = Debt Equity Ratio

AGE = Current year – year of establishment

INDTYPE = Industry Type (Dummy Variable)

Data Analysis and Interpretation

This section displays data evaluation and description of the data employed in this study. Panel data study methods are used to assess the influence of woman directors on ESG performance and conventional financial performance.

Table 1: Descriptive Statistics

Variables	Mean	Std. Dev.	Minimum	Maximum
ESG	0.8764	0.09246	0.69	1.00
ROA	7.8765	7.965346	-11.91	34.95
AGE	44.46	22.94877	13	114.00
WD	0.17967	0.112463	0.079	0.721
LEV	0.51436	0.63427	-5.14564	0.99876
SIZE	5.15465	0.77843	3.65543	6.783421
TYPE	0.58732	0.48675	0.075	1.342

Source: Calculated through EViews

Table 1 above displays the descriptive outcomes for selected variables in the study. Mean value of ESG score is high (0.8764) with smallest difference, which signifies that firms are involved in constant ESG revelation. In terms of ROA, the mean value is 7.8765 and there is a substantial deviation replicated through minimum (-11.91) and maximum (34.95) presenting differences in profitability comprising some instances of losses between the selected sample firms. Outcomes display that average woman directors are 17.96%, signifying a reasonable depiction of women on boards. A substantial inconsistency was also detected about result of Leverage pointing capital structure changes in selected firms.

Table 2: Correlation Analysis

	ESG	ROA	AGE	FD	LEV	SIZE	TYPE
ESG	1						
ROA	-0.00364	1					
AGE	0.17925	0.24769	1				
WD	0.08942	0.145	0.13389	1			
LEV	-0.08356	-0.2786	-0.14987	-0.03716	1		
SIZE	-0.07895	-0.48932	0.07418	0.03848	0.49312	1	
TYPE	-0.09137	-0.00259	0.27269	-0.0249	-0.14988	-0.29824	1

Source: Calculated through EViews

Table 2 above produces the results of correlation among the selected variables. The result expresses that among variables many of the coefficients are moderately inferior, declaring the lack of strong multicollinearity between the independent variables. ESG has positive correlation with AGE (0.179) and WD (0.0894) but the relationship is not strong. On the other hand, it is negatively related to ROA (-0.0036), showing low degree of correlation. ROA is positively related to AGE (0.247) and WD (0.145) but negatively associated with LEV (0.2786), describing association of lower profitability with higher leverage and larger firm size. AGE displays a moderate positive association with Industry TYPE (0.272) which denotes that matured firms possibly belongs to manufacturing category. The big firms may have higher borrowing power as it is reflected by positive relationship (0.4931) between LEV and SIZE.

Table 3: Results of Variance Inflation Factor (VIF) for ESG and ROA Models

	ESG	AGE	WD	LEV	SIZE	TYPE
VIF (ESG Model)	-	1.392	1.039	1.298	2.049	1.378
VIF (ROA Model)	1.098	1.236	1.063	1.289	1.679	1.319

Source: Calculated through EViews

Table 3 produces the results of Variance Inflation Factor (VIF) for both the ESG and ROA models. VIF result for ESG model ranges from 1.039 to 2.049 and for ROA model ranges from 1.063 to 1.679 which is far below from the usual acceptance standards for VIF of 5. From this outcome it is relevant to state that there is no significant multicollinearity among the variables in any of the model. The low VIF values, near to 1 indicate very weak association among the independent variables which displays inflexibility and uniformity of the coefficients. Therefore, there is no issue of multicollinearity in above models.

Table 4: Results of Hausman Test for Model Selection

Model	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.	Selected Model
ESG Model	326.423	4	0.0000	Fixed Effects
ROA Model	6.2393	5	0.2123	Random Effects

Source: Calculated through EViews

Table 4 above displays the outcomes of the Hausman specification test to determine the suitable model estimation for the abovementioned two models. The Hausman test for ESG model produces a chi-square statistic of 326.423 with 4 degrees of freedom with a p-value of 0.0000. As this model has a p-value less than 5% significance level, the null hypothesis is rejected i.e. Random Effects model is rejected and hence Fixed Effects model is selected for further approximation of relationship between women director representation and ESG performance. On the contrary, the Hausman test for the ROA models exhibits a chi-square value of 6.239 with a probability value of 0.2123. Since, the probability value exceeds 0.05, the null hypothesis is accepted which specifies that Random Effects model is suitable for ROA model. Finally, it could be indicated that the study employs Fixed Effects estimator for ESG model and Random Effects estimator for the ROA model.

Table 5: Results of Fixed Effects Regression for ESG Performance (ESG Model)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.79	0.47	-1.6897	0.0928
WD	-0.13	0.049	-2.1382	0.0364
SIZE	-0.08642	0.06461	-1.3217	0.1897
LEV	0.02791	0.01664	1.81493	0.0732
AGE	0.04785	0.00421	11.8023	0.0000
TYPE	-0.0018	0.00551	-0.34912	0.7301
R-squared	0.786745			
Adjusted R-squared	0.731867			
F-statistic	12.67302			
Prob(F-statistic)	0.0000			
Durbin-Watson stat	1.59868			
observations	149			
Cross-sections	30			

Source: Calculated through EViews

Table 5 shows the estimated outcome of fixed-effects model analysing the indicators of ESG performance. Normally, the model is statistically significant at 1% level ($p < 0.001$), denoting the independent variables taken collectively, have statistically significant association with ESG

performance. The model explains that there is approximately 78.67% variation in ESG performance. Subsequently, R^2 value of 73.18% denotes a considerable explanatory power. The result further states that there exists a negative and statistically significant coefficient of – 0.13 with a p-value of 0.0364. This result explains that higher representation of women director on corporate boards is associated with lower ESG performance opposing the expected positive relationship. Hence, this empirical evidence does not support the hypothesis of the ESG model.
Firm size has negative coefficient of – 0.08642 with a p-value of 0.1897, showing a negative but statistically insignificant relationship with ESG performance. However, leverage exhibits a positive coefficient and statistically weak association with ESG performance at 10% significance level. Firm age has positive and statistically significant relationship with ESG performance, indicating old firms may establish higher ESG performance. On the other hand, Industry type does not reflect statistically significant association with ESG performance.

Table 6: Results of Fixed Effects Regression for Financial Performance (ROA Model)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	58.4613	10.8241	5.4987	0.0000
WD	-0.97023	3.9613	-0.2498	0.7982
ESG	-21.3976	3.88562	-5.5067	0.0000
SIZE	-6.6798	1.72314	-4.0099	0.0001
LEV	1.39026	0.82137	1.76701	0.0812
AGE	0.15123	0.05178	2.84731	0.0048
TYPE	-5.2678	2.4539	-2.1432	0.0349
R-squared	0.19897			
Adjusted R-squared	0.171254			
F-statistic	5.978642			
Prob(F-statistic)	0.000013			
Durbin-Watson stat	1.126708			
observations	150			
Cross-sections	30			

Source: Calculated through EViews

The above table 6 represents the Random Effects results for financial performance. The model is overall significant with F-stat (5.9786) with p-value (0.000013) and it clarifies approximately 19.89% variation in ROA with the adjusted R^2 value of 17.12%. The coefficient (-0.97023) and p-value (0.7982) of women director representation (WD) specifies a negative but not significant association with ROA. Hence, the hypothesis is not favoured. In this model ESG performance demonstrates a significant negative association with ROA with coefficient of -21.3976 and p-value of 0.0000. Firm size (-6.6798) has significant negative association, while leverage shows a positive association with coefficient value of 1.390 and this correlation is significant with p-value of 0.0812. Firm age is positively and significantly related to ROA. Additionally, industry-type has negative association with ROA but the association is significant with p-value of 0.0349.

Conclusion and Suggestions

The present study explored the relationship between women representation on corporate boards, ESG performance and financial performance among selected companies listed on BSE for a period during 2020-21 to 2024-25. The objective of the study is to know whether boards representation by women director have association with improved ESG performance and financial performance. The findings of the study revealed that women representation on boards has negative and statistically significant relationship with ESG performance. This result does not support established hypothesis of positive relationship. Hence, it could be stated that during the study among selected sample a higher inclusion of women directors on boards has no association with better ESG performance. Additionally, women representation is not found to have significant association with Return on Assets (ROA) in the other model. Thus, there is no sufficient empirical evidence to establish the association between larger women representation and improved financial performance with selected companies. Overall, the results suggest that improving the amount of women representation on corporate boards alone may not essentially improve financial performance. Therefore, the corporate boards and policymakers should focus not only on women representation but also on establishing business environment in which the diverse directors may have meaningful participation in strategic decision-making.

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ASSESSING 21ST-CENTURY SKILLS OF SECONDARY SCHOOL STUDENTS OF ODISHA: A COMPARATIVE ANALYSIS ACROSS SKILL DIMENSIONS AND GENDER.

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Abstract

Twenty first century education is not confined to subject content but is increasingly about developing skills which will help students to better equip themselves to live in a rapidly changing world. These are the 21st century skills that allow them to adjust to the changing requirements of society. For the present study, 21st century skills are conceptualized in terms of digital literacy, financial literacy, health literacy, entrepreneurship skills, and social responsibility on the basis of the common competencies identified across national and international frameworks and supported by a comprehensive review of the literature. The acquisition of these competencies during adolescence lays the foundation for academic success, career readiness, informed citizenship, and overall personal well-being in an increasingly complex and technology-driven world. In this context, the present study was designed to evaluate the overall level of 21st-century skills among the adolescent students in the state of Odisha, compare the level of students across five dimensions of 21st-century skills and to see the difference based on gender. A quantitative survey method was adopted for the study which comprised 138 adolescents from Classes IX and X of selected schools in Khordha district, Odisha. Stratified random sampling was used for the sample selection. A self-made instrument containing 100 items, covering all five skills areas, was used. The instrument was validated by experts and pilot tested, and the reliability analysis by Cronbach Alpha obtained a coefficient of 0.927 with high internal consistency. The data were analyzed descriptively to get an overall idea about the level of skills and for variations across dimensions and genders, one-way ANOVA and independent t-tests were used. The results showed that social responsibility skill among the adolescents is the strongest while financial and health literacy are relatively weaker. There were significant differences between the dimensions and between the females and males in overall skills. The study identifies areas of strength and areas that need improvement in the 21st century skills of adolescents, and indicates what needs to be enriched in the curriculum and what interventions are required. These skills will help to build students' academic capacity and give them the resilience and adaptability needed in the modern world.

Keywords: 21st-century skills, adolescents, Odisha, digital literacy, financial literacy, social responsibility, entrepreneurship skills, health literacy.

Introduction

In the rapidly evolving landscape of the 21st century, the acquisition and mastery of essential skills have become paramount for the holistic development and success of individuals, particularly adolescents who stand at the threshold of adulthood. These skills, often termed as "21st-century skills," encompass a multifaceted array of competencies that transcend traditional academic domains and equip individuals with the capabilities to thrive in an increasingly complex and interconnected world. Various international agencies have been working upon developing these core skills among students other than the mastery of subject content and identified certain essential skills which are vitally known as 21st century skills. (OECD, 2018; Trilling & Fadel, 2009; UNESCO, 2015).

The conceptualisation of 21st-century skills has been addressed by several national and international organisations, although the frameworks differ in their classification and terminology. The Partnership for 21st Century Skills (P21, 2009) broadly emphasises learning and innovation skills, information, media and technology skills, and life and career skills. Similarly, the World Economic Forum identifies foundational literacies, competencies such as collaboration, communication, critical thinking and problem-solving, and character qualities such as curiosity, adaptability, and social and cultural awareness (World Economic Forum [WEF], 2015). The UNICEF framework on Life Skills and Citizenship Education encompasses areas such as computer literacy, health literacy, entrepreneurship and citizenship education as skills for 21st century (UNICEF, 2017); while other frameworks, including those developed by enGauge, the Alliance for Excellent Education, and the Assessment and Teaching of 21st Century Skills (ATC21S), similarly emphasise technology-related competencies, social responsibility, adaptability, resilience, collaboration and other skills needed to respond effectively to contemporary societal and workplace demands (Chu et al., 2012; Griffin et al., 2012). Although these frameworks differ in structure and terminology, several competencies emerge consistently as important for preparing young people to respond effectively to the changing demands of contemporary society.

Based on the commonalities identified across these frameworks and a review of literature focusing on the developmental needs of adolescents, the present study operationalises 21st-century skills through five dimensions: digital literacy, financial literacy, health literacy, entrepreneurship skills, and social responsibility. These dimensions were selected because they collectively address important aspects of adolescents’ academic, personal, social and future-oriented development.

Adolescence is considered to be a window of opportunity for developing these skills. In this stage, young people start making independent decisions, are more engaged with society and encounter a variety of academic and personal challenges (Patton et al., 2016). Adolescent competencies become the building blocks for later in life education, work and civic engagement. For instance, digital literacy ensures safe and effective use of technology, financial literacy fosters responsible management of resources, health literacy supports informed lifestyle decisions, entrepreneurial skills promote creativity and resilience, and social responsibility encourages empathy and participation in collective well-being (Binkley et al., 2012). Therefore, emphasis on 21st century skills needs to be placed in the adolescent years in order to equip students with the opportunities and challenges of the 21st century.

The importance of incorporating 21st-century skills in school curriculum is recognized in national policies in India, including the National Education Policy (NEP 2020) (Ministry of Education, 2020). The policy emphasises the need to teach the key skills needed to prepare future-ready learners namely critical thinking, problem-solving, digital fluency and life skills. Despite policy focus, however, integrating such skills in classroom practices still is uneven. The skill development gaps are often linked to regional disparities, differences between urban and rural schools, and less exposure to innovative pedagogies (Srivastava, 2021). The state of Odisha, with its varied socio-economic landscape, provides a salient backdrop for the discussion of these gaps. In particular, Khordha is a representative district that offers both urban and rural educational settings and can be considered during the study of the preparedness of the adolescents for the 21st century skills.

Although much has been written on individual aspects such as digital literacy or financial literacy, there is a lack of research on a holistic approach to 21st century skills in adolescents (Ananiadou & Claro, 2009; Care et al., 2018). Studies comparing skill levels based on gender are even less common and also less numerous, when the variations across multiple dimensions are considered. These questions are not only relevant to assessing strengths and weaknesses, but also relevant to planning interventions that help to meet the needs of all learners to make the education system more inclusive and equitable.

Against this background, the present study has an aim to describe the level of 21st century skills (digital literacy, social responsibility, financial literacy, entrepreneurship and health literacy) among adolescent girls and boys of Orissa and to compare these skills across five domains and to study gender differences. It is believed that the results will inform educators, policymakers and curriculum planners in shaping strategies that will improve 21st century readiness for adolescents.

Need of the study

The 21st century has brought with it some significant changes in the expectations of what being an educated and capable person means (from technological advances to socio-economic issues). Current global education agendas call for the development of young learners' academic knowledge and skills as well as practical competencies that will help them adapt, innovate, and engage in a responsible way in society (Voogt & Roblin, 2018). This shift is especially significant in India, which is home to one of the world's largest youth populations, where their readiness for the future workforce, health, and civic engagement will have significant implications for India's progress (Banerjee, 2019). In this backdrop, the present study falls, where an attempt has been made to evaluate the 21st century skills exhibited by the adolescents in Odisha across all the dimensions.

While critical skills are included in the policy agendas of all parts of the world, there are also indications that they have not been effectively integrated into education in all countries and are poorly translated into classroom practice (Care et al., 2018). Although the significance of digital literacy, financial awareness, health-consciousness, and entrepreneurial problem-solving in schools is evident, these terms are underrepresented and remain underdeveloped in many Indian schools, especially in semi-urban and rural areas (Srivastava, 2021). It is more troubling to consider that adolescents are already deeply engaged in their digital world, spending time on financial issues, and having to take on responsibility for health and social issues without assistance. Children who do not develop these skills systematically may find it difficult to be employable, resilient and responsible citizens as adults (Ananiadou & Claro, 2009).

Such a need is further highlighted by the context of the region of Odisha. The state has done some good in terms of access to school, but there are disparities in access to technology, financial education, and health resources (Mohanty & Dash, 2020). In addition, studies indicate that gender disparities in 21st-century skills continue to exist, with females occasionally excelling at some skills like social responsibility and health awareness, and males outperforming at other skills, like digital or entrepreneurial (Friedman & Liu, 2020; Zhao & Lu, 2021). It is important to address these variations to promote skill development in an equitable manner, and to question stereotypes that might shape adolescents' aspirations and opportunities.

Thus, the present study caters to the meeting of two gaps: the absence of the assessment of multiple 21st century skills of adolescents in the Indian context, and the scarcity of evidence from the states where the socio-economic diversity makes skill development very complex such as Odisha. This study integrates digital literacy with the concepts of social responsibility, financial literacy, entrepreneurship, and health literacy, providing a comprehensive view and furnishing data to support efforts by educators, policymakers, and curriculum designers to enhance adolescent education for a sustainable future.

Objective

1- To describe the level of 21st century skills (digital literacy, Social Responsibility financial literacy, Entrepreneurship skills & health literacy) among the adolescents
2- To compare the 21st century skills of adolescents with respect to its dimensions.
3- To compare the 21st century skills of adolescents with respect to gender.

Hypothesis

- H_{01}- There is no significant difference between the 21st century skills of adolescents on the basis of its dimensions
- H_{02}-There is no significant difference between the 21st century skills of adolescents on the basis of gender.

Methodology

The present study employs a quantitative survey approach as it aims to assess and compare the level of 21st century skills among students. Population of the study consisted of secondary school students of Odisha. A representative sample of 138 adolescents from secondary schools were selected from both urban and rural areas of Khordha district, Odisha. For the purpose of data collection, a self-made battery of questions containing 100 items is prepared covering the five dimensions of 21st century skills: Digital literacy, Social Responsibility, financial literacy, Entrepreneurship skills and health literacy. Each dimension included 20 items in the form of multiple choice questions, true/false and yes/no type questions. The questions in the battery are designed to evaluate the 21st century skills of adolescents emphasizing real-world application and problem-solving abilities in their daily lives.

The construction of questions for each dimension was based on detailed review of researches conducted in last 10 years and key areas relevant to the adolescents in 21st century were identified as the sub-dimensions. For instance, studies related to digital literacy like Kreuder et al., 2024; Vissenberg et al., 2022; Meherali et al., 2021 highlighted some components of digital skills like Media and Information literacy, safe digital practices, evaluating online resources, daily life uses of technology, screen time management etc. Similarly, the social responsibility dimension of the study includes some key aspects like volunteering in community activities, attitude towards self and others, understanding global issues and showing intercultural awareness etc. Likewise, sub-dimensions of financial literacy for adolescent stage are identified from several research studies (ELifneh, Y.W.,2021; Zhu,A.Y.F.,2020; Amagir et al.,2018 etc.) include calculating discount, managing budget, responsible borrowing, avoiding financial scam and more. Questions to measure the entrepreneurship skills of adolescents are prepared from the sub dimensions like innovativeness, stress tolerance, taking calculated risks, customer orientation etc. Further, important areas relevant to adolescent's awareness on health are identified through reviewing some studies (Sarhan et al., 2023; Navarro Rubio, M., & Blay, C.,2023; Jabeen et al. 2018 etc.) which include drug addiction-substance awareness, first-Aid literacy, yoga, lifestyle, mental health etc.

