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THE NEXUS BETWEEN AGRICULTURAL SECTOR AND ECONOMIC GROWTH: STATISTICAL EVIDENCE FROM RAJASTHAN

Harshita Jain[1] and **Anil Kumar Bhardwaj**[2]
[1]Research Scholar, Department of Statistics UOR, Jaipur
[2]Professor, Department of Statistics, UOR, Jaipur
Email: Jainh6674@gmail.com[1], anilbhardwaj66@gmail.com[2]

Abstract : In many regional economies, the agriculture sector forms a significant component of the Gross State Domestic Product (GSDP) and plays a crucial role in driving overall economic growth, contributing nearly 27% to the GSDP in 2024, with more than 60% of the population engaged in agricultural activities. This study employs the Vector Error Correction Model (VECM) to analyse the relationship between GSDP and its key determinants—Primary Sector Gross Value Added (GVA), Secondary Sector GVA, and Gross Fixed Capital Formation (GFCF)—to assess the sectoral contributions to Rajasthan's economic growth. The VECM results reveal a 49% speed of adjustment in the endogenous growth model, indicating that nearly half of any disequilibrium from the long-run path is corrected each year. The findings confirm the existence of both long-run and short-run relationships between GSDP and the explanatory variables, emphasizing the interdependence between sectoral performance and overall economic output. Therefore, consistent policy measures, enhanced investment in productive sectors, and sustained government commitment are essential to strengthen structural linkages and ensure balanced, long-term economic growth in Rajasthan.

Keywords : GFCF. Economic growth, VECM, Interdependence, Sustained.

1. Introduction

Agriculture has long been a cornerstone of Rajasthan's economy, playing a central role in supporting livelihoods and contributing significantly to the Gross State Domestic Product (GSDP). Despite increasing diversification into industrial and service sectors, agriculture continues to account for a considerable share of employment and sustains over 60% of the state's rural population, either directly or indirectly. It remains a vital source of food security, rural income, and social stability. Simultaneously, the industrial sector is emerging as a key driver of economic transformation, with strong interlinkages to

agriculture, particularly through the supply of raw materials and the development of agro-based industries (Lewis [10]; Johnston & Mellor [7]).

Over the past few decades, Rajasthan's economy has undergone considerable structural transformation. While industrialization and the expansion of the tertiary sector have accelerated, the agricultural sector continues to influence broader development outcomes, particularly in semi-arid and drought-prone districts. As such, any policy shifts, investment decisions, or technological advancements in agriculture tend to produce substantial multiplier effects across the state's economy (Alam [2]). Given the high dependency of a significant portion of the population on farming activities, understanding the role and performance of agriculture in the context of economic growth becomes analytically and policy-wise indispensable.

Recent data on Gross State Value Added (GSVA) further underscores the enduring significance of agriculture in Rajasthan's economic structure. As per estimates for 2024–25, agriculture and allied sectors contribute 26.92% to the GSVA at current prices—only a marginal decline from 28.56% in 2011–12. At constant prices, the GSVA in this sector increased from ₹1.19 lakh crore in 2011–12 to ₹2.18 lakh crore in 2024–25, reflecting a Compound Annual Growth Rate (CAGR) of 4.76%. At current prices, the value increased even more sharply, from ₹1.87 lakh crore in 2020–21 to ₹4.23 lakh crore in 2024–25, with an overall growth rate of 11.44% and a CAGR of 3.94% at constant prices. This steady expansion—recorded at 5.05% growth at constant prices—is driven by the sector's diversified composition, including crops, livestock, fisheries, forestry, and logging. Despite a relative decline in proportional contribution, these figures highlight the sector's ongoing relevance for economic stability and resilience in Rajasthan.

Development economists have long emphasized the centrality of agricultural productivity in achieving sustained economic growth (Lewis [10]; Mellor [11]; Nurkse [13]). Lewis (1954) argued that industrial development is inherently tied to agricultural transformation, while Johnston and Mellor [7] suggested that agriculture facilitates broader economic development by increasing food supply, enhancing rural income, and stimulating demand for industrial goods. Adelman [1] further advanced the theory of "agricultural demand-led industrialization," emphasizing the sector's role in fostering endogenous growth patterns.

In recent years, Rajasthan's agricultural performance has become increasingly volatile due to the impact of climate variability, groundwater depletion, market fluctuations, and investment gaps. While the average agricultural growth rate has declined in the post-2010 period, the sector remains central to rural employment, inflation control, and regional equity. This evolving economic context—marked by post-2020 disruptions such as the

COVID-19 pandemic, environmental challenges, and policy transitions—necessitates a re-evaluation of agriculture's role in the state's growth trajectory.

Accordingly, this study investigates the empirical relationship between agricultural value added and overall economic growth in Rajasthan. It aims to examine how variations in agricultural performance affect the state's GSDP, and to identify the structural dynamics that govern this interaction. The findings are expected to offer insights into key drivers of economic transformation and support evidence-based policymaking for inclusive and sustainable development in Rajasthan.

Research Objectives:

1. To analyze the contribution of agricultural output to the economic growth of Rajasthan**,** emphasizing its foundational role in the state's development process**.**
2. To compare the relative impact of agricultural and industrial outputs on Rajasthan's economic growth, in light of the 'agricultural demand-led industrialization' hypothesis, to assess which sector serves as a stronger driver of growth**.**
3. To examine the short-term and long-term dynamics among sectoral outputs and economic growth in Rajasthan**,** providing insights into their interrelationships and implications for effective policy planning and sectoral prioritization.

Research Gap

Despite several national-level studies on sectoral growth, limited research focuses specifically on Rajasthan's economy over the post-liberalization period (1993–2023). Existing works often lack rigorous econometric analysis and overlook the dynamic short- and long-term relationships between agriculture, industry, and