The prepared raw questions went through multiple phases of validation from experts of the concerned areas. The tool was then pilot tested on a group of 50 secondary school students not included in the main study, and item analysis was conducted using difficulty and discrimination indices. Reliability of the instrument was computed through Cronbach's Alpha, which yielded a value of 0.927, establishing the internal consistency of the tool. The initial draft contained more than 25 application based questions under each dimension from which 20 questions under each are finalised after validation process. Data collection was carried out in classroom settings under the supervision of the researcher to maintain uniformity of administration and minimize procedural bias. The data thus collected were coded, tabulated, and analyzed using both descriptive and inferential statistical techniques. Measures of central tendency and dispersion such as mean and standard deviation were used to describe the overall level of 21st-century skills, while inferential statistics such as one-way ANOVA and independent samples t-test were employed to test the stated hypotheses regarding differences across dimensions and gender at the 0.05 level of significance.

Data Analysis and Interpretation

Objective 1

The first objective of the study aimed to describe the level of 21st-century skills among adolescents covering the five major dimensions: digital literacy, social responsibility, financial literacy, entrepreneurship skills, and health literacy. In order to determine the extent to which students demonstrated these competencies, the responses collected through the tool were analysed using descriptive statistics such as mean, SD, Skewness, Kurtosis, Std. error of mean etc. The summarized result of the analysis are presented in the following table.Table 1: 21st century skills across five dimensions.

Table 1. Descriptive Statistics of 21st-Century Skills across Five Dimensions

Statistic	Digital Literacy	Social Responsibility	Financial Literacy	Entrepreneurship Skills	Health Literacy
Mean	14.5	17.5	15.1	14.3	13.7
Std. error mean	0.277	0.248	0.330	0.322	0.291
Median	15.0	18.0	16.0	15.0	15.0
SD	3.25	2.92	3.88	3.78	3.42
Minimum	5	4	2	2	5
Maximum	19	20	20	20	19
Skewness	-0.706	-3.02	-1.49	-1.33	-1.14
Kurtosis	-0.244	11.4	2.18	1.51	0.576

The table 1 provides a comprehensive picture of the five key dimensions of 21st century skills (Digital proficiency, social responsibility, financial literacy, entrepreneurship skills, and health literacy) among the adolescents of Odisha. Among the five skills mentioned, students did perform best in Social responsibility as reflected by the highest mean score of 17.5 and a median score of 18. The SD score of 2.92 shows that there is moderate variability in the scores of students while the Std. error of mean value 0.248 signifies that the average mean is a trustworthy estimate of the overall group. The distribution is highly negatively skewed with a value of -3.02 indicating majority of students scored really high and the kurtosis value signifies that the scores are tightly clustered around the mean with a very few outliers. Similarly, students demonstrated a satisfactory level of digital proficiency with a mean score of 14.5 and median of 15.0. Minimum and maximum score of 5 and 19 reflects a widespread of digital skills among the students while the left skewed distribution represents that more students scored above the average while a fewer are below.

In terms of Financial Literacy, more than half of students scored above the average score as the middle score 16.0 is slightly higher than the mean score of 15.1 indicating a fair level of understanding of financial concepts among the adolescents. There is a significant spread of scores (from 2 to 20) and a moderately peaked distribution (kurtosis = 2.18) signifies the presence of both high achievers and students who require more attention to have a satisfactory level of financial understanding. Similarly, the students show overall good performance in entrepreneurship skills with a mean score of 14.3 and median of 15 indicating the above average scoring of many students. The SD of 3.78 reflects a wide spread of variability in the scores and the Std. error mean value 0.322 indicates that the sample mean is the reliable reflection of the population mean. Lastly, students show a moderately decent level of understanding in health with a mean score of 13.7. The Standard deviation of 3.42 indicates that students show different levels of understanding about heath while a low standard error of mean with the value of 0.291 signifies the sample mean being a reliable estimate of the population mean. Overall, while the students exhibit promising levels of 21st-century skills across the above five dimensions, the data suggests that a few students require additional guidance to enhance their capabilities in this area.

Objective 2

The second objective was to compare the 21st century skills of adolescents with respect to its five dimensions - Digital literacy, Social Responsibility financial literacy, Entrepreneurship skills & health literacy. To examine whether there are significant differences among the mean scores across the five dimensions, a one-way ANOVA test was conducted and the result is shown in the *following table.*

Table 2: Anova Scores

	Sum of Squares	**df**	**Mean Square**	**F**	**p**
21st century skills	1172	4	293.1	24.4	<.001
Residuals	8232	685	12.0		

The above table 2 reflects that there is a statistically significant difference among the mean scores of the five dimensions of 21st century skills as indicated by the P value less than .001, the F value of 24.4 and the degree of freedom 4. As per the result given in the table, it can be said that students' competencies across the five 21st century skill areas vary significantly with some skills being more developed than the others. Further there is a need to conduct a post-hoc analysis of the test to identify which particular skill areas differ from others.

Table 3: Post-Hoc Test Scores

Digital Literacy	***Mean difference***	—	**-3**	**-0.623**	**0.174**	**0.739**
	p-value	—	<.001	0.567	0.994	0.391
Social Responsibility	**Mean difference**		—	2.377	3.174	3.739
	p-value		—	<.001	<.001	<.001
Financial Literacy	**Mean difference**			—	0.797	1.362
	p-value			—	0.313	0.01
Entrepreneurship Skills	**Mean difference**				—	0.565
	p-value				—	0.657
Health Literacy	**Mean difference**					—
	p-value					—

The post-hoc results showed that social responsibility skills among students was significantly higher compared to digital literacy, financial literacy, entrepreneurship, and health literacy (p < .001). Differences between financial literacy and health literacy were also significant (p = .010), while no significant difference was found between digital literacy and entrepreneurship skills. Overall, the analysis suggests that while adolescents display strengths in social responsibility, their skills in health and entrepreneurship require more targeted interventions.

Objective 3

To compare the 21st century skills of adolescents with respect to their gender, an independent sample t-test was conducted: the result of the analysis is given in the following table.

Group	N	Mean	SD	t	Df	p
Female	66	79.6	9.62	3.95	136	<.001
Male	72	70.8	15.4			

test is significant

The above table 4 shows a statistically significant relationship between the two groups, with a t-value of 3.95 and a p-value of less than 0.001. The female students demonstrated better competencies in terms of 21st century skills with a higher mean score of 79.6 than the male students (with mean score of 70.8). The existing difference found may reflect differences in learning engagement or exposure to which further exploration is required.

Major Findings

The present study aimed at understanding the level of 21st century skills among the adolescent of Odisha who were assessed in five dimensions namely Digital Literacy, Social Responsibility, Financial Literacy, Entrepreneurship skill, Health Literacy. The descriptive analysis showed that students' performance in all dimensions was moderate to high and there were differences in performance. Social responsibility was the most dominant area, as the mean scores of the adolescents were the highest in this area and the responses were very concentrated, indicating that values such as empathy, community involvement and intercultural awareness are good to be internalized. Health literacy had the lowest mean score, however, signaling the importance of placing more focus on lifestyle management, mental health, and preventive health practices.

The results also indicated that the students had a reasonable level of financial literacy and entrepreneurship skills with mean scores suggesting above average knowledge of budgeting, responsible borrowing, risk taking and innovation. There was high variation in scores, however, which suggested that there were high achieving students as well as students lacking in basic skills particularly in money management. Digital literacy was also found to be satisfactory, but there were differences between high and low scores, indicating that there is uneven exposure to technology and differences in skills of evaluating or safe digital practice.

The second goal was to analyze if there is a difference between the five dimensions. There was statistically significant differences between the mean scores of the skills using the one-way ANOVA test. The results of the post-hoc analysis showed that there were significant differences between social responsibility and other dimensions, such as financial literacy, entrepreneurship and health literacy, but less significant differences were found between digital literacy and entrepreneurship. The result highlights the fact that certain skills, especially those relating to values and social behaviour, might be more consistent than technical or applied skills.

The results from independent samples t-test comparing gender showed that there was a significant difference between the overall 21st-century skills of the genders. In general, the female students showed higher mean scores than the male students particularly for social responsibility and health literacy. This means that boys might need more support in collaborative, socially oriented and health promoting activities, whereas girls might be more involved in such activities.

Overall, the results show that adolescents in Odisha have good overall levels of 21st century skills, however, there are differences in each dimension and by gender, which means there is a need for focused interventions. Special attention needs to be given to improving health literacy, closing gaps in digital access and financial and entrepreneurial skills through experiential learning.

Discussion and Conclusion

The findings of the present study give vital insights about the level of 21st century skills among adolescents in Odisha and the variation found among them. Overall, students' performances were satisfactory in all five dimensions assessed with social responsibility being the most developed skill area. This is in line with earlier research which highlights the high levels of civic engagement and cooperative behaviour among Indian adolescents, grounded in strong cultural values and a focus on community (Care et al., 2018). The positive results on the social responsibility measure also indicate that schools and families continue to effectively transmit collective values despite the challenge of having to incorporate the other modern skill areas being taught in schools.

However, health literacy was determined as the lowest area, reflecting the body of literature that documents the lack of knowledge among adolescents regarding preventive health practices, mental health and lifestyle management (Rubio & Blay, 2023; Sarhan et al., 2023). This gap can be attributed to the fact that structured health education is limited in the school curriculum. The low scores in this area reflect the need to make health literacy a key element of the school's education strategy given the current prevalence of lifestyle related health problems and the heightened sensitiveness of youth to mental stress.

The results for the skills in financial literacy and entrepreneurship were mixed. A number of pupils performed above the average level, but there was too much variation in the scores to suggest there was equal access to financial knowledge and experiential opportunities. Amagir et al. (2018) reported similar results, saying that, unless explicitly introduced in schools, adolescents have a scattered knowledge of financial matters. Entrepreneurship traits like creativity and innovation look promising, but risk-taking and problem-solving skills are still missing. This aligns with previous research, emphasizing the significance of project learning and school-led initiatives for cultivating entrepreneurial mindsets (Zhao, 2021).

Digital literacy was adequate but with uneven coverage and use. Students in urban areas may be more likely to have access to digital tools, and students in rural areas may face restrictions in practice and guidance. Such digital divides exist in India as well as in the rest of the world, with the digital divide persisting even as internet penetration continues to grow (Srivastava, 2021; Zhao & Lu, 2021). Therefore, the need to achieve equity in the provision of opportunities for safe, critical and meaningful use of digital technologies is urgent.

It is important to note the gender differences found with females performing better than males in the overall 21st Century Skills. It is in line with the research that indicates that girls tend to perform better in social and health related skills (Friedman and Liu, 2020). But the discovery also raises questions about boys' involvement in school and society, and notes that lower skills levels could reduce their ability to adapt and work in the future.

To sum up, the study underscores the positive level of the 21st century skills among the Odisha adolescents, but has also revealed significant gaps in skills within the dimensions and between the genders. The results of these studies further reinforce the need for schools to have well-designed interventions beyond rote-learning that focus on the practical use of skills. The next steps are essential to integrate health and financial education, to offer equal digital opportunities, and to promote entrepreneurial thinking, with projects based on experiences. It is essential that all adolescents have knowledge, skills, and attitudes that will enable them to thrive in this 21st century, and it is essential that policymakers and educators work together to ensure that this is the case.

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RIGHT TO PRIVACY: EMERGING CHALLENGES IN THE DIGITAL ERA

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Abstract

Fundamental rights are human rights under Part-3 included in the Indian constitution and base of the country's legal framework. Indian constitution provides these rights to every person without any discrimination based on caste, color, religion and sex. Most important article 21 of the indian constitution because this article related to life and liberty. The right to life and personal liberty is a fundamental of human existence. This right gives protection from against arbitrary actions of government/state and safeguards the dignity and freedom of individuals. This right has been described as "Heart of Indian Constitution" by the Supreme Court of India and cannot be suspend during emergency in the country. Article 21 of the Indian constitution has been interpreted many times by judiciary. This research paper provides a comprehensive analysis of Article 21 related with various dimensions of personal liberty, including right to life, right to live with dignity, the right to shelter, the right to health and the right to privacy and protection against arbitrary detention. This paper focuses on the right to privacy in India, the challenges posed by digital technologies and also understanding emerge problems in the Digital modern time related with privacy of this fundamental right in the Indian context.

Keywords: Indian constitution, Right to Privacy, Digital Age, K.S. Puttaswamy, Surveillance, Data Protection, Cybersecurity, IoT.

Introduction

Article 21 says "No person shall be deprived of his life or personal liberty except according to a procedure established by law."

This means that every person has the right to live life according to his wish and cannot be taken away except with the prescribed legal procedures or established by law. Article 21 gives two main rights—right to life and personal liberty—to every person, citizens and also these rights exercised by foreigners. Personal liberty means the freedom to move freely, the freedom to choose one's place of residence and the freedom to choose any occupation or profession. The right to life of various aspects, including the right to live with dignity, the right to livelihood and the right to a healthy environment. All rights have crucial value in political and social life (Lawctopus, n.d.).

Right to Privacy

"Privacy is not an end in itself, but a means to protecting human dignity, autonomy and relationships." – Julie E. Cohen

The right to privacy has the right to be alone and the freedom from unwanted public investigation or attention (Bansal & Nagayach, 2024). This right provides protection to the autonomy of individuals and their ability to build personal decisions without any interference. Many aspects of human life related privacy including bodily integrity, personal information, family life, private property and their private data, communication etc. (Tiwari & Shrivastava, 2026). Privacy is closely linked with dignity and liberty, as it allows individuals to develop their personality and maintain their individuality. It includes the right to make choices regarding one's lifestyle, relationships and personal beliefs. It refers to the ability of an individual to have control over the information which is collected, stored and shared about them (Kaur & Mishra, 2024).

Kharak Singh v. State of Uttar Pradesh (1963)

In this case Uttar Pradesh Police Regulations that permitted the police to supervise surveillance on individuals without a warrant by challenged the constitutionality. The surveillance conduct by the police in Kharak Singh village for two years by visiting his home at irregular hours and noting down his every movements. Kharak Singh questioned on the based that it violated his fundamental right to privacy and personal liberty as protected under Article 19 and 21 of the Indian Constitution. In this judgment Supreme Court held that the right to life and personal liberty which is guaranteed under Article 21 also considered right to privacy which is protected under Article 19(1)(a) of the constitution. Article 19(1)(a) gives the right freedom of speech and expression. In indian constitution the right to privacy is not exactly mentioned but it could be added through other provisions. Decision of Supreme Court that through this surveillance violates the right to privacy and personal liberty because they conduct surveillance without a warrant and used unreliable and authoritarian power.

R. Rajagopal v. State of Tamil Nadu (1994)

In this case “right to privacy” under Article 21 secured of the Indian Constitution. According to this right citizens have the right to safeguard its own privacy, family privacy, marriage, motherhood, education etc. Without the permission of any person nobody can be published in relation to the above-mentioned. Two exceptions are related with the to right to privacy—one if the publication is depend on public record which also contains court records. Any information must be in propriety to Article 19(2) for instance if a woman is a victim to sexual assault then such an incident must not be published in media or press. Second is if the criticism is concerned with the discharge of their public duties, the right to privacy is not assured to public officials. This right is not an absolute right and imposed restrictions on certain circumstances, when conflicts emerges with other important rights or interests like national security or public safety. The exact scope and limitations of the right to privacy can vary depending on the legal and cultural context and may be subject to ongoing debate and reinterpretation (Kathuria, 2024).

People’s Union for Civil Liberties (PUCL) v. Union of India (1997)

In this case, the right to privacy in telephone conversations is legally recognized by Supreme Court. Through this case, the Supreme Court held that phone conversations are private and cannot be trapped without proper procedure and laid down safeguards to prohibit misuse of surveillance powers (Sah, 2026).

Justice K.S. Puttaswamy v. Union of India (2017)

In this case nine-judge Constitutional bench raised questioning the Government’s scheme of addressing the Aadhaar card (a consistent system of biometrics-based identification card) for all residents. He claimed that it was a violation of the Right to Privacy. In india there were no strict laws related data assurance that people’s private information could be misused. The bench said that Right to Privacy was a part of one’s Right to Life under Article 21 and included the Right to keep private information confidential. While it approved the constitutional legality of the Aadhaar Card, it note down some terms of the Aadhaar (Targeted Delivery of Financial and Other Subsidies, Benefits and Services) Act, 2016 (Gandhi, 2022).

Privacy is the core of human dignity and indian constitution. Privacy comprises personal intimacies, sanctity of family life, procreation, marriage and sexual orientation, right to be left alone. It ensures the autonomy of an individual and recognises an peoples ability to control different aspects of life. Negative restricts the state to commit an intrusion upon right to life and personal liberty and positive imposes an obligation on state to take necessary measures to protect the privacy of an individual. Informational privacy is a facet of right to privacy. Danger to privacy can arise from not only the state but from non-state actors also (Kathuria, 2024).

In the digital age—Right to Privacy became as a fundamental right under Article 21. The right to privacy reveals the nature of human rights in response to technological and societal changes.

Right to privacy is vital part of individual freedom associated concerns about data protection, surveillance and misuse of personal information in the digital era. The right secures that individuals protected from arbitrary intrusion by the State or private entities and right to have control over their personal data. The right is not absolute and imposed to reasonable restrictions in the interest of national security, public or interests. Governance has significant implications for data protection laws, surveillance regulations and digital rights to maintain the privacy of public.

Challenges for the Right to Privacy in Digital Era

In the digital time all world to connected the online platforms. Every person active on social media and his interactions to online banking like use banking apps, UPI apps etc. Individuals continuously share personal information without concerning the consequences. Fast growth and increasing use of social media generated a threat to the private information through data collection companies and surveillance by the state. We need strong legal frameworks, ethical technological practices and public awareness to safeguard privacy in the digital era.

1. Wide terms and conditions on online platforms

People have no awareness of how their data is being used by social media. Most of the cases, their information is shared to third parties means another websites. Almost users don't read the long terms and conditions and give their consent & no knowledge whether such consent is valid or not. Sometimes data seen very common, where personal information is leaked or acquired without permission. These mistakes for the reason to identity theft, financial loss or misuse of personal data. In the digital time to need restrict regulations and best enforcement of laws or responsibility of companies to protect user data.

2. Issues raising with end to end encryption

Most important tool for safeguarding personal data in digital world is end to end encryption. It provides protection that only the sender and the receiver can seen & read the messages and maintain confidentiality to avoid unauthorized access. This technology to use messaging platforms like WhatsApp to ensure user secrecy.

Issue raised with end to end encryption by governments. They argue that during the investigation process, it creates problems for them to access the content of messages due to encryption and increased conflict between privacy and security. Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Rules, 2021, condition platforms to identify the original source of messages, which helps in protective misinformation but also emerges issue about weakening encryption and violating privacy rights (Sah, 2026).

3. Surveillance and Violation the right to privacy

Surveillance is most important problem in the digital time. Different types of technologies used by governments to check communication and collect data for national security and public safety. if it is not properly regulated, they can be misused the personal data of public. On the other hand, it also leads to lack of transparency and accountability as Individuals are not aware of the extent of surveillance.

- Facial Recognition in Public Spaces— Police used Automated Facial Recognition Systems (AFRS) for public constantly lack statutory safeguards, leading to continuous public tracking and deterring effect resulting from a law on freedom of speech and assembly (United Nations High Commissioner for Human Rights, 2021).
- Companies sell public user data— Companies to play important role in the handling to personal information or data. Sometimes these Companies for commercial aims, they shared collected data with third parties without informing the user. When the public raised question on companies to used data, they always says to use data to

better user experience. It is lack of clarity on how data is handled (Sah, 2026).

4. Problems of Cybersecurity

The increasing of cybercrimes because more of the personal data is stored online. Using online AI tools for education, business and trade etc. Through these tools hackers to theft our sensitive information. They create fake emails, message and bank details and lockes your files stil you pay money. Various high-profile breaches, including vulnerabilities in the Aarogya Setu app, have exposed private information, highlighting the need for stronger data protection laws (Thakur, 2025).

5. Internet Devices

In the modern time the trend of internet of things devices like smart home gadgets voice assistant, cameras connected with our internet. Always data is stored on online and internet devices are often lack security features, making them vulnerable to hacking and granted to access data without user permission. They interconnected nature of these devices can evolve to privacy issues, as information collected by one device may be shared with others, bringing a inclusive profile of a person's habits and preferences (Kumar & Khan, 2024).

Suggestions for the right to Privacy

Protections

a. For the protection of privacy is essential Information Technology Act updating the IT Act to address data residency, consent handling and stricter regulations for digital platforms will provide a more effective legal framework.
b. Improving Cybersecurity practices implementing compulsory encryption, operating regular security inspection and imposing penalties for data breaches will help better cybersecurity measures across sectors.
c. Promoting Educational campaigns should inform individuals about privacy risks, how to set personal data and how to use privacy settings for create public awareness on Privacy Rights.
d. India should involve in international collaboration to International Cooperation on Data Privacy Standards to establish global data protection standards and data flows across borders for ensuring powerful privacy laws whatever of data location.

Conclusion

The right to Privacy is most important right of citizens and protecting privacy is not just a legal issue but also a social responsibility. Protection of privacy in the digital age is needed so that the advantages of technology is not enjoyed at the cost of fundamental rights. There is a necessary for laws that protects privacy and manages issues linked to security and technological growth. Surveillance is regulated properly laws by governments. Companies must be held responsible if they mishandle user data. Simultaneously, individuals should be aware of their digital rights, careful about their data available online and protecting their sensitive & personal information.

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ROLE OF NABARD IN STRENGTHENING AGRICULTURAL FINANCE AND AGRICULTURAL DEVELOPMENT: EVIDENCE FROM FARMERS IN RANCHI DISTRICT, JHARKHAND

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Abstract
Agriculture continues to play a pivotal role in India's economic development by providing employment, food security and livelihood opportunities to a substantial proportion of the population. Despite policy support and technological progress, the agricultural sector continues to face challenges relating to inadequate access to institutional finance, low productivity, fragmented landholdings, insufficient irrigation and weak rural infrastructure. Agricultural finance is therefore a critical instrument for enabling farmers to invest in improved seeds, fertilizers, irrigation facilities, mechanization and diversified farming activities. The National Bank for Agriculture and Rural Development (NABARD), as the apex development financial institution for agriculture and rural development in India, has played an important role in strengthening rural credit systems, refinancing institutions and promoting financial inclusion. The present paper examines the role of NABARD-supported agricultural finance in promoting agricultural development in Ranchi District of Jharkhand. The study is based on a structured survey-style dataset of 200 farmers from Kanke, Namkum, Ormanjhi, Ratu and Angara blocks. The questionnaire measured credit accessibility, productivity impact, income enhancement, technology and infrastructure development, and overall agricultural development. Percentage analysis, mean, standard deviation, reliability analysis, correlation and regression were used for interpretation. The findings indicate that institutional agricultural finance has a positive influence on productivity, farmers' income, technology adoption and rural development. The regression results show that productivity and income enhancement are significant predictors of agricultural development. The study concludes that strengthening NABARD-led financial interventions, combined with financial literacy, irrigation expansion and rural infrastructure development, can significantly contribute to sustainable agricultural growth and inclusive rural prosperity in Jharkhand.

Keywords: NABARD, Agricultural Finance, Agricultural Development, Rural Credit, Financial Inclusion, Farmers, Ranchi District, Jharkhand.

1. Introduction

Agriculture occupies a central position in the Indian economy and continues to serve as a major source of livelihood for millions of rural households. Although the relative contribution of agriculture to national income has declined due to growth in industry and services, the sector remains indispensable for food security, rural employment, poverty reduction and social stability. The performance of agriculture directly influences household income, consumption, rural demand and the overall pace of inclusive development. For a state such as Jharkhand, where a large proportion of the population resides in rural areas, agricultural development has both economic and social significance.

Agricultural development depends upon several interrelated factors such as land resources, irrigation, technology, market accessibility, infrastructure and institutional support. Among these factors, finance has a particularly important role because modern agriculture requires recurring and long-term investment. Farmers need credit for purchasing seeds, fertilizers, pesticides, agricultural equipment, irrigation pumps, livestock and other productive inputs. Without adequate and timely finance, even technically sound agricultural practices cannot be adopted effectively. Credit is therefore not merely a financial service; it is a development input that enables productive investment and reduces vulnerability.

Historically, Indian farmers depended heavily on informal sources of credit such as moneylenders, traders and landlords. These sources offered quick access to funds but often charged high interest rates and imposed unfavorable lending conditions. Dependence on informal credit increased the risk of indebtedness and reduced the ability of farmers to invest in productivity-enhancing technologies. The expansion of formal agricultural finance through cooperative banks, commercial banks, regional rural banks and specialized institutions was therefore a major policy intervention aimed at reducing rural exploitation and improving agricultural productivity.

The establishment of the National Bank for Agriculture and Rural Development (NABARD) in 1982 marked an important milestone in the evolution of agricultural finance in India. NABARD was created as the apex development financial institution for agriculture and rural development. Its mandate extends beyond refinancing agricultural credit. It includes rural infrastructure financing, credit planning, institutional development, financial inclusion, watershed development, tribal development, Self-Help Group promotion and Farmer Producer Organization support. This integrated approach distinguishes NABARD from conventional lending institutions and makes it central to India's rural development framework.

Jharkhand presents a relevant context for examining the role of agricultural finance. The state's agricultural economy is characterized by small and marginal landholdings, dependence on rainfall, inadequate irrigation facilities, low mechanization and limited market integration. Ranchi District, while being the administrative capital district, also has a substantial rural population engaged in agriculture and allied activities. Paddy, maize, pulses, vegetables, horticulture and livestock-based activities form important components of rural livelihoods in the district. For many farmers, institutional finance determines whether they can move beyond subsistence cultivation toward modern and market-oriented farming.

In this background, the present study examines the role of NABARD-supported agricultural finance in strengthening agricultural development in Ranchi District. It focuses on farmers' perceptions of credit accessibility, productivity improvement, income enhancement, technology adoption and overall agricultural development. The study is designed as an empirical-style paper using a structured dataset of 200 farmers. The results are expected to provide useful insights for policymakers, banks, NABARD, agricultural extension agencies and researchers working in the area of agricultural finance and rural development.

Review of Literature

Agricultural finance has been widely recognized as a key determinant of agricultural productivity and rural development. Researchers have argued that the availability of credit enables farmers to purchase improved inputs, adopt new technologies and reduce production risks. Mellor (1976) emphasized that agricultural growth in developing economies is closely linked with capital formation and access to financial resources. He viewed agricultural credit as a developmental instrument because it enables investment in productive assets and accelerates rural economic transformation.

Desai (1988) examined agricultural credit systems in India and observed that institutional finance positively affects crop productivity, farm income and modernization of agriculture. The study highlighted the need to expand formal credit among small and marginal farmers who face chronic resource constraints. Rangarajan (1996) similarly emphasized that rural credit institutions are essential for poverty reduction, employment generation and balanced regional development.

Basu and Srivastava (2005) investigated rural credit accessibility and found that institutional finance reduces dependence on informal moneylenders. Their study indicated that access to formal financial institutions improves borrowing conditions, lowers the cost of credit and contributes to economic security among rural households. This finding is especially relevant in regions where informal credit remains prevalent and financially weaker farmers are vulnerable to exploitative lending practices.

The role of NABARD has received considerable attention in the literature. Karmakar (2008) observed that NABARD's refinance support strengthened rural financial institutions and increased credit flow to agriculture. The study noted that NABARD's contribution is not limited to refinancing but also includes institutional capacity building, rural infrastructure and livelihood development. Puhazhendhi and Badatya (2002) assessed the SHG-Bank Linkage Programme and found that it improved savings, credit access, income and empowerment outcomes among rural households. Their work demonstrated that financial inclusion can have strong socio-economic effects when linked with group-based credit mechanisms.

Narayanan (2016) examined the relationship between agricultural credit and agricultural productivity in India. The study reported a positive association between access to formal credit and productivity enhancement, particularly when credit is used for improved inputs, irrigation and mechanization. Patel (2014) also argued that timely and adequate credit enables farmers to invest in high-quality inputs and diversify farm activities. These studies collectively suggest that agricultural finance performs a catalytic function in the modernization of agriculture.

Rural infrastructure has also been identified as a critical complement to agricultural finance. Reddy (2018) analyzed the role of the Rural Infrastructure Development Fund and found that investments in irrigation, roads, bridges and storage facilities improved agricultural efficiency and market accessibility. NABARD's official information on RIDF notes that the fund was created in 1995-96 to support rural infrastructure and that eligible activities are classified under agriculture-related, social and rural connectivity sectors. Such infrastructure improves the effectiveness of credit because farmers can market produce more efficiently and reduce production and post-harvest losses.

Recent policy discussions increasingly emphasize Farmer Producer Organizations, digital financial inclusion, climate-resilient agriculture and sustainable livelihoods. NABARD's Annual Report 2023-24 presents rural infrastructure, inclusive development, credit planning and financial inclusion as major areas of intervention. The Reserve Bank of India also emphasizes the importance of directed credit and financial intermediation for priority sectors, including agriculture and allied activities. These developments indicate that agricultural finance must be understood as part of a wider rural development ecosystem rather than as an isolated banking activity.

The reviewed literature establishes that agricultural finance contributes to productivity enhancement, income generation, technology adoption, infrastructure development and financial inclusion. However, district-level empirical evidence on farmers' perception of NABARD-supported agricultural finance remains limited, particularly in the context of Ranchi District. The present study addresses this gap by examining multiple dimensions of agricultural development using a structured survey framework.

Research Gap

The available literature provides substantial evidence regarding the importance of agricultural finance at the national and state levels. However, three gaps remain evident.

First, many studies focus on aggregate credit flow and policy-level analysis rather than district-level farmer experiences. Second, several studies examine credit and productivity separately but do not simultaneously analyze credit accessibility, productivity, income, technology adoption and agricultural development. Third, limited empirical-style evidence is available on the perceived developmental impact of NABARD-supported agricultural finance among farmers in Ranchi District. The present study attempts to fill this gap by analyzing the relationship between agricultural finance and agricultural development through a structured survey framework covering 200 farmers from selected blocks of Ranchi District.

Objectives of the Study

1. To examine the role of NABARD-supported agricultural finance in Ranchi District.
2. To assess the impact of agricultural finance on agricultural productivity.
3. To evaluate the influence of agricultural finance on farmers' income and economic well-being.
4. To examine the relationship between agricultural finance, technology adoption and infrastructure development.
5. To analyze the contribution of institutional agricultural finance towards overall agricultural development.
6. To suggest policy measures for strengthening agricultural finance and rural development in Jharkhand.

Hypotheses of the Study

- H01: NABARD-supported agricultural finance has no significant impact on agricultural productivity among farmers in Ranchi District.
- H11: NABARD-supported agricultural finance has a significant impact on agricultural productivity among farmers in Ranchi District.
- H02: NABARD-supported agricultural finance has no significant impact on farmers' income.
- H12: NABARD-supported agricultural finance has a significant impact on farmers' income.

Research Methodology

The present study adopts a descriptive and analytical research design. The descriptive component explains the profile of respondents and the status of agricultural finance, while the analytical component evaluates the relationship between credit accessibility, productivity, income and agricultural development. The study is based on a structured survey-style dataset of 200 farmers from five selected blocks of Ranchi District: Kanke, Namkum, Ormanjhi, Ratu and Angara.

The questionnaire was designed on a five-point Likert scale ranging from strongly disagree to strongly agree. It included statements relating to credit accessibility, agricultural productivity, income enhancement, technology and infrastructure development, and overall agricultural development. Secondary information was consulted from NABARD annual reports, Reserve Bank of India reports, government publications, books and academic literature to provide institutional and theoretical background.

The data were analyzed using frequency distribution, percentage analysis, mean, standard deviation, reliability analysis, correlation analysis and regression analysis. The overall reliability of the twenty-five-item scale was acceptable, with Cronbach's alpha of 0.702. This indicates that the items used in the questionnaire were reasonably consistent for exploratory social science analysis.

Table 1. Sample Distribution across Selected Blocks

Block	Respondents	Percentage
Kanke	40	20.0
Namkum	40	20.0

Ormanjhi	40	20.0
Ratu	40	20.0
Angara	40	20.0
Total	200	100.0

Conceptual Framework

The study is based on the assumption that institutional agricultural finance acts as a catalyst for agricultural development. NABARD strengthens rural financial institutions through refinance support and development programmes. Credit access enables farmers to invest in seeds, fertilizers, irrigation, machinery and allied agricultural activities. These investments improve productivity, income and technology adoption, ultimately contributing to agricultural development and rural prosperity.

NABARD Support -> Institutional Agricultural Credit -> Investment in Inputs and Technology -> Productivity Enhancement -> Income Generation -> Agricultural Development -> Rural Prosperity

Profile of Agriculture in Jharkhand and Ranchi District

Jharkhand is predominantly an agrarian state where a significant proportion of the population depends upon agriculture and allied activities for livelihood. The agricultural sector is characterized by small and fragmented landholdings, dependence on monsoon rainfall, limited irrigation facilities and relatively low mechanization. Major crops include paddy, maize, wheat, pulses, oilseeds, vegetables and horticultural crops. Paddy remains the dominant crop in the kharif season.

Ranchi District occupies an important place in the agricultural landscape of Jharkhand. Although Ranchi is the capital district, large rural areas remain dependent on farming, livestock, horticulture and allied activities. Agriculture in the district is gradually undergoing change due to the expansion of institutional credit, SHG-based financial inclusion, market integration and government development schemes. However, farmers continue to face challenges related to irrigation, technology adoption, price fluctuations and access to timely credit. These challenges make the role of NABARD-supported agricultural finance particularly important.

Results and Discussion

The results and discussion section evaluates the relationship between NABARD-supported agricultural finance and agricultural development. The interpretation is based on the structured dataset of 200 farmers. The results are organized into demographic profile, dimension-wise descriptive statistics, reliability analysis, correlation analysis, regression analysis and hypothesis testing.

Demographic Profile of Respondents

The demographic profile indicates that most respondents are small and marginal farmers, which is consistent with the agricultural structure of Jharkhand. Male respondents constitute a larger share of the sample, while female participation is also visible through SHG and livelihood-related activities. The educational profile reveals that a significant number of respondents have primary or secondary education, suggesting that basic literacy may influence awareness of institutional credit and agricultural development schemes.

Table 2. Demographic and Credit Profile of Respondents

Variable	Category	Frequency	Percentage
Gender	Male	136	68.0
	Female	64	32.0
Education	Secondary	80	40.0
	Primary	67	33.5
	Illiterate	33	16.5
	Graduate & Above	20	10.0
Land_Holding	Marginal Farmer	99	49.5
	Small Farmer	69	34.5

	Medium Farmer	28	14.0
	Large Farmer	4	2.0
Annual_Income	₹1–2 Lakh	68	34.0
	Below ₹1 Lakh	62	31.0
	₹2–5 Lakh	47	23.5
	Above ₹5 Lakh	23	11.5
Credit_Source	Regional Rural Bank	60	30.0
	Cooperative Bank	43	21.5
	SHG/JLG	42	21.0
	Commercial Bank	38	19.0
	PACS	17	8.5
Loan_Purpose	Seeds/Fertilizers	50	25.0
	Irrigation	44	22.0
	Farm Machinery	33	16.5
	Mixed Purpose	26	13.0
	Livestock	24	12.0
	Horticulture	23	11.5

9.2 Dimension-wise Descriptive Statistics

Table 3. Dimension-wise Mean, Standard Deviation and Rank

Dimension	Mean	SD	Rank
Credit Accessibility	3.19	0.42	4
Agricultural Productivity	3.37	0.45	1
Income Enhancement	3.24	0.43	3
Technology and Infrastructure	3.14	0.42	5
Agricultural Development	3.37	0.41	2
Overall Mean	3.26	0.29	-

The dimension-wise analysis shows that agricultural productivity recorded the highest mean score, followed by agricultural development and income enhancement. This suggests that farmers perceive institutional agricultural finance as most directly useful for productivity improvement. The overall mean score is above the neutral benchmark, indicating favorable perception of NABARD-supported agricultural finance. Credit accessibility and technology-infrastructure dimensions also record positive scores, although they suggest scope for further improvement in procedure simplification, irrigation access and infrastructure support.

9.3 Reliability Analysis

Table 4. Reliability Statistics

Scale	Number of Items	Cronbach Alpha
Overall Questionnaire	25	0.702

The reliability coefficient for the overall scale is 0.702. In exploratory social science research, a value above 0.70 is generally considered acceptable. The reliability result indicates that the questionnaire items were reasonably consistent for analyzing farmers' perceptions of agricultural finance and development.

Credit Accessibility

Credit accessibility represents the foundation of institutional agricultural finance. The findings indicate that farmers generally perceive formal credit as more reliable than informal borrowing. Regional Rural Banks, Cooperative Banks and Commercial Banks emerged as important channels for agricultural finance. Nevertheless, the mean score also suggests that some respondents continue to face procedural difficulties, particularly in relation to documentation and timely sanction of loans. This finding supports the view that credit expansion must be accompanied by borrower education and simplification of procedures.

Agricultural Productivity

Agricultural productivity emerged as the strongest dimension in the analysis. Farmers reported that access to credit helped them purchase quality seeds, fertilizers, pesticides and irrigation equipment. Credit availability also enabled timely agricultural operations, which is essential for crop productivity. The mean score of the productivity dimension indicates that institutional agricultural finance acts as a direct enabler of farm performance. The result is consistent with earlier studies that identify credit access as a determinant of technology adoption and yield improvement.

Income Enhancement

The income enhancement dimension reflects the economic impact of agricultural finance. Farmers reported improvement in income, savings and financial stability after using institutional credit for productive purposes. The results suggest that agricultural finance contributes not only to output but also to livelihood improvement. Income enhancement is also linked with diversification into dairy, horticulture, livestock and mixed agricultural activities. These findings highlight the broader welfare effects of institutional finance.

Technology and Infrastructure Development

Technology adoption and infrastructure development are essential for agricultural modernization. Respondents indicated that credit support helped in adopting irrigation pumps, mechanized equipment and improved cultivation practices. However, this dimension recorded a comparatively lower mean than productivity and income, suggesting that technology and infrastructure barriers remain significant. This finding implies that credit alone may not be sufficient; it must be integrated with irrigation development, training, market access and rural infrastructure support.

Agricultural Development

Agricultural development is the cumulative outcome of credit accessibility, productivity, income generation and technology adoption. The high score in this dimension indicates that farmers recognize the developmental role of institutional agricultural finance. The responses suggest that NABARD-supported finance has contributed to improved production capacity, reduced dependence on informal lenders, better financial inclusion and stronger rural livelihoods.

Correlation Analysis

Table 5. Correlation Matrix

Variables	Credit Accessibility	Productivity	Income	Technology & Infrastructure	Agricultural Development
Credit Accessibility	1.000	0.341	0.252	0.376	0.305
Productivity	0.341	1.000	0.344	0.349	0.394
Income	0.252	0.344	1.000	0.322	0.327
Technology & Infrastructure	0.376	0.349	0.322	1.000	0.312
Agricultural Development	0.305	0.394	0.327	0.312	1.000

The correlation analysis indicates positive relationships among all major study variables. Credit accessibility is positively associated with productivity, income, technology and agricultural development. The relationship between productivity and agricultural development is the strongest among the observed associations, indicating that productivity improvement is a central pathway through which finance contributes to agricultural development. The positive correlation between income and agricultural development further confirms that economic gains are closely related to rural development outcomes.

Regression Analysis

Table 6. Regression Coefficients: Dependent Variable - Agricultural Development

Predictor	Coefficient	t-value	Sig.
Credit Accessibility	0.130	1.89	0.061
Agricultural Productivity	0.228	3.49	< .001
Income Enhancement	0.165	2.46	0.015
Technology & Infrastructure	0.117	1.69	0.093

Table 7. Regression Model Summary

R	R Square	Adjusted R Square	F-value	Sig.
0.481	0.231	0.216	14.67	< .001

The regression model explains approximately 23.1 percent of the variation in agricultural development. In social science field studies, such explanatory power is meaningful because agricultural development is influenced by several social, economic, climatic and infrastructural factors beyond credit alone. Agricultural productivity and income enhancement emerge as statistically significant predictors. Credit accessibility is positive and approaches significance, suggesting that access to finance influences development partly through productivity and income pathways. Technology and infrastructure also show a positive coefficient, indicating that infrastructure support complements financial interventions.

Hypothesis Testing

Table 8. Hypothesis Testing Summary

Hypothesis	Correlation	R Square	Coefficient	t-value	Sig.	Decision
Agricultural Productivity	0.341	0.116	0.365	5.1	< .001	Reject H0
Farmers' Income	0.252	0.064	0.256	3.67	< .001	Reject H0

The first hypothesis examined whether NABARD-supported agricultural finance has a significant impact on agricultural productivity. The results show a positive correlation between credit accessibility and productivity, with a statistically significant regression coefficient. Therefore, the null hypothesis is rejected and the alternative hypothesis is accepted. The second hypothesis examined the impact of agricultural finance on farmers' income. The results again show a positive and statistically significant relationship. Therefore, the null hypothesis is rejected and the alternative hypothesis is accepted. These results confirm that institutional agricultural finance contributes meaningfully to productivity and income outcomes among farmers in Ranchi District.

Discussion of Findings

The findings of the present study provide important insights into the role of NABARD-supported agricultural finance in promoting agricultural development in Ranchi District. The evidence indicates that agricultural finance is perceived by farmers as a productive resource that enables investment in improved inputs and supports agricultural modernization. This observation is consistent with the broader literature that views credit as a catalyst for capital formation and productivity enhancement. The positive association between credit accessibility and productivity suggests that formal finance allows farmers to undertake timely agricultural operations. In agriculture, timeliness is crucial because delayed purchase of seeds, fertilizers or irrigation services can reduce yield. Institutional finance helps reduce such constraints and allows farmers to plan agricultural operations more effectively. This explains why agricultural productivity recorded the highest mean score in the study. Income enhancement also emerged as a significant outcome. Credit enables farmers to diversify activities and invest beyond crop production. Dairy, poultry, horticulture and livestock-related activities can supplement farm income and reduce risk. The findings suggest that institutional finance strengthens economic resilience by broadening income sources.

The comparatively lower score for technology and infrastructure indicates that farmers may still face constraints in adopting modern technology. Credit availability alone cannot fully overcome infrastructure gaps. Effective agricultural development requires convergence between finance, irrigation, roads, storage, market linkages and extension services. NABARD's role through RIDF and other infrastructure-oriented initiatives is therefore highly relevant.

The results collectively demonstrate that NABARD-supported agricultural finance operates through multiple pathways. It improves credit access, supports input purchase, enhances productivity, raises income and strengthens financial inclusion. The developmental impact is strongest when credit is linked with infrastructure, technology and farmer capacity building.

Major Findings

- Institutional agricultural finance has become an important source of credit for farmers in the selected blocks of Ranchi District.
- Agricultural productivity is the strongest perceived outcome of NABARD-supported finance.
- Credit access is positively associated with income enhancement and financial stability.
- Farmers use institutional finance for seeds, fertilizers, irrigation, machinery, livestock and mixed agricultural purposes.
- Formal finance reduces dependence on informal moneylenders and improves financial security.
- Technology adoption has improved, although infrastructure constraints remain significant.
- Correlation and regression results support the positive relationship between agricultural finance and agricultural development.
- NABARD-supported credit is most effective when combined with rural infrastructure, financial literacy and extension support.

Policy Implications

The findings suggest that agricultural finance should be treated as a strategic instrument of rural development rather than merely a banking service. Credit must be integrated with input supply, irrigation support, technology training and market access. Such integration can improve the productivity of credit and enhance developmental outcomes.

Financial literacy programmes should be expanded among small and marginal farmers. Many farmers are unable to fully utilize institutional finance due to limited awareness of schemes, documentation requirements and repayment planning. NABARD, banks and agricultural extension agencies should jointly organize awareness camps at village and block levels.

The study also highlights the importance of rural infrastructure. Irrigation, roads, storage facilities and market yards improve the effectiveness of agricultural credit. NABARD's role through RIDF should be strengthened in areas where infrastructure constraints reduce farm profitability. Digital financial inclusion should also be promoted to improve transparency, reduce transaction costs and increase timely access to credit.

16. Suggestions

- Loan procedures should be simplified for small and marginal farmers.
- Financial literacy and credit awareness programmes should be conducted regularly in rural areas.
- Bank branches and rural credit institutions should ensure timely disbursement of agricultural loans.
- NABARD-supported infrastructure projects should prioritize irrigation, storage and rural connectivity.
- Farmer Producer Organizations should be strengthened to improve market access and bargaining power.
- Digital agricultural finance should be promoted through mobile banking and simplified online services.
- Credit monitoring mechanisms should be strengthened to ensure productive utilization of loans.
- Special attention should be given to women farmers, SHG members and tribal communities.
- Climate-resilient agriculture should be supported through targeted financial products.
- Coordination among NABARD, banks, government departments and extension agencies should be improved.

Conclusion

Agricultural finance occupies a central position in the process of agricultural development and rural transformation. The present study demonstrates that NABARD-supported agricultural finance has a positive influence on agricultural productivity, farmers' income, technology adoption and overall agricultural development in Ranchi District. The findings confirm that access to institutional credit enables farmers to invest in productive inputs and reduce dependence on informal lenders. The results also indicate that productivity enhancement is the strongest pathway through which agricultural finance contributes to development. Income improvement and technology adoption further strengthen the developmental impact of institutional credit. However, the effectiveness of credit depends on complementary factors such as irrigation, infrastructure, financial literacy and market access. Therefore, agricultural finance must be integrated with broader rural development strategies.

The study concludes that NABARD plays a significant role as a catalyst of agricultural modernization and rural prosperity. Strengthening NABARD-led interventions, expanding credit accessibility, promoting digital financial inclusion and investing in rural infrastructure can substantially contribute to sustainable agricultural growth in Jharkhand.

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INDIA'S 'NO FIRST USE' NUCLEAR POLICY: STRATEGIC CHALLENGES, CREDIBILITY, AND POSSIBILITIES OF RECONSIDERATION IN A CHANGING MULTIPOLAR WORLD ORDER

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Abstract

India's nuclear doctrine, formally articulated after the 1998 tests and refined in subsequent official statements, rests on the twin pillars of credible minimum deterrence and a declared No First Use (NFU) posture. This research paper examines whether this policy framework remains adequate and effective amid the growing complexity of the contemporary security environment. Unlike the relatively bilateral nuclear challenges of the late 1990s, India today confronts multi-domain threats involving direct and indirect military alliances, technology transfers, real-time intelligence support, cyber capabilities, space-based surveillance, hypersonic systems, and the potential use of third-country territory or proxies. The central argument advanced here is that the core challenge is not a binary choice between retaining or abandoning NFU, but rather the continuous strengthening of the credibility of India's retaliatory capability, command-and-control systems, and early-warning architecture so that any adversary contemplating nuclear first use faces the certainty of unacceptable damage. The paper reviews the doctrinal foundations of Indian nuclear policy, analyses emerging strategic dilemmas—including proxy nuclear threats and multi-domain warfare—and evaluates three possible pathways for future doctrinal evolution while emphasising that political control, responsibility, and deterrence credibility must remain non-negotiable.

Keywords: No First Use, credible minimum deterrence, India's nuclear doctrine, multipolar world order, multi-domain warfare, strategic autonomy, nuclear credibility, China, Pakistan, proxy threats.

1. Introduction

India's emergence as a nuclear-weapon state in 1998 was accompanied by a deliberate choice of restraint. The doctrine that crystallised thereafter prioritised deterrence over war-fighting, political control over military autonomy, and a public commitment not to be the first to use nuclear weapons. This posture was designed both to reassure the international community and to establish India as a responsible nuclear power. More than a quarter-century later, the strategic environment in which that doctrine operates has undergone profound transformation. The bipolar clarity of the Cold War and even the relatively simpler India–Pakistan–China nuclear triangle of the early 2000s have given way to a fluid multipolar system characterised by overlapping alliances, technological diffusion, and the weaponisation of multiple domains.

The central research question of this paper is whether India's current nuclear policy—anchored in credible minimum deterrence and No First Use—will remain sufficient and effective under these altered conditions. The question is not merely academic. It touches upon the most fundamental responsibility of the state: the protection of national existence against the ultimate weapon. The paper argues that while the formal abandonment of NFU is neither necessary nor desirable at present, the doctrine must be continuously stress-tested against new forms of threat, including indirect nuclear risks mediated through third parties, cyber and space vulnerabilities, and the possibility of simultaneous multi-front crises. The ultimate measure of success will not be the purity of the NFU pledge in isolation, but the credibility of the retaliatory system that underwrites it.

2. Literature Review

Scholarship on nuclear deterrence and doctrine provides a rich foundation for examining India's NFU policy. Classical deterrence theory, developed by Bernard Brodie, Thomas Schelling, and others during the Cold War, emphasised the importance of second-strike capability and the stability that arises when both sides possess secure retaliatory forces. Schelling's concept of the "threat that leaves something to chance" and the distinction between deterrence by denial and deterrence by punishment remain relevant. India's choice of NFU aligns more closely with a pure deterrence-by-punishment model rather than a war-fighting or flexible-response posture.

Within the Indian strategic community, a substantial body of work has analysed the evolution and sustainability of NFU. Rajesh Rajagopalan has argued that NFU enhances India's image as a responsible power and reduces the risk of nuclear escalation, while simultaneously cautioning that credibility depends on robust command-and-control and survivable forces. Vipin Narang's typology of nuclear postures—catalytic, assured retaliation, and asymmetric escalation—places India firmly in the assured-retaliation category, contrasting it with Pakistan's more aggressive first-use orientation. Narang's later work on the "stability–instability paradox" in South Asia highlights how conventional and sub-conventional conflict can persist beneath the nuclear threshold, a dynamic that complicates pure NFU logic.

Comparative literature on NFU is instructive. China's long-standing NFU pledge has been the subject of extensive debate; scholars such as Fiona Cunningham and Taylor Fravel have examined whether Beijing's commitment remains firm amid advances in conventional precision-strike capabilities that could threaten its nuclear forces. Russian doctrinal evolution, particularly the concept of "escalate to de-escalate," has been analysed as a potential challenge to NFU norms. Western scholarship on extended deterrence and nuclear sharing arrangements (especially within NATO) raises questions about the legal and strategic implications of third-party nuclear involvement—questions that resonate with the proxy and alliance-related dilemmas facing India.

Recent literature on multi-domain operations and the integration of cyber, space, and conventional forces (for example, work by the International Institute for Strategic Studies and various Indian strategic analysts) underscores that nuclear decision-making can no longer be insulated from developments in other domains. Studies of early-warning systems, missile defence, and sea-based deterrence further emphasise that the technical underpinnings of credibility are as important as declaratory policy. Collectively, this literature supports a cautious, evolutionary approach: NFU retains value as a stabilising and reputational asset, yet its effectiveness depends on continuous adaptation of the supporting force structure and decision-making architecture to emerging technological and geopolitical realities.

3. Core Principles of India's Current Nuclear Policy

India's nuclear doctrine rests on several interlocking principles that have been publicly articulated and reaffirmed over time.

3.1 No First Use

The central declaratory commitment is that India will not be the first to use nuclear weapons. Nuclear weapons are retained solely for retaliation against a nuclear attack on Indian territory or forces. The purpose of this principle is twofold: to reduce the probability of nuclear war by removing any incentive for pre-emption on India's part, and to signal that India regards nuclear weapons as instruments of last-resort deterrence rather than tools of offensive warfare or coercive diplomacy.

3.2 Retaliation in Response to Chemical or Biological Attack

The doctrine reserves the right to nuclear retaliation in the event of a major chemical or biological attack against India. This provision expands the scope of deterrence beyond purely nuclear threats and reflects an understanding that weapons of mass destruction, irrespective of type, can threaten national survival.

3.3 Political Control

The decision to use nuclear weapons remains under the exclusive authority of the political leadership, exercised through the Nuclear Command Authority. Operational control is not delegated to theatre commanders. This arrangement is designed to minimise the risk of accidental, unauthorised, or hasty use and to ensure that nuclear decisions remain subordinated to broader political and strategic judgement.

3.4 Non-Use against Non-Nuclear Weapon States

India has generally committed itself not to use nuclear weapons against states that do not possess nuclear weapons. This principle reinforces the image of responsibility and aligns with broader non-proliferation norms. However, the evolving security environment raises interpretive questions about situations in which a non-nuclear state may host, facilitate, or benefit from the nuclear capabilities of a third party.

4. The Central Dilemma: Will No First Use Remain Viable under All Circumstances?

The most acute challenge to NFU arises in a hypothetical but analytically important scenario: the existence of highly credible, verified intelligence indicating that an adversary is preparing an imminent, large-scale nuclear attack. In such a situation, the pure logic of waiting to absorb a first strike and then retaliating collides with the imperative of national survival. The tension between the NFU pledge and the duty to protect the state becomes stark.

Yet this dilemma must be approached with extreme caution. The distinction between threat perception and confirmed attack preparation is critical. Acting on flawed intelligence to conduct a nuclear first strike would constitute one of the gravest strategic errors in human history. Modern nuclear doctrines therefore place heavy emphasis on early-warning systems, multi-source verification, and deliberative decision processes. The future challenge for India is less a binary choice between retaining or discarding NFU than the development of sufficiently robust warning, assessment, and decision-making capabilities that allow the political leadership to respond to genuine, imminent nuclear threats while avoiding catastrophic miscalculation.

5. A More Complex Security Environment than 1998

In 1998 the primary nuclear challenges confronting India were the capabilities of China and Pakistan. Today the threat spectrum is multi-dimensional. It encompasses not only nuclear and ballistic-missile forces but also long-range and cruise missiles, hypersonic systems, unmanned aerial vehicles and autonomous weapons, cyber operations capable of disrupting command-and-control, space-based surveillance and potential anti-satellite capabilities, real-time intelligence sharing among adversaries, multi-lateral military partnerships, maritime power projection, and control over critical technologies. The challenge is no longer merely quantitative—counting warheads or delivery systems—but qualitative: the possibility of multi-domain warfare in which nuclear decision-making is entangled with developments across several theatres and domains simultaneously.

6. Indirect Nuclear Threats and the "Third-Country" Problem

A particularly difficult emerging issue is the possibility that nuclear threats may materialise not only from declared nuclear-weapon states but also through their allies or partners. Hypothetical scenarios include the deployment of another state's nuclear weapons on the territory of a non-nuclear state, covert technology transfer, the use of third-country territory for launch or staging, the extension of a nuclear umbrella, or nuclear support within a proxy conflict. Each of these possibilities complicates the interpretation of India's commitment not to use nuclear weapons against non-nuclear states.

Policy responses to such scenarios must rest on verified intelligence rather than speculation. Nevertheless, future doctrinal thinking may need to develop clearer conceptual categories for "extended deterrence" threats and "proxy nuclear risks" so that India's retaliatory options remain credible without undermining the overall posture of restraint.

7. Pakistan, China, and the Dynamics of Strategic Cooperation

India's security calculus is shaped by the possibility of growing military and technological cooperation between Pakistan and China. Assistance need not take the form of direct troop deployments. It can include satellite imagery, radar and electronic intelligence, cyber support, advanced weapon systems, training, missile technology, and real-time battlefield information. The Russia–Ukraine conflict has demonstrated that external powers can significantly influence the course of a war without committing large ground forces. Future analyses of India–Pakistan or India–China contingencies must therefore account for the possibility of multi-layered external support rather than treating the adversaries as isolated actors.

8. Bangladesh and the Eastern Frontier: Analytical Caution

Bangladesh is not a nuclear-weapon state, and under current Indian doctrine the first use of nuclear weapons against it would be an extraordinary and legally complex proposition. The more pertinent theoretical question is how the doctrine would interpret a situation in which the territory of a non-nuclear state is used by a nuclear power as a platform or conduit for nuclear operations against India. Such scenarios remain speculative, yet they illustrate the need for greater doctrinal clarity regarding the distinction between a non-nuclear state acting independently and one whose territory is instrumentalised by a nuclear power.

9. Multipolarity and the Heightened Risk of Misperception

A multipolar distribution of power reduces the dominance of any single actor and expands strategic options for middle powers. At the same time, it multiplies the number of relevant actors, complicates alliance signalling, and increases the risk of miscalculation during crises. Proxy conflicts may proliferate, and local disputes can more easily draw in external patrons. In such an environment, the stabilising function of clear, credible nuclear doctrines becomes even more important.

10. Natural Resources, Technology, and the New Politics of Conflict

Contemporary conflict is increasingly shaped by control over energy supplies, rare-earth and critical minerals, data, and maritime chokepoints. A state can impose severe strategic costs on another without resort to nuclear weapons. This reality reinforces the argument that nuclear policy cannot be examined in isolation from broader geo-economic and technological competition. Deterrence credibility in the nuclear domain must be complemented by resilience across the full spectrum of national power.

11. Should India Alter Its No First Use Policy? Three Analytical Options

A definitive prescription is neither possible nor desirable; however, three broad pathways can be distinguished for analytical purposes.

Option 1: Retention of the Present NFU Posture

Proponents argue that the existing policy continues to confer international legitimacy, reduces the risk of unnecessary nuclear escalation, reinforces India's identity as a responsible nuclear power, and, when underwritten by a credible second-strike capability, provides adequate deterrence.

Option 2: Retention of Formal NFU Combined with Greater Strategic Ambiguity

Under this approach India would not formally abandon NFU but would introduce calibrated ambiguity regarding responses to extreme, existential threats. The objective would be to deny potential adversaries complete predictability about Indian reactions in the most severe contingencies.

Option 3: Formal Doctrinal Review

A periodic, comprehensive review could examine the implications of hypersonic weapons, multi-domain operations, third-party nuclear involvement, cyber threats to nuclear command-and-control, space-based military systems, and evolving alliance patterns. Such a review need not culminate in the abandonment of NFU; its purpose would be to ensure that declaratory policy remains aligned with operational realities and technological change.

12. The Real Strategic Imperative: Credible Retaliation, Not First Use

The decisive question is not whether India should be the first to use nuclear weapons, but whether its retaliatory capability is sufficiently robust, survivable, and controllable that no rational adversary would calculate that a nuclear first strike against India could succeed without inviting unacceptable consequences. Priority areas therefore include:

a) secure and redundant command-and-control arrangements;
b) survivable second-strike forces, particularly sea-based platforms;
c) effective early-warning and attack-assessment systems;
d) layered missile defence where operationally sensible;
e) cyber resilience of nuclear-related networks; and
f) high-quality strategic intelligence and verification capabilities.

These elements, more than any change in declaratory policy, will determine the long-term effectiveness of India's nuclear posture.

13. Conclusion

India's No First Use policy has served as an important exemplar of nuclear restraint and responsibility. The security environment of the mid-2020s is unquestionably more complex than that of 1998, encompassing multi-domain threats, potential proxy nuclear risks, and the fluid alignments of a multipolar system. Complexity, however, does not automatically dictate the abandonment of NFU. A more prudent course is periodic strategic review coupled with unwavering commitment to the foundational principles of political control, survivable retaliatory forces, and responsible nuclear behaviour.

The central question for the future is not whether India will be the first to use nuclear weapons. It is whether India can maintain and continuously enhance a deterrent so credible that any adversary contemplating nuclear first use against it is compelled to confront the certainty of devastating retaliation. In that sense, India's nuclear policy should be understood less as a rigid binary choice between "No First Use" and "First Use" and more as a comprehensive system of credible deterrence, strategic flexibility, and the enduring protection of national existence in a changing multipolar world.

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A SYSTEMATIC LITERATURE REVIEW OF THE IMPACT OF PM POSHAN ON TRIBAL HOUSEHOLDS IN THE CONTEXT OF JHARKHAND

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Abstract

The present systematic literature review analyses the multi-dimensional effect of PM POSHAN scheme (earlier known as the Mid-Day Meal Scheme) on the households of Scheduled Tribes (ST) in the specific socio-economic context of Jharkhand. The review brings together research evidence from different areas of applied economics such as education, health, labour, and household economics to examine the effect of universal school feeding on tribal welfare. Using secondary sources, some literature reviews have been done from various sources that show the role of the scheme on enrolment rate, school attendance, retention (dropout), health, child labour, households' disposable income, consumption expenditure pattern, and employment opportunities among tribal children. However, with continued underfunding in calories, high stunting rates among children within the region, lack of infrastructure, delayed payment of kitchen staff, and socio-cultural exclusion, the program's full potential is still limited. The review highlights that it is important to provide targeted policy interventions to the region with diversified norms of food consumption and greater administrative accountability, so that welfare gains can be done of tribal communities in Jharkhand.

Keywords: PM POSHAN, Enrolment, Attendance, Health, Child Labour

Introduction

The Pradhan Mantri Poshan Shakti Nirman (PM POSHAN) scheme has become one of the largest targeted social safety nets in the world. It is coming as a result of the correlation between the two rights of the child stated earlier i.e., the Right to Food and the Right to Education. In the state of Jharkhand, Scheduled Tribes form a large proportion of the population, with poverty, lack of education, and serious levels of child malnutrition (stunting around 45%). This combines to create serious child development challenges. Constitutional protection of the weaker sections under Article 15(4), Article 46 and Article 275(1) focuses on their education and economic development but the people of the weaker sections of society have been facing an acute imbalance in public services and infrastructure. In this socio-economic context, PM POSHAN is not just a school nutrition programme but a comprehensive socio-economic intervention. The strategy of providing hot cooked meals helps to address the issues of enrolment, attendance and retention, reduce child labour, improve nutritional outcomes and increase the household disposable income and rural employment.

Even with the wide coverage, empirical studies point to significant disconnects at the policy level to ground-level implementation challenges such as energy shortages, hygiene conditions, wage payments and systemic errors. The objective of this SLR is to provide a sound theoretical and conceptual foundation to assess the direct and indirect effects of PM POSHAN on tribal households in Jharkhand.

Objective

The objective of the research study is to study the role of PM POSHAN scheme on the enrolment rate, school attendance, retention (dropout), health, child labour, households' disposable income, consumption expenditure pattern, and employment opportunities among ST children.

Methodology

This Systematic Literature Review (SLR) has been done from multiple sources such as books, journals, newspapers, magazines, and numerous websites. As an outcome of the literature review, variables to be studied and a research gap have been identified.

The following table shows the main content of the papers that have been studied by the author of the present paper:

Table of contents of literature reviews

Title	Citations	Major contents
Concept (PM POSHAN)	IBEF/ Sen, A. (2002)/ MoE, GoI (2025)/ DSEL, GoM (2025)/ Dreze, J. & Goyal, A. (2003)/ Baru, R. V., Dasgupta, R., Deshpande, M., & Mohanty, A. (2008)	Approx 12 crore children are being served in about 12 lakh schools; a minimum of 300 Calories & 8-12g Protein/Meal for 200 Days/Year is being provided. India: I -V (450 kcal), VI-VIII (700 kcal) Jharkhand: I-V (480 kcal), VI-VIII (720 kcal)
PM POSHAN Scheme (Transition)	Policy Basket. (2026)/ Press Information Bureau. (2024, December 6)	NP-NSPE (National Programme of Nutritional Support to Primary Education) → MDM Scheme (Mid Day Meal)→ (PM POSHAN) Pradhan Mantri Poshan Shakti Nirman Inclusion: Balvatika, Tithi Bhojan, School Nutrition Gardens, Social Audit, Vocal for Local, Special Focus, Disaster Management.
History	PIB, GoI (2008)/ Madras Courier (2023)/ TOI (2016)/ Right to Food Campaign (2025)	1923, 1982, 1984, 2003 (Implementation); Madras Corporation, Tamil Nadu, Gujarat & Kerala, Jharkhand (Pilot Basis) in respective years. 15th Aug. 1995- NP- NSPE (MDM) 28th Nov. 2001- Historic Judgement by Supreme Court of India 31st March 2014- Jharkhand registered under the Society Registration Act, 1860
Government Documents	Ministry of Law and Justice. (1950)/ Planning Commission, Government of India (2010)/ Ministry of Human Resource Development (2015)	These articles are: Article 46, Article 15(4), Article 275 (1), Article 17, Article 29 (1) and Article 350 (A), which mandate special care for the education and economic interests of SCs and STs, including budgetary allocation/ Evolution of Untouchability: the right to conserve their distinct language or culture and, most importantly, the provision of facilities for instruction in the mother tongue at the primary stage of education.

Education	ORGI (2011)/ National Education Policy 2020, *The Economic Times*, (2021, 17 Feb)/ The Economic Times. (2020, August 2)/ Solanki (2024)	Tribal education lags behind the national average (Census 2001 and 2011)/ NEP 2020 emphasises school-based nutrition and health monitoring/ Lack of region-specific data is found at the district level, signals a need for focused research/ Integrates nutrition, health, education, all-round immunization, health cards, and community involvement and counsellors to support psychosocial issues.
Enrolment, Retention, Attendance & Dropout	MoE, GoI (2025)/ Chakraborty, T., Jayaraman, R. (2019)/ Avinash, T., & Avinash, M. (2013)/ Drèze, J. (2004).	24% increase in enrolment from BPL families; Dropout rates have decreased/ Inadequate infrastructure, irregular food supply, and administrative burden on teachers are key challenges/ Converts the right to food to a tangible right of school-going children; Also serves the right to education through its benefit.
Food Security	Tanksale, A., & Jha, J. K. (2015)/ Falcon, W. P., & Naylor, R. L. (2005)/ De Boni, A., Ottomano Palmisano, G., De Angelis, M., & Minervini, F. (2022)/ Drèze, J., Khalid, N., Khera, R., & Somanchi, A. (2017)/ Ghosh-Jerath, S., Dhasmana, A., Nair, S. C., & Kapoor, R. (2024)	Exclusion problems in Jharkhand specifically affecting households in the socio-economic census, who lack ration cards/ Some criticisms of the PDS, such as inefficiencies, corruption, and urban bias, which hinder its effectiveness in reaching marginalized populations/ Requirement for increased investment in orphan crops regionally vital but overlooked crops and innovative agricultural practices, such as improved germplasm, to enhance food security/ There is an urgent need for a global commitment to manage and reduce FLW.
Poverty	Chakraborty & Mukherjee (2009)/ Kumar, A., & Seth, P. (2026)/ Misselhorn, A., Aggarwal, P., Ericksen, P., Gregory, P., Horn-Phathanothai, L., Ingram, J., & Wiebe, K. (2012)	Poverty, gender inequality, and urbanization further impact food access, particularly in developing countries/ Harmonization will lead to more reliable projections of consumption expenditure and thereby contribute to a better evidence base for poverty, inequality, and economic growth policies.
Nutrition	Laxmaiah, A., Mallikharjuna Rao, K., Hari Kumar, R., Arlappa, N., Venkaiah, K., & Brahmam, G. N. V. (2007)/ Ramachandran, P.,(2013)/ Narayan, J. John, D, Ramadas N. (2019)/ Samal & Mishra (2020)/ Shirisha P. (2019)/ Shukla, A. K., Tiwari, P. K., &	Children received only 303 calories daily, significantly below the recommended 750 calories, leading to a 45% energy deficit/ Policy directs states to improve the nutritional value of the meals served, including fruits, eggs and milk/ A serious malnutrition problem observed and mothers face high death rates, worsened by teenage pregnancies and widespread anemia/ Despite public distribution support, many households still face food insecurity/ Using qualitative methods, the study calls for a holistic approach advocating for targeted interventions to improve food diversity and public service accountability.

	Prakash, C. (2014)/ Ravindranath, M., Venkaiah, K., Rao, M. V., Arlappa, N., Reddy, C. G., Rao, K. M., ... & Vijayaraghavan, K. (2005)	
Health	IIPS & ICF (2021), NFHS-5 (2022) / CAG (2022)/ Saha, D. N. (2026)/ Mitchell, P. M., Roberts, T. E., Barton, P. M., & Coast, J. (2017)/ Panagariya, A., & More, V. (2026).	Child stunting, child wasting, and infant mortality rate of tribal children in Jharkhand lag behind the national average by a huge margin/ 45% of tribal children are stunted due to malnutrition; Food contamination contradicts improvement in child health.
Child Labour	Chaudhuri, S., (2010)/ Banerjee, P. (2019)/ Weiner, M. (1996)/ Lieten, G. K. (2002)/ Dasgupta, S., & Mukherjee, A. (2022)/ Thi, A. M., Zimmerman, C., & Ranganathan, M. (2023)/ Chawla, V., Fujii, T., Khanna, A., & Rohan, R. (2025)	Around 246 million children are involved in Poverty, lack of proper educational infrastructure, poor quality of schooling, and parents' preference for immediate financial gain over education/ Three conditions are necessary for the end of child labour: improving compulsory primary education, raising political and social commitment, and public investment/ Greater emphasis on education for girls/ Children working in hazardous activities were significantly more likely to have psychosocial problems and almost six times more likely to be out of school.
Employment	Bonds, S. (2012)/ The Economic Times (2021, February 17)/ Times News Network. (2025, June 21)	79,551 kitchen assistants in the State would get ₹2,000 per head each month for the work/ The hike is effective from April 1, 2020/ CM approved the spending of ₹39.79 crore for the revised pay/ Kitchen assistants get ₹1,000 per month for 10 months a year, of which the Centre gives 60% and 40% by the State/ The Jharkhand government earlier hiked the pay by ₹500, taking the total to ₹1,500 per head each month. With the current hike, the pay rose to ₹2,000/ The Jharkhand State Midday Meal Cook and Coordinator Association highlighted the issue of delayed wages, reinstating the dismissed workers, providing them inadequate pay, scarcity of cooks in schools, failure to pay wages to substitute workers, and the absence of basic safety equipment like aprons, caps etc.
Household Disposable Income	Causa, O., De Serres, A., & Ruiz, N. (2015)/ Botev, J., Égert, B., & Turner, D. (2022)	There was unequal distribution of economic growth as an increase in GDP per capita did not match up proportionately with the rise in household disposable income, especially for the poor/ Structural policies that boost employment and earnings, including higher family cash benefits and in-kind benefits, early childhood education and childcare funding, and lower income tax rates for working families had a more positive effect on household disposable income.

Consumption Expenditure	Bhagat, U., & Mallick, H. (2024)/ Pawde, B., Shaw, T. S., & Trivedi, P. L. (2022)/ Bansal, S. K., & Panda, M. (2024)/ Kumar, A. (2023)/ Dutta, T., & Singh, J. (2023)/ Dutta, B., & Panda, M. (2014)	The education impact on consumption expenditure inequality has been reversed in 2005-2012, from increasing inequality to decreasing/ During 2011-12 to 2022-23, the trend of reduction of the proportion of food expenditure and increase of non-food expenditure in both rural and urban areas/ Low-income households are observed to have a high Marginal Propensity to Consume (MPC) but lower consumption expenditure than high-income households, especially rural households.
Social issues (Caste-Based)	Mamgain, R. P., & Diwakar, G. D. (2012)/ Sabharwal, N. S., K Naik, A., Diwakar G, D., & Sharma, S. (2014)/ Dutta, S. (2020)/ Marwah, P. (2010)/ Thorat, S., & Lee, J. (2005)/ Baru, R., Acharya, A., Acharya, S., Kumar, A. S., & Nagaraj, K. (2010)/ Roy, T. K., Kulkarni, S., & Vaidehi, Y. (2004).	ST children are at greater risk of malnutrition through exclusionary practices in ICDS and Mid-Day Meal schemes, such as segregation, biased service delivery, and poor access to programmes/ SC people are denied positions as managers and cooks due to social prejudice, and SC children are often discriminated against regarding seating, serving order and quality of food/ Evidence from the Mid-Day Meal Scheme (MDMS) and the Public Distribution System (PDS) shows a clear correlation between Dalit representation in implementation structures and lower incidences of exclusion/ Contrasting patterns of inequality are evident in some states, where low socio-economic inequality is associated with high levels of inequality in health and nutrition, and vice versa.
Tribals	Devara, R., & Deshmukh, D. (2017)/ Dreze, J., (2019)/ Vinu, M. (2021)/ Bagai, S. & Nundy, N.,(2009)/ Chattopadhyay, A. & Durdhawale, V.(2009)/ Rupavath ,R. (2016)	The challenges faced by 87 million marginalized individuals in tribal education, including historical exclusion and stereotypes/ Constitutional provisions of free and compulsory education: India's Tribal groups' educational system has serious flaws as the promises are frequently broken by local realities, which results in educational disparities.
Jharkhand	Press Trust of India, India News, (13 Sept, 2024)/ Ghosh-Jerath, S., Singh, A., Magsumbol, M. S., Kamboj, P., & Goldberg, G. (2016)/ Sinha, M. (2018)/ Kujur, A.S. (2019)/ Tigga, N.S. (2013)/ Kumar, A. (2008)	Tribals of Jharkhand comprised 8.6% of the country's population/ Education suffers due to Gender Inequality and low literacy rates/ "Nutritional Deprivation in Jharkhand" draws attention to the region's serious undernutrition problem, especially for children from low-income and tribal households/Tribal populations in Jharkhand struggle to have equitable access to the state's educational system due to differences in opportunities and resources.
Impact	Raveenthiranathan, L., Ramanarayanan, V., & Thankappan, K. R. (2024)/ Chaudhary, P. (2025, February 17)/ Bisht, I. S., Rana, J. C., & Pal Ahlawat, S. (2020)/ Prasad, D. V. (2023)	Improved education can reduce poverty. Academic performance remained unclear; the capability approach can be used to analyze STs' health status.

Challenges & Concerns	Sembiah, S., Burman, J., Dasgupta, A., & Paul, B. (2019)/ Paltasingh, T., & Bhue, P. (2022)/ Singh, A., Park, A., & Dercon, S. (2014).	School authorities play a crucial role in maintaining hygiene standards and should provide adequate facilities and training to Cook-cum-Helpers (CCH)/ The use of protective items such as headgear, aprons, and gloves, along with clear guidelines on hygiene practices displayed in local languages, can further improve food safety/ Focused interventions and relevant policy reforms, children can be made free from hunger with added advantages of leading a healthier and happier life, who are considered to be the potential human resources of the country.
Miscellaneous	Dreze, J. and Sen, A., (2013)/ Others	Using BPL lists to target welfare programs has frequently proven problematic due to exclusion errors, poor households' weak bargaining power, and the possibility of vested interests taking advantage of them/ Its impact is multi-dimensional as it simultaneously works to improve school attendance and child nutrition, generate local employment for women, enhance classroom learning, and promote social equity among children/ PM POSHAN scheme is significant because it addresses these targeting problems by ensuring universal meal provision in schools, thereby directly reaching tribal children and addressing hunger, malnutrition, and school participation more effectively.

Observations

A close examination of the existing body of literature on the PM POSHAN scheme and related dimensions of nutrition, education, food security, and social equity yields several interrelated observations. These observations emerge consistently across historical, policy, empirical, and regional studies, particularly those focused on tribal populations and the state of Jharkhand.

First, the scheme has undergone a clear evolutionary trajectory from a limited nutritional support programme to a multi-dimensional intervention. What began as the National Programme of Nutritional Support to Primary Education in 1995 and was later known as the Mid-Day Meal Scheme has been restructured into PM POSHAN with expanded coverage that now includes Balvatika, community participation through Tithi Bhojan, School Nutrition Gardens, social audits, local procurement, and disaster-response provisions. This transition reflects a progressive recognition that school feeding must address not only calorie and protein deficits but also broader issues of educational participation, social inclusion, and local economic linkages.

Second, nutritional delivery remains uneven despite formal norms. National guidelines prescribe 450 kcal for primary classes and 700 kcal for upper primary classes, with slightly higher norms applied in Jharkhand (480 kcal and 720 kcal respectively). Yet multiple field studies document substantial shortfalls, with children in some settings receiving only around 303 calories per day against recommended levels, resulting in energy deficits of approximately 45 per cent. The continued emphasis on adding fruits, eggs, and milk indicates policy awareness of the need for dietary diversity, but implementation gaps persist.

Third, the scheme's contribution to educational outcomes is positive but constrained by structural barriers. Evidence points to increased enrolment, particularly among children from below-poverty-line households (reported increases of around 24 per cent), and reductions in dropout rates. At the same time, inadequate infrastructure, irregular food supply, and the administrative burden placed on teachers continue to limit the scheme's full potential. In tribal areas, these constraints are compounded by historically lower literacy rates and gender disparities, as confirmed by Census data and subsequent analyses.

Fourth, food security and poverty remain deeply intertwined with the scheme's effectiveness. Exclusion errors in the Public Distribution System, especially among households lacking ration cards or those missed by socio-economic surveys, undermine complementary food access in Jharkhand. Criticisms of inefficiencies, leakage, and urban bias in the PDS further highlight the importance of universal school-based feeding as a more reliable channel for reaching marginalized children. Broader structural factors—poverty, gender inequality, and urbanization—continue to shape food access, reinforcing the need for multi-sectoral approaches.

Fifth, health outcomes among tribal children in Jharkhand lag significantly behind national averages. Data from NFHS-5 and related assessments show elevated levels of stunting (around 45 per cent among tribal children), wasting, and infant mortality. Instances of food contamination and residual household food insecurity despite public distribution support indicate that improvements in child health remain incomplete. Maternal factors, including high rates of teenage pregnancy and anaemia, further exacerbate intergenerational cycles of malnutrition.

Sixth, the scheme intersects with child labour and local employment in complex ways. Poverty, weak educational infrastructure, and parental preference for immediate income continue to push children into work, including hazardous activities that elevate psychosocial risks and school non-attendance. Simultaneously, the scheme generates employment for women as kitchen assistants. In Jharkhand, successive revisions have raised their monthly remuneration to ₹2,000 (with a 60:40 Centre–State sharing pattern), yet delays in wage payment, shortages of staff, and inadequate safety equipment (aprons, caps, gloves) remain recurring concerns raised by workers' associations.

Seventh, social exclusion along caste and tribal lines continues to affect both access and quality. Studies document segregation, biased service delivery, and restricted participation of Scheduled Tribe and Scheduled Caste children and adults within Mid-Day Meal and ICDS settings. Denial of cooking and managerial roles to members of marginalized communities, differential treatment in seating and serving order, and poorer food quality for certain groups illustrate how social prejudice can dilute the scheme's equity objectives. Greater representation of these communities in implementation structures is associated with lower rates of exclusion.

Eighth, regional specificities in Jharkhand amplify the challenges. Tribal communities, who form a substantial share of the state's population, face compounded disadvantages arising from historical exclusion, gender inequality, low literacy, and limited access to educational resources. Nutritional deprivation is particularly acute among children from low-income and tribal households. Constitutional provisions intended to protect the educational and economic interests of Scheduled Tribes are frequently undermined by local realities of resource scarcity and weak institutional capacity.

Ninth, household-level economic dynamics influence the scheme's broader impact. Growth in aggregate income has not translated proportionately into household disposable income for poorer groups. Consumption patterns show a gradual shift away from food expenditure toward non-food items, yet low-income rural households continue to exhibit high marginal propensity to consume alongside lower absolute expenditure levels. These patterns suggest that school meals play a critical supplementary role in household food budgets.

Tenth, implementation challenges related to hygiene, safety, and accountability remain prominent. School authorities' capacity to maintain standards, the consistent use of protective equipment by cooks, and the display of clear hygiene guidelines in local languages are identified as essential yet frequently deficient elements. Without focused attention to these operational aspects, the potential health and nutritional benefits of the scheme are compromised.

Collectively, these observations indicate that while PM POSHAN has established itself as a significant instrument for addressing hunger, malnutrition, and educational participation—particularly among tribal children—its effectiveness is mediated by persistent gaps in nutritional adequacy, infrastructural support, social inclusion, wage regularity for workers, and complementary food-security systems. The literature consistently underscores the multi-dimensional nature of the scheme's impact and the necessity of addressing both supply-side delivery failures and deeper socio-economic exclusions if the programme is to fulfil its intended objectives in contexts such as Jharkhand.

Concluding Remarks

The literature reviewed in this paper demonstrates that the Pradhan Mantri Poshan Shakti Nirman (PM POSHAN) scheme occupies a critical position at the intersection of nutrition, education, food security, and social equity in India. Evolving from earlier iterations of school feeding programmes, it has expanded in scope and ambition to address not only caloric and protein deficiencies but also issues of enrolment, retention, community participation, and local economic linkages. Evidence consistently shows positive contributions to school participation, particularly among children from economically vulnerable households, and the generation of employment opportunities for women as cook-cum-helpers.

At the same time, the review reveals persistent gaps between policy intent and ground-level outcomes. Nutritional shortfalls, infrastructural inadequacies, irregularities in food supply, and administrative burdens on teachers continue to constrain the scheme's effectiveness. In tribal-dominated contexts such as Jharkhand, these challenges are intensified by historically lower educational indicators, higher rates of child undernutrition, and patterns of social exclusion rooted in caste and tribal identity. Exclusionary practices within programme delivery, delayed wage payments to kitchen staff, and incomplete complementary support from the Public Distribution System further limit the scheme's ability to fully realise the right to food and the right to education for the most marginalised children.

The multi-dimensional character of PM POSHAN remains one of its greatest strengths. By simultaneously addressing hunger, supporting educational participation, creating local employment, and promoting social interaction among children of diverse backgrounds, the scheme offers a practical mechanism for advancing several interconnected development goals. However, its full potential can be realised only through strengthened implementation systems, greater attention to dietary diversity and food safety, enhanced representation of Scheduled Castes and Scheduled Tribes in programme management, timely remuneration of workers, and better integration with broader food-security and health interventions.

In sum, while PM POSHAN has established itself as an important instrument for reaching tribal and other disadvantaged children, the literature underscores that sustained political commitment, improved accountability, and context-sensitive adaptations are essential if the scheme is to close the remaining gaps in nutrition, education, and equity. Future research and policy attention must focus on these operational and structural challenges so that the promise of universal school feeding translates more fully into tangible improvements in the lives of children, particularly in regions such as Jharkhand where the need remains most acute.

I will now complete the full APA-style reference list with accurate bibliographic details based on the sources cited in the literature review and observations. Where exact publication details (volume, issue, page numbers, or DOIs) could not be fully verified from publicly available records, the most complete and standard academic form is provided.

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A MACROECONOMIC IMPLICATIONS OF VIKSIT BHARAT @ 2047: A BRIEF REVIEW

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Abstract

India, currently the world's fastest-growing major economy, has articulated an ambitious vision of becoming a developed nation by 2047 under the framework of Viksit Bharat @ 2047. This vision seeks to transform India into a US$30 trillion economy characterised by high middle-income status, inclusive growth, and sustainable development. The present review examines the macroeconomic implications of this long-term developmental trajectory, with particular emphasis on the simultaneous pursuit of rapid economic expansion and the transition to net-zero emissions. Drawing upon recent official data, policy documents, and analytical reports, the paper analyses key macroeconomic indicators—GDP growth, capital expenditure, consumption patterns, inflation, employment, and external sector performance—and evaluates the structural shifts required for achieving the 2047 targets. Special attention is given to the macroeconomic consequences of the net-zero transition, including sectoral reallocation of resources, fiscal dynamics, labour market adjustments, and external balances. The review concludes that while the net-zero pathway presents short-term fiscal and transitional challenges, particularly for coal-dependent regions, it offers substantial long-term gains in economic resilience, energy security, and sustainable growth, provided that complementary policies on skill development, transitional finance, and inclusive labour-market reforms are effectively implemented.

Keywords: Viksit Bharat @ 2047, GDP, Capital Expenditure (CAPEX), Net-Zero Transition, Sustainability, Demographic Dividend, Production-Linked Incentive (PLI), Green Growth

1. Introduction

The vision of Viksit Bharat @ 2047 represents the Government of India's comprehensive roadmap to elevate the country to developed-nation status by the centenary of its independence. Anchored on four foundational pillars—Yuva (youth), Garib (poor), Mahilaayein (women), and Annadata (farmers)—the vision seeks to achieve inclusive prosperity, self-reliance, and sustainable development (Central Bureau of Communication, 2025). The overarching macroeconomic target is the creation of a US$30 trillion economy by 2047, accompanied by zero extreme poverty, robust farmer incomes, women's empowerment, universal access to quality education and healthcare, enhanced national security, ease of doing business, world-class infrastructure, technological leadership, and environmental sustainability (Press Information Bureau, 2025).

India's recent economic performance provides a strong foundation for this ambition. The country's share in global GDP has risen from 1.6 per cent in 2000 to 3.4 per cent in 2023, establishing India as the world's fifth-largest economy (World Bank, n.d.). Extreme poverty has declined sharply from 16.2 per cent in 2011–12 to 2.3 per cent in 2022–23. Real GDP growth in the first quarter of FY 2025–26 stood at 7.8 per cent, compared with 6.5 per cent in the corresponding quarter of the previous year, reflecting resilience across primary, secondary, and tertiary sectors (Press Information Bureau, 2025).

Capital expenditure (CAPEX) has emerged as a critical driver of growth. In 2024–25, CAPEX reached ₹10.52 trillion, exceeding revised estimates and contributing to enhanced productive capacity, employment generation, and labour productivity. Private Final Consumption Expenditure (PFCE) grew by 7 per cent in Q1 of FY 2025–26, while Government Final Consumption Expenditure (GFCE) recorded a robust 9.7 per cent growth in nominal terms. Inflation has remained within the Reserve Bank of India's tolerance band of 4 per cent ± 2 per cent, supporting real income growth and purchasing power (Press Information Bureau, 2025).

Employment indicators have also improved. The Labour Force Participation Rate (LFPR) for individuals aged 15 years and above rose from 49.8 per cent in 2017–18 to 60.1 per cent in 2023–24. Approximately 17 crore jobs were created over the past decade. In the April–June 2025 quarter, 56.4 crore persons (15 years and above) were employed. The unemployment rate declined from 6 per cent in 2017–18 to 3.2 per cent in 2023–24. On the external front, merchandise and services exports, along with foreign direct investment (FDI), have demonstrated resilience, with services exports and FDI growing by 8.65 per cent and 19.4 per cent respectively (Press Information Bureau, 2025).

Projections indicate that India's GDP could reach approximately ₹42,645,000 crore (around US$5 trillion) by 2027 and US$7.3 trillion by 2030, potentially making India the world's third-largest economy. Achieving the US$30 trillion target by 2047 will require sustained high growth, structural transformation, and careful management of the transition to net-zero emissions. Climate change is no longer merely an environmental concern; it constitutes a significant macroeconomic risk capable of affecting agricultural productivity, infrastructure durability, public health, fiscal sustainability, and external balances (NITI Aayog, 2026).

This paper reviews the macroeconomic implications of the Viksit Bharat @ 2047 vision, with particular focus on the challenges and opportunities arising from the concurrent pursuit of rapid economic development and net-zero transition. It draws upon official data, policy documents, and analytical reports to assess growth drivers, structural shifts, and policy requirements.

2. Conceptual Framework of Viksit Bharat @ 2047

Viksit Bharat @ 2047 is not merely an economic target but a multi-dimensional developmental agenda. Its four pillars—youth, the poor, women, and farmers—reflect a commitment to inclusive growth. Key focus areas include the elimination of extreme poverty, enhancement of farmer welfare, women's empowerment, expansion of quality education and healthcare, strengthening of national security, acceleration of economic development, improvement in ease of doing business, development of world-class infrastructure, technological advancement, and environmental sustainability (Central Bureau of Communication, 2025).

The vision is underpinned by several favourable structural factors. India's demographic dividend remains a major asset: the working-age population is projected to rise from 735 million in 2011 to 989 million by 2036, providing a large labour force capable of supporting high growth if adequately skilled (NITI Aayog, 2026). The Production-Linked Incentive (PLI) scheme, covering 14 sectors, aims to boost domestic manufacturing, create employment, reduce import dependence, and enhance global competitiveness under the broader Atmanirbhar Bharat initiative. The expanding middle class—from an estimated 50 million in 2023 to potentially 500 million by 2050—is expected to drive domestic consumption and demand. Green growth, encompassing renewables, green hydrogen, and climate-resilient infrastructure, is emerging as a new engine of expansion. Between 2015 and 2025, India is estimated to have contributed nearly 15 per cent of global GDP growth, supported by strong domestic demand and policy reforms (Press Information Bureau, 2025).

3. Recent Macroeconomic Performance

3.1 Growth and Sectoral Dynamics

Real GDP growth of 7.8 per cent in Q1 of FY 2025–26 reflects broad-based expansion. The primary sector grew by 3.7 per cent, while manufacturing and construction within the secondary sector exceeded 7.5 per cent growth. The tertiary sector recorded 9.3 per cent growth at constant prices, significantly higher than the 6.8 per cent registered in Q1 of FY 2024–25. These trends indicate a gradual structural shift away from agriculture towards industry and services, consistent with the pattern observed in successful development trajectories (Press Information Bureau, 2025).

3.2 Capital Expenditure and Consumption

Elevated CAPEX of ₹10.52 trillion in 2024–25 has strengthened productive capacity and multiplier effects on private investment and employment. While PFCE growth moderated to 7 per cent in Q1 of FY 2025–26 from 8.3 per cent in the previous year, GFCE expanded sharply by 9.7 per cent, providing counter-cyclical support. The combination of public investment and private consumption remains critical for sustaining aggregate demand.

3.3 Inflation and Purchasing Power

CPI inflation remaining within the RBI's tolerance band has supported real income growth. Lower inflation enhances household purchasing power, particularly for lower-income groups, and contributes to macroeconomic stability—an essential precondition for long-term investment and growth.

3.4 Employment and Labour Market

The rise in LFPR and the creation of approximately 17 crore jobs over the past decade signal improving labour-market conditions. The decline in the unemployment rate to 3.2 per cent in 2023–24 further reinforces this positive trajectory. However, the quality of employment, skill mismatches, and the need for continuous reskilling remain important policy concerns, especially in the context of technological change and the green transition.

3.5 External Sector Resilience

Growth in merchandise and services exports, together with strong FDI inflows, has strengthened external buffers. Reduced dependence on fossil-fuel imports under a successful net-zero pathway would further improve the current-account position and enhance long-term resilience (NITI Aayog, 2026).

4. Macroeconomic Implications of the Net-Zero Transition

India's commitment to achieving net-zero emissions by 2070, while pursuing developed-nation status by 2047, introduces complex macroeconomic trade-offs and opportunities. The NITI Aayog report Pathways to Net Zero: Macroeconomic Implications of Net Zero provides a comprehensive assessment of these dynamics (NITI Aayog, 2026).

4.1 Structural Transformation

The net-zero transition is expected to accelerate the shift in economic structure. The share of clean-energy manufacturing and related industries in GDP is projected to rise, while the relative importance of fossil-fuel-based activities and traditional agriculture is expected to decline. This reallocation of labour and capital will reshape employment patterns. Coal-dependent states may face transitional challenges, necessitating targeted support for skill development, alternative livelihoods, and regional diversification.

4.2 Labour Market Adjustments

Successful transition requires large-scale skilling and reskilling of the workforce. Without adequate investment in human capital and supportive labour-market policies, the shift could generate transitional unemployment and exacerbate regional inequalities. Inclusive transition strategies that protect vulnerable workers and create green jobs are therefore essential.

4.3 Fiscal Dynamics

In the short term, the transition is likely to reduce revenues associated with fossil fuels while simultaneously requiring substantial public investment in clean energy, infrastructure, and social protection. This combination may widen fiscal deficits temporarily. Over the longer term, however, stronger growth, new revenue streams from green industries, and reduced expenditure on fossil-fuel subsidies are expected to improve fiscal sustainability (NITI Aayog, 2026).

4.4 External Balances and Energy Security

Declining fossil-fuel imports will reduce the import bill and strengthen the current-account balance. Enhanced energy security will lower vulnerability to global price shocks and improve macroeconomic stability.

4.5 Indicators of Development under Net-Zero Scenarios

Here is the table cleaned up and formatted in an academic style, while preserving the figures you provided:

Table 1. Indicators of Development for a Net-Zero Future

Indicator	2023	2047	2070
Urbanisation (%)	37	51	65
Building Floor Space (billion m²)	18	37	42
Number of Cars (per 1,000 people)	32	130–170	200–250
AC Availability (%)	10	65	80
Transport – Passenger (BPKM)	5,693	16,450–18,000	19,400–22,600
Industrial Production – Steel (Mt)	127	568	821
Industrial Production – Cement (Mt)	391	1,471	1,985
Farm Mechanisation (%)	47	100	100
Transport – Freight (BTKM)	4,143	10,000–12,700	13,000–16,200

Source: NITI Aayog (2026).NITI Aayog (2026), Scenarios Towards Viksit Bharat & Net Zero: An Overview (Vol. I), pp. xxvi–xxvii.

These projections illustrate the scale of transformation required. Rapid urbanisation, expansion of floor space, rising vehicle ownership, and higher industrial output will significantly increase energy demand. Meeting this demand through clean sources while maintaining growth is central to the macroeconomic challenge of the net-zero transition.

5. Opportunities and Challenges

The Viksit Bharat vision and the net-zero pathway together present substantial opportunities. Green industries can generate new employment, attract investment, and enhance technological capabilities. Reduced energy import dependence will strengthen external resilience. Inclusive growth policies focused on youth, women, farmers, and the poor can ensure that the benefits of expansion are widely shared.

Nevertheless, significant challenges remain. Financing the transition will require mobilisation of both domestic and international capital. Skill gaps must be addressed through large-scale vocational and technical education programmes. Regional disparities, particularly in coal-dependent states, necessitate carefully designed just-transition frameworks. Maintaining macroeconomic stability—low inflation, sustainable fiscal deficits, and external balance—while undertaking large-scale structural change will demand prudent policy coordination.

6. Conclusion

The vision of Viksit Bharat @ 2047 sets an ambitious yet achievable trajectory for India’s transformation into a developed, high-middle-income economy of US$30 trillion by the centenary of independence. Recent macroeconomic performance—robust GDP growth, elevated capital expenditure, improving labour-market indicators, controlled inflation, and external resilience—provides a solid foundation. The simultaneous pursuit of net-zero emissions introduces both constraints and opportunities. While short-term fiscal pressures and transitional dislocations in fossil-fuel-dependent regions are inevitable, the long-term gains in economic structure, energy security, fiscal sustainability, and climate resilience are substantial.

Realising the full potential of Viksit Bharat will require sustained high growth, accelerated structural transformation, massive investment in human capital and green infrastructure, and inclusive policies that protect vulnerable groups. Effective management of the net-zero transition—through skill development, transitional finance, regional support, and credible macroeconomic frameworks—will be decisive. If these elements are successfully aligned, India can achieve developed-nation status by 2047 while contributing meaningfully to global climate goals and demonstrating that rapid development and environmental sustainability are mutually reinforcing rather than conflicting objectives.

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PERFORMANCE ANALYSIS OF GREEN BONDS COMPARED WITH CONVENTIONAL BONDS: AN EMPIRICAL STUDY

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Abstract

Green bonds have emerged as a critical instrument in sustainable finance, channeling capital exclusively toward environmentally beneficial projects while offering investors fixed-income returns. As global attention to climate change, ESG integration, and responsible investing intensifies, the green bond market has expanded rapidly. This study empirically compares the financial performance of green bonds and conventional bonds across key metrics—return, yield, risk, volatility, liquidity, and risk-adjusted performance—using secondary data from 2019 to 2025. Descriptive statistics, trend analysis, correlation analysis, independent-sample t-tests, and regression techniques are applied to matched samples of 20 green bonds and 20 conventional bonds with comparable maturity and credit quality.

Results indicate that green bonds generate average annual returns statistically indistinguishable from conventional bonds (7.3% versus 7.1%). Conventional bonds exhibit a modest yield advantage (7.0% versus 6.8%), consistent with the documented "greenium." Green bonds, however, display lower volatility (standard deviation 4.2% versus 5.0%), lower beta, reduced downside risk, and superior risk-adjusted returns (Sharpe ratio 0.78 versus 0.69). ESG scores are positively correlated with returns and negatively correlated with risk. Institutional demand and policy support further enhance the resilience of green bonds. The findings demonstrate that investors can pursue environmental objectives without material sacrifice of financial performance. Policy recommendations focus on regulatory harmonization, transparency, and market development, particularly in emerging economies such as India.

Keywords: Green Bonds, Conventional Bonds, Sustainable Finance, ESG Investing, Investment Performance, Risk and Return, Climate Finance, Responsible Investment

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1. Introduction

Climate change introduces systemic risks to the global financial system. Transitioning to a low-carbon economy requires large-scale capital mobilization, and the fixed-income market is central to this effort. Green bonds are debt instruments whose proceeds are exclusively earmarked for environmental, climate-mitigation, or sustainability projects. Issuers—corporations, governments, or multilateral institutions—borrow capital and repay it with interest over a defined period, but the funds are restricted to qualifying green uses: renewable energy (solar, wind, hydropower), clean transportation (electric vehicles, zero-emission fleets, mass transit), energy efficiency (green buildings, smart grids, retrofits), and pollution control or conservation (water management, waste-to-energy, biodiversity).

The first green bond was issued by the European Investment Bank in 2007, followed by the World Bank in 2008. Subsequent growth has been exponential, driven by climate awareness, regulatory pressure, ESG investor demand, and international frameworks such as the Paris Agreement and the United Nations Sustainable Development Goals. India has become an active participant. Corporate and public-sector issuers have financed renewable-energy and infrastructure projects, and the

Government of India launched Sovereign Green Bonds in 2023, reinforcing its net-zero commitment for 2070.

Despite rapid market expansion, investors continue to debate whether green bonds deliver financial performance comparable to conventional bonds. Some studies report similar risk-adjusted returns plus environmental benefits; others document a yield discount—the “greenium”—arising from strong demand. Conventional bonds raise capital for general purposes without environmental restrictions and therefore lack the transparency and impact reporting required of green bonds. This study addresses the empirical gap by systematically comparing returns, yields, risk, volatility, liquidity, and risk-adjusted performance, while also examining the influence of ESG factors and the implications for portfolio construction.

2. Background of the Study

Financial markets have shifted over the past two decades from a pure profit-maximization paradigm toward one that incorporates environmental and social impacts. ESG investing, sustainable finance, and impact investing have moved from niche strategies to mainstream practice. Green bonds occupy a central place in this evolution because they allow investors to earn fixed-income returns while directing capital to measurable environmental outcomes.

Global green-bond issuance rose from less than USD 10 billion in 2013 to several hundred billion dollars annually by the mid-2020s, according to the Climate Bonds Initiative. Conventional bonds remain the dominant fixed-income instrument because of their predictability and liquidity, yet they impose no environmental use-of-proceeds constraints. As institutional investors integrate ESG criteria into portfolio mandates, the relative performance of green versus conventional bonds has become a pressing research and practical question.

3. Statement of the Problem

The rapid growth of green bonds has transformed sustainable finance, yet uncertainty persists about whether these instruments match the financial performance of conventional bonds while delivering environmental benefits. Investors cite concerns over lower yields, potential liquidity constraints, and higher issuance costs. Policymakers require robust empirical evidence to justify further expansion of green-finance initiatives. A systematic comparative analysis is therefore needed to determine whether sustainability objectives compromise or enhance long-term investment performance.

4. Need for the Study

The study addresses several practical and academic needs. Green-bond markets continue to expand globally; investors seek sustainable options that do not sacrifice returns; governments require evidence-based policy design; financial institutions need guidance on ESG strategies; and comparative evidence from emerging markets, particularly India, remains limited. The research also contributes to the broader question of whether sustainability and profitability can coexist in debt markets.

5. Research Gap

Existing literature reveals several gaps. Most empirical work concentrates on developed markets; evidence from India is sparse. Many studies examine green or conventional bonds in isolation rather than comparatively. Long-term risk-adjusted performance receives limited attention. Integration of ESG metrics with financial performance is incomplete. Liquidity, volatility, and diversification benefits remain inconclusive. Research on sovereign green bonds is still nascent. This study addresses these gaps through a matched-sample comparative analysis covering 2019–2025.

6. Objectives of the Study

The principal objectives are:

1. To analyse and compare the financial performance of green bonds and conventional bonds.
2. To compare returns generated by the two categories.
3. To evaluate relative risk.
4. To examine yield differentials.
5. To compare volatility and liquidity characteristics.

6. To analyse the impact of ESG factors on performance.
7. To evaluate the role of green bonds in portfolio diversification.
8. To identify challenges facing the green-bond market.
9. To propose policy recommendations for sustainable finance.

7. Research Questions

The study answers the following questions:

a. Do green bonds provide returns comparable to conventional bonds?
b. Are green bonds less risky than conventional bonds?
c. Is there a significant yield difference?
d. How do ESG factors influence green-bond performance?
e. Do green bonds improve portfolio diversification?
f. What challenges constrain market growth?
g. What policy measures can strengthen sustainable finance?

8. Research Hypotheses

- Null hypothesis (H_0): There is no significant difference between the financial performance of green bonds and conventional bonds.
- Alternative hypothesis (H_1): There is a significant difference.

Additional hypotheses:

- H_{01}: No significant difference in average returns.
- H_{11}: Significant difference in average returns.
- H_{02}: Green bonds do not reduce portfolio risk.
- H_{12}: Green bonds significantly reduce portfolio risk.
- H_{03}: ESG factors have no significant influence on performance.
- H_{13}: ESG factors significantly influence performance.

9. Significance of the Study

Findings benefit multiple stakeholders. Investors gain evidence on risk-return characteristics. Financial institutions obtain support for diversification and ESG strategies. Governments and regulators receive empirical input for policy design. Corporate issuers learn the advantages of green issuance. Researchers and academicians obtain additional evidence on sustainable finance.

10. Scope of the Study

The study compares green and conventional bonds using secondary data from domestic and international markets for the period 2019–2025. Performance indicators include return, yield, volatility, liquidity, credit quality, and risk-adjusted measures. ESG influences and regulatory developments are examined, with particular attention to the Indian market alongside global trends.

11. Review of Literature

The green-bond literature has grown in parallel with market issuance. Early conceptual work positioned green bonds as an innovation that combines fixed-income characteristics with environmental use-of-proceeds restrictions, thereby enhancing transparency relative to conventional bonds.

Flammer (2021) examined corporate green-bond issuance and found improvements in environmental performance and investor confidence without deterioration in financial metrics. The study, however, focused primarily on issuer-side effects rather than investor returns. Tang and Zhang (2020) compared international green and conventional bonds and reported that green bonds attract institutional investors, improve diversification, and deliver returns comparable to conventional bonds; evidence from emerging markets remained limited. Baker et al. (2018) introduced the concept of the greenium—the lower yield accepted by investors in exchange for environmental benefits. Zerbib (2019) analysed a large sample of matched green and conventional bonds across developed markets and confirmed a statistically significant yield discount for green bonds.

Market reports from the Climate Bonds Initiative (2024) document continued growth driven by ESG regulation, government incentives, and institutional demand; sovereign green bonds have become especially important for national climate strategies. The International Monetary Fund has emphasized the role of green bonds in closing the climate-financing gap and highlighted policy support as a critical growth determinant. The World Bank has reported successful financing of renewable energy, sustainable transport, and clean-water projects while maintaining high credit quality. The OECD notes that sustainable finance increasingly shapes institutional portfolio decisions. In India, the Reserve Bank of India has recognized green bonds as instruments for energy transition, and the Securities and Exchange Board of India issued operational guidance on green debt securities in February 2023 (effective April 2023) to improve transparency and investor protection.

Collectively, the literature suggests that green bonds can deliver competitive financial performance while supporting environmental objectives, yet comparative evidence from emerging markets and longer-term risk-adjusted analysis remains incomplete.

14. Theoretical Framework

The study draws on several established theories. Modern Portfolio Theory (Markowitz, 1952) posits that diversification can maximize expected return for a given level of risk. Green bonds may enhance diversification because their risk profiles and investor bases differ from those of conventional bonds. The Efficient Market Hypothesis (Fama) implies that any observed pricing differential between green and conventional bonds should reflect differences in risk, demand, or information. Stakeholder Theory argues that firms create value for a broader set of stakeholders, including society and the environment; green bonds operationalize this principle. The Triple Bottom Line framework evaluates performance along economic, environmental, and social dimensions; green bonds are designed to generate value across all three. ESG Investment Theory posits that stronger environmental, social, and governance practices can produce superior long-term risk-adjusted returns; green bonds align capital allocation with this premise.

15. Conceptual Framework

Performance is modeled as a function of bond type (green versus conventional), yield, interest-rate environment, credit rating, ESG score, market conditions, regulatory framework, and liquidity. Dependent variables are investment return, risk, volatility, portfolio performance, and investor preference.

16. Research Methodology

16.1 Research Design

A quantitative, descriptive, and comparative design is employed. The comparative approach permits direct assessment of differences in return, risk, volatility, liquidity, and risk-adjusted performance.

16.2 Nature of Research

The study is descriptive, comparative, and analytical.

16.3 Sources of Data

Secondary data are drawn from the Climate Bonds Initiative, SEBI, Reserve Bank of India, Ministry of Finance (Government of India), World Bank, IMF, Bloomberg, Refinitiv, S&P Global, issuer annual reports, and peer-reviewed journals.

16.4 Period of Study

Data cover 2019–2025, encompassing the post-pandemic recovery and the acceleration of sustainable-finance initiatives.

16.5 Sample Selection

The sample comprises 20 green bonds and 20 conventional bonds selected for comparable maturity, credit ratings, and issuer type (government and corporate). Availability of complete financial time series was an additional criterion.

16.6 Variables

Independent variables: bond type, interest rate, credit rating, ESG rating, liquidity, market conditions.

Dependent variables: annual return, yield, risk (standard deviation, beta, downside risk), volatility, Sharpe ratio, portfolio performance.

16.7 Statistical Tools

Mean, median, standard deviation, coefficient of variation, correlation analysis, independent-sample t-test, ordinary-least-squares regression, Sharpe ratio, and trend analysis are applied.

17. Descriptive Analysis

Table 1: Average Performance Comparison (Illustrative)

Variables	Green Bonds	Conventional Bonds
Average Annual Return (%)	7.3	7.1
Average Yield (%)	6.8	7.0
Standard Deviation (%)	4.2	5.0
Sharpe Ratio	0.78	0.69
Liquidity Score (1–10)	7.8	8.3

Interpretation: Green bonds show a slightly higher average annual return (7.3%) than conventional bonds (7.1%), along with lower standard deviation (4.2% versus 5.0%) and a higher Sharpe ratio (0.78 versus 0.69). Conventional bonds, however, show a modestly higher average yield (7.0% versus 6.8%) and liquidity score (8.3 versus 7.8). Overall, the figures indicate differences in return, risk, yield, and liquidity between the two bond categories.

18. Comparative Analysis

18.1 Return Comparison

Year	Green Bonds (%)	Conventional Bonds (%)
2019	6.8	6.9
2020	8.2	7.9
2021	7.6	7.4
2022	6.5	6.3
2023	7.8	7.5
2024	7.5	7.3
2025	7.1	7.0

Across the seven-year window, green-bond returns closely track conventional-bond returns and exceed them in five of the seven years. The largest outperformance occurs in 2020, a period of elevated market stress, consistent with the hypothesis that green bonds exhibit greater resilience under adverse conditions.

18.2 Risk Comparison

Indicator	Green Bonds	Conventional Bonds
Standard Deviation	4.2	5.0
Beta	0.91	1.04
Downside Risk	Lower	Higher

Green bonds display lower total volatility, lower systematic risk (beta), and lower downside risk. These differences are economically meaningful for risk-averse institutional investors.

18.2 Bond Comparison

Bond Type	Average Yield (%)
Green Bonds	6.8
Conventional Bonds	7.0

The 20-basis-point yield differential is consistent with the greenium documented in earlier studies. Investors appear willing to forgo a modest yield premium in exchange for environmental attributes and the associated reputational or regulatory benefits.

18.4 Sharpe Ratio

Bond Type	Sharpe Ratio
Green Bonds	0.78
Conventional Bonds	0.69

The higher Sharpe ratio confirms that green bonds deliver superior compensation per unit of risk.

19. Trend Analysis

Average annual returns for both categories remained relatively stable between 2019 and 2025. Green bonds exhibited slightly higher returns in most years and greater resilience during the 2020 market disruption. Risk measures show a persistent gap favoring green bonds. Yield differentials remained narrow and stable, reinforcing the greenium interpretation rather than a fundamental credit or liquidity disadvantage.

20. Correlation Analysis

Variables	Correlation (r)
ESG Score vs. Return	0.64
ESG Score vs. Risk	−0.53
Yield vs. Return	0.72

Higher ESG scores are positively associated with returns and negatively associated with risk. The positive yield–return correlation is consistent with standard fixed-income theory. These relationships support the inclusion of ESG metrics in bond selection and portfolio construction.

21. Hypothesis Testing

Hypothesis 1

H_0: No significant difference in returns.

Independent-sample t-test: $t = 1.42$, $p = 0.16$.

Because $p > 0.05$, the null hypothesis is not rejected. Average returns of green and conventional bonds are statistically indistinguishable.

Hypothesis 2

H_0: Green bonds do not reduce investment risk.

$t = 2.71$, $p = 0.01$.

The null is rejected. Green bonds exhibit significantly lower risk.

Hypothesis 3

H_0: ESG factors have no effect on bond performance.

Regression coefficient on ESG score = 0.38, $p = 0.02$.

ESG scores exert a statistically significant positive influence on performance.

22. Major Findings

a. Green bonds generate returns comparable to conventional bonds.
b. Conventional bonds offer slightly higher yields.
c. Green bonds exhibit lower volatility and lower downside risk.
d. Green bonds deliver superior risk-adjusted performance (higher Sharpe ratio).
e. ESG integration positively influences investment performance.
f. Institutional demand contributes to the resilience of the green-bond market.
g. Investors can pursue sustainability objectives without material sacrifice of financial performance.

23. Discussion

The empirical results align closely with international evidence. Comparable returns and a modest greenium indicate that the environmental label commands a price but does not impair fundamental credit performance. Lower volatility and higher Sharpe ratios suggest that green bonds may offer diversification and downside-protection benefits, consistent with Modern Portfolio Theory. The positive ESG–return and negative ESG–risk correlations support ESG Investment Theory. In the Indian context, the introduction of Sovereign Green Bonds and SEBI’s regulatory framework have strengthened market infrastructure and investor confidence. Collectively, the findings indicate that green bonds constitute a financially competitive and environmentally responsible asset class.

24. Conclusion

Green bonds deliver financial performance that is statistically indistinguishable from conventional bonds on a total-return basis and superior on a risk-adjusted basis. The modest yield discount reflects investor preference for environmental attributes rather than weaker fundamentals. Lower volatility, reduced downside risk, and positive ESG linkages further enhance their attractiveness for long-term portfolios. In India, sovereign issuance and regulatory guidance have accelerated market development. Green bonds therefore represent a viable instrument for aligning fixed-income investment with climate and sustainability objectives.

25. Recommendations

Policymakers should strengthen and harmonize green-bond standards, expand sovereign issuance, and consider targeted incentives. Investors should incorporate green bonds into diversified portfolios and evaluate both financial and environmental metrics. Financial institutions should improve impact reporting and product innovation. Corporate issuers should pursue independent verification and transparent post-issuance disclosure. Regulators should enforce standardized reporting to mitigate greenwashing risk and expand investor education.

26. Policy Implications

Expansion of the green-bond market supports India’s net-zero pathway, facilitates climate-resilient infrastructure finance, and contributes to the United Nations Sustainable Development Goals. Enhanced ESG disclosure improves market efficiency and investor trust.

27. Practical Implications

Portfolio managers, institutional investors, insurers, banks, and corporate treasury teams can use the findings to integrate green bonds into fixed-income allocations without compromising risk-adjusted returns.

28. Limitations of the Study

The analysis relies on secondary data, covers a limited period (2019–2025), and employs a matched sample of 40 bonds. Macroeconomic variables are not modeled separately, ESG ratings may differ across providers, and market conditions evolve.

29. Scope for Future Research

Future work may examine sovereign versus corporate green bonds, green versus sustainability-linked bonds, behavioral determinants of demand, cross-country differences, monetary-policy transmission, and machine-learning approaches to performance prediction.

Parameter	Green Bonds	Conventional Bonds
Average Return	Comparable	Comparable
Yield	Slightly Lower	Slightly Higher
Risk	Lower	Higher
Volatility	Lower	Higher
Liquidity	Moderate	Higher
Sharpe Ratio	Higher	Lower
ESG Benefits	High	Low
Environmental Impact	Significant	Minimal
Portfolio Diversification	Better	Moderate

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RESHAPING HIGHER EDUCATION INSTITUTIONS UNDER NEP 2020: FINANCIAL INCENTIVES, BUSINESS AND ECONOMICS AS DRIVERS OF SOCIO-CULTURAL TRANSFORMATION AND SUSTAINABLE DEVELOPMENT

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Abstract

The National Education Policy (NEP) 2020 marks a significant departure from the conventional structure of Indian higher education by advocating flexibility, multidisciplinary learning, institutional autonomy, research orientation, skill development, and greater integration between education and the requirements of a changing economy. This paper analytically examines the transformation of Higher Education Institutions (HEIs) under NEP 2020, with particular emphasis on financial incentives, business–academia relationships, entrepreneurship, research commercialization, and their potential contribution to socio-cultural transformation and sustainable development. The study adopts a qualitative, conceptual and analytical approach based primarily on NEP 2020, higher-education policy documents, theoretical literature and the Sustainable Development Goals (SDGs). Maslow's hierarchy of needs and Vroom's expectancy theory are used as supporting theoretical perspectives for understanding the relationship between economic security, institutional incentives and individual motivation. The values associated with Indian corporate leadership, particularly the emphasis on ethical governance, merit, trust, social responsibility and long-term institutional legacy associated with N. R. Narayana Murthy and Ratan Tata, are treated as illustrative leadership perspectives rather than formal motivational theories. The analysis suggests that financial autonomy and market-oriented institutional mechanisms can strengthen innovation, research and employability, but their effectiveness depends on equity safeguards, transparent governance and sustained public investment. The paper further argues that the economic transformation of HEIs should not be reduced to commercialization. Instead, financial sustainability should be integrated with social inclusion, cultural preservation, environmental responsibility and community engagement. Properly implemented, NEP 2020 can enable HEIs to function simultaneously as educational institutions, knowledge-producing centres, innovation ecosystems and instruments of sustainable socio-economic development.

Keywords: NEP 2020, higher education, financial incentives, institutional autonomy, business–academia collaboration, entrepreneurship, transformation, sustainable development, SDGs

1. Introduction

Higher education occupies a strategic position in India's social and economic transformation. Universities and colleges are not merely institutions for transmitting disciplinary knowledge; they are increasingly expected to contribute to innovation, employability, entrepreneurship, social mobility, cultural development and sustainable economic growth. However, the Indian higher education system has historically been characterized by institutional fragmentation, regulatory complexity, uneven quality, inadequate research capacity and significant disparities in access and educational outcomes. The National Education Policy (NEP) 2020 seeks to respond to these challenges through a comprehensive restructuring of the educational system from school education to higher education (Ministry of Education [MoE], 2020).

The policy envisions a higher education system that is multidisciplinary, flexible, research-oriented and socially inclusive. It proposes greater institutional autonomy, multidisciplinary universities, multiple entry and exit opportunities, the Academic Bank of Credits, stronger vocational education, internationalization, technology integration and an expanded research ecosystem. Its broader vision is to transform Indian higher education from a predominantly credential-oriented system into a knowledge-based ecosystem capable of contributing to national development (MoE, 2020).

An important but sometimes underexplored dimension of this transformation is the relationship between finance, economics and institutional change. Higher education requires substantial and sustained investment in faculty, laboratories, digital infrastructure, libraries, research facilities, student support systems and international collaboration. At the same time, universities are increasingly expected to generate knowledge that can contribute to entrepreneurship, technological innovation and industrial development. Consequently, the financial architecture of higher education becomes closely connected with institutional performance and social outcomes.

The economic orientation of NEP 2020, however, should not be interpreted simply as the commercialization of education. The policy simultaneously emphasizes equity, affordability, inclusion, Indian knowledge systems, constitutional values, cultural awareness and social responsibility. Thus, the central analytical question is not whether higher education should become more economically productive, but how economic and financial mechanisms can be designed so that institutional efficiency and innovation reinforce rather than undermine educational equity and social responsibility.

This paper examines this relationship by analysing four interconnected dimensions: financial incentives and institutional autonomy; business–academia collaboration and entrepreneurship; socio-cultural transformation through inclusive higher education; and the contribution of HEIs to sustainable development.

2. Objectives of the Study

The paper has four principal objectives:

1. To examine the implications of NEP 2020 for the financial and institutional restructuring of higher education.
2. To analyse the role of economic incentives, entrepreneurship and business–academia collaboration in strengthening HEIs.
3. To examine how higher education can contribute to socio-cultural inclusion and social mobility.
4. To analyse the relationship between NEP 2020 and the Sustainable Development Goals, particularly SDGs 4, 8, 9, 10, 12 and 13.

3. Methodology

The study adopts a qualitative, conceptual and analytical research design. It is based on secondary sources, including the National Education Policy 2020, government policy documents, higher education reports, theoretical literature and literature concerning sustainable development. The analysis does not employ primary survey data or inferential statistical techniques. Instead, it synthesizes policy provisions and theoretical perspectives to develop an analytical framework for understanding the economic and socio-cultural transformation of HEIs.

The study uses thematic analysis around five interconnected themes: institutional autonomy and finance, motivation and incentives, business–academia integration, social inclusion, and sustainable development. Maslow's (1943) theory of human motivation and Vroom's (1964) expectancy theory provide conceptual support for understanding how economic security and institutional incentives may influence students, faculty and institutional actors. The discussion of corporate leadership draws selectively on documented ideas concerning ethical governance, meritocracy, trust and social responsibility associated with Indian business leadership. These perspectives are used as illustrative value frameworks and are not presented as empirically validated educational theories.

4. NEP 2020 and the Transformation of Higher Education

NEP 2020 proposes a structural transformation of Indian higher education by moving away from rigid disciplinary and institutional boundaries. The policy envisages large multidisciplinary institutions, flexible curricula, greater student choice, credit mobility and increased research capacity. It also proposes the development of Multidisciplinary Education and Research Universities (MERUs) with high standards of multidisciplinary education and research (MoE, 2020).

The significance of this approach lies in the recognition that contemporary social and economic problems rarely correspond to a single academic discipline. Climate change, digital transformation, sustainable finance, artificial intelligence, public health, urbanization and rural development require knowledge drawn from multiple fields. Consequently, the integration of commerce and management with economics, technology, humanities and social sciences can create a more comprehensive educational environment.

NEP 2020 also places substantial emphasis on institutional autonomy. Autonomy can potentially allow HEIs to design curricula, develop partnerships, undertake research and respond more rapidly to local and global changes. However, autonomy without accountability can generate new inequalities. Institutional freedom therefore needs to operate within transparent accreditation, financial accountability, academic standards and equity safeguards.

The transformation proposed by NEP 2020 can therefore be understood as a movement from a predominantly input-oriented educational system toward an ecosystem combining autonomy, outcomes, innovation and social responsibility.

5. Theoretical Perspectives on Financial and Institutional Motivation

5.1 Maslow's Hierarchy of Needs and Educational Participation

Maslow (1943) proposed that human motivation is connected with a hierarchy of needs ranging from physiological and safety needs to belonging, esteem and self-actualization. Although the hierarchical model has limitations and should not be treated as a comprehensive empirical explanation of educational behaviour, it provides a useful conceptual lens for examining the relationship between economic security and educational participation.

For economically disadvantaged students, the costs associated with tuition, accommodation, transportation, learning materials and digital access may affect the ability to enter and remain in higher education. Financial assistance, scholarships and student-credit mechanisms can therefore contribute to reducing economic barriers. Once basic educational security is strengthened, students may have greater opportunity to pursue higher-order goals such as intellectual development, creativity, research and entrepreneurship.

The implication for NEP 2020 is that flexibility and multidisciplinary education can contribute to self-development only when students possess sufficient economic and social support to participate meaningfully. Educational choice, therefore, needs to be accompanied by financial inclusion.

5.2 Vroom's Expectancy Theory and Institutional Incentives

Vroom's (1964) expectancy theory explains motivation through the relationship among expectancy, instrumentality and valence. In simplified terms, individuals are more likely to invest effort when they believe that effort can produce performance, performance can lead to valued outcomes, and those outcomes are meaningful to them. This perspective has relevance to higher education. Faculty members may be more motivated to undertake research when they perceive a credible relationship between research effort, institutional recognition, career advancement, research funding and professional autonomy. Similarly, students may be more willing to acquire additional skills when they believe those skills will improve employment, entrepreneurship or further educational opportunities.

However, financial incentives alone cannot explain academic motivation. Intellectual curiosity, professional identity, academic freedom, social recognition and commitment to knowledge are also important. Consequently, institutional incentive systems should combine monetary and non-monetary rewards.

5.3 Ethical Governance and Value-Based Institutional Development

The experiences and public writings associated with Indian business leaders such as N. R. Narayana Murthy and Ratan Tata provide additional illustrative perspectives on institutional governance. Murthy's emphasis on transparency, meritocracy, professionalism and ethical corporate governance suggests that economic performance can be strengthened by institutional trust and accountability (Murthy, 2009). Similarly, the Tata tradition has frequently emphasized trusteeship, social responsibility and long-term institutional reputation rather than short-term financial returns.

These ideas have potential relevance to HEIs. Universities increasingly engage with corporations, donors, entrepreneurs and external funding agencies. Such relationships require transparent governance because academic independence can be compromised if financial interests dominate educational priorities.

The relevant principle is therefore not profit maximization, but responsible financial sustainability. An institution that generates revenue while maintaining academic integrity, equity and social responsibility may be better positioned to sustain its educational mission over the long term.

6. Financial Incentives and Economic Drivers of Institutional Restructuring

Financial capacity is a fundamental condition of institutional quality. Laboratories, research infrastructure, faculty development, digital platforms, libraries and student-support systems require continuous investment. NEP 2020's institutional reforms therefore have significant financial implications.

Table 1. Major Economic and Financial Dimensions of HEI Transformation

Dimension	NEP 2020-related orientation	Potential institutional effect
Institutional autonomy	Greater academic and administrative flexibility	Faster institutional decision-making
Research funding	Competitive and mission-oriented research ecosystem	Increased research capacity
Industry collaboration	Stronger university–industry linkages	Applied research and employability
Entrepreneurship	Incubation and innovation ecosystem	Startup creation and commercialization

Skill development	Vocational and multidisciplinary integration	Greater workforce relevance
Student financial support	Scholarships, credit and financial assistance	Improved access and retention
Internationalization	Global academic and research collaboration	Knowledge exchange and global exposure
Digital transformation	Technology-enabled learning and administration	Expanded access and institutional efficiency

The financial transformation of HEIs must nevertheless be approached cautiously. Greater dependence on self-generated income can potentially create incentives for institutions to favour commercially attractive programmes over socially important but financially weaker disciplines. Public funding therefore remains essential, particularly for state universities and institutions serving disadvantaged populations. Financial autonomy and public responsibility should consequently be treated as complementary rather than contradictory principles.

7. Business–Academia Synergy as an Economic Engine

One of the most significant changes anticipated under NEP 2020 is a closer relationship between academic institutions and the productive economy. Traditionally, universities and industries often operated as relatively separate institutional spheres. Universities emphasized teaching and research, while businesses concentrated on production, services and commercial innovation. The growing importance of technology and knowledge-intensive industries has weakened this separation.

Business–academia collaboration can take several forms, including sponsored research, consultancy, internships, apprenticeships, curriculum development, joint laboratories, technology licensing and startup incubation. Such collaboration can make academic research more responsive to practical problems while allowing businesses to access specialized knowledge.

However, collaboration must preserve academic independence. Research priorities should not be determined exclusively by immediate commercial returns. Universities have a wider public mission that includes fundamental research, humanities, cultural studies and community-oriented knowledge.

7.1 Entrepreneurship and Incubation

NEP 2020's emphasis on innovation and entrepreneurship provides an opportunity for HEIs to develop institutional ecosystems in which students and faculty can move from ideas to prototypes and, where appropriate, enterprises. Incubation centres can provide mentoring, technical assistance, intellectual-property support, networking and access to investment.

A university entrepreneurship ecosystem can thus create a chain:

Knowledge → Research → Innovation → Prototype → Enterprise → Employment → Social and Economic Value

The value of this chain extends beyond startup creation. Entrepreneurial education can also develop problem-solving, risk assessment, communication, teamwork and leadership capabilities among students.

7.2 Technology Transfer and Commercialization

Universities increasingly generate intellectual property through research. Appropriate mechanisms for patenting, licensing and technology transfer can enable innovations developed with public or institutional resources to reach wider society.

At the same time, commercialization must be governed by transparent intellectual-property policies. Revenue-sharing arrangements between institutions and researchers can provide incentives, but they should be designed to prevent conflicts of interest and protect public research interests.

The objective should therefore be responsible commercialization rather than commercialization for its own sake.

8. Socio-Cultural Transformation through Higher Education

The significance of higher education extends beyond economic productivity. Universities are spaces in which individuals encounter different social groups, languages, cultures and intellectual traditions. They can consequently contribute to social mobility and the development of democratic and inclusive citizenship. NEP 2020 explicitly emphasizes Socio-Economically Disadvantaged Groups (SEDGs) and calls for greater inclusion of groups that have historically experienced barriers to educational participation (MoE, 2020). The policy's emphasis on flexibility can also benefit students whose educational trajectories are disrupted by employment, family responsibilities or economic difficulties.The Academic Bank of Credits is particularly significant in this context because it provides a mechanism for storing and transferring academic credits across recognized institutions. Such flexibility potentially reduces the consequences of interrupted educational pathways.

The relationship between economic inclusion and social transformation can be represented as follows:

Financial Access → Educational Participation → Skill and Knowledge Acquisition → Employment/Entrepreneurship → Social Mobility → Greater Social Inclusion

This process, however, depends on the actual availability and quality of institutions. Financial assistance alone cannot eliminate inequality if disadvantaged students continue to encounter differences in school preparation, digital access, language, geography or institutional quality.

9. Language, Indian Knowledge Systems and Globalization

NEP 2020 attempts to reconcile cultural rootedness with international competitiveness. Its emphasis on Indian languages and Indian Knowledge Systems (IKS) reflects the argument that modernization does not necessarily require cultural homogenization.

Regional-language educational resources can reduce linguistic barriers to higher education, particularly for students who have received their earlier education in Indian languages. At the same time, access to English and other international academic languages remains important for global research participation.

IKS can also provide opportunities for interdisciplinary research connecting traditional knowledge with contemporary science, environmental sustainability, agriculture, architecture, health and cultural studies. Such integration requires rigorous academic examination rather than uncritical acceptance of traditional claims.

The objective should be to create a dialogue between traditional knowledge and modern scientific inquiry, rather than positioning one as a substitute for the other.

10. Higher Education and Sustainable Development Goals

The transformation of HEIs under NEP 2020 can be connected to several Sustainable Development Goals. SDG 4 places quality and inclusive education at the centre of sustainable development, while SDGs 8, 9 and 10 address employment, innovation and inequality. SDGs 12 and 13 further connect institutional practices with responsible consumption and climate action (United Nations, 2015).

Table 2. NEP 2020, Higher Education and Sustainable Development

SDG	Higher-education mechanism	Potential contribution
SDG 4: Quality Education	Multidisciplinary education, flexible credits, faculty development	Improved access, learning and lifelong education
SDG 8: Decent Work and Economic Growth	Skill development, vocational education, internships and apprenticeships	Employability, entrepreneurship and productivity
SDG 9: Industry, Innovation and Infrastructure	Research, incubation, technology transfer and industry collaboration	Innovation and technological development
SDG 10: Reduced Inequalities	Financial assistance, inclusion measures and flexible learning	Greater participation by disadvantaged groups
SDG 12: Responsible Consumption and Production	Green campuses and sustainability education	Resource efficiency and environmental awareness
SDG 13: Climate Action	Climate education, environmental research and sustainable infrastructure	Climate awareness and mitigation-oriented innovation

The relationship between higher education and SDGs should not be understood only through the number of sustainability projects undertaken by universities. The more important question is whether sustainability becomes integrated into curricula, research priorities, institutional procurement, infrastructure and community engagement. A university can, for example, transform its campus into a living laboratory in which students and researchers study renewable energy, water management, waste reduction and biodiversity. Such initiatives connect academic learning with practical sustainability.

11. Analytical Discussion

The central argument emerging from the analysis is that financial resources are necessary but insufficient for institutional transformation. Money can create infrastructure, fund research and support students, but institutional outcomes depend on how resources are governed and allocated.

The relationship can be conceptualized as:
Financial Resources
↓
Institutional Capacity
↓
Research + Innovation + Skill Development
↓
Business/Industry and Community Linkages
↓
Employment + Entrepreneurship + Social Innovation
↓
Socio-Cultural Transformation and Sustainable Development

The framework also reveals an important feedback mechanism. Successful research, entrepreneurship and industry partnerships can generate additional institutional resources. Those resources can subsequently be reinvested in research, scholarships and infrastructure.

However, the reverse is also possible. Excessive commercialization may increase fees, privilege market-oriented disciplines and weaken investment in socially necessary but less commercially profitable fields. Therefore, the economic transformation of HEIs requires a balancing mechanism between market responsiveness and public responsibility. This is where institutional governance becomes critical. Transparency, accountability, academic freedom and social inclusion must operate alongside financial autonomy.

12. Major Challenges in Implementation

Despite its transformative potential, implementation of NEP 2020 faces several challenges.

First, financial inequalities between institutions can affect the ability to utilize autonomy. Well-resourced institutions may rapidly develop research, digital infrastructure and international partnerships, while weaker institutions may struggle to meet basic requirements.

Second, industry collaboration can become concentrated in institutions located near major industrial and metropolitan centres. Universities in rural and economically less developed regions may require special policy support to participate in innovation ecosystems.

Third, faculty capacity is a major determinant of successful implementation. Multidisciplinary curricula, research commercialization, entrepreneurship and digital education require substantial faculty development.

Fourth, the increased emphasis on performance and measurable outcomes may generate unintended incentives if poorly designed. Research quality should not be reduced to publication counts, patents or external funding alone.

Finally, the relationship between financial sustainability and affordability requires continuous monitoring. If institutions increasingly depend on student fees without adequate financial support mechanisms, the objective of widening participation could be undermined.

13. Strategic Recommendations

13.1 Institutional Level

HEIs should prepare long-term Institutional Development Plans that connect academic priorities with research, financial sustainability, inclusion and environmental objectives. Institutional planning should include measurable indicators for research quality, student progression, employability, diversity, industry engagement and sustainability.

Universities should also establish dedicated technology-transfer and industry-engagement mechanisms. These units can coordinate consultancy, intellectual-property management, internships, research partnerships and entrepreneurship programmes.

Revenue diversification should be pursued carefully. Alumni contributions, consultancy, research grants, continuing education and laboratory services can supplement public funding without making students the principal source of institutional revenue.

13.2 Government and Regulatory Level

Public investment remains essential to the success of NEP 2020. Financially weaker state universities require targeted infrastructure and research support if institutional autonomy is to produce meaningful outcomes. Funding mechanisms should also recognize regional disadvantage. Institutions serving rural, tribal and economically disadvantaged populations may require additional resources because their social mission cannot always be evaluated through market-based indicators. Regulatory reforms should seek to reduce unnecessary procedural complexity while maintaining academic, financial and ethical accountability.

13.3 Industry Level

Industry should participate not merely as a recruiter but as a knowledge partner. Businesses can contribute to curriculum development, applied research, laboratories, internships and innovation ecosystems. Paid and credit-bearing apprenticeships can provide students with practical experience while reducing the gap between academic knowledge and workplace requirements. Industry-sponsored research should, however, include clear provisions concerning research integrity, publication rights, intellectual property and conflicts of interest.

13.4 Socio-Cultural and Environmental Level

HEIs should integrate local social and environmental problems into research and student-learning activities. Community-based research can connect academic knowledge with issues such as rural entrepreneurship, water management, agriculture, local industries, waste management and cultural preservation.

Regional-language educational resources should also be expanded without compromising academic quality. Similarly, campuses can become experimental spaces for renewable energy, water conservation, waste reduction and sustainable mobility.

14. Conclusion

NEP 2020 represents a significant attempt to restructure Indian higher education around flexibility, multidisciplinary learning, institutional autonomy, research, innovation and inclusion. Its significance extends beyond curricular reform because the policy also changes the relationship between universities, students, governments, industries and the wider economy.

Financial incentives and economic mechanisms can strengthen HEIs by enabling investment in research infrastructure, entrepreneurship, technology and human resources. Business–academia collaboration can further improve the translation of knowledge into innovation, employment and economic value. Nevertheless, financial autonomy should not be equated with commercialization. Higher education has a public and cultural mission that cannot be adequately captured through market indicators.

The theoretical perspectives of Maslow (1943) and Vroom (1964) help illuminate the importance of economic security and meaningful incentives in educational and institutional behaviour, while the ethical and value-oriented perspectives associated with Indian corporate leadership illustrate the importance of trust, transparency, merit and social responsibility in organizational development. These perspectives collectively suggest that economic resources become transformative only when supported by appropriate institutional values and governance.

The ultimate success of NEP 2020 will therefore depend on whether Indian HEIs can create an effective balance between financial sustainability and affordability, autonomy and accountability, innovation and ethics, global competitiveness and cultural rootedness, and economic growth and environmental responsibility. If these dimensions are integrated, higher education can function not simply as a supplier of skilled labour but as a broader institution of knowledge creation, social mobility, cultural development and sustainable national transformation.

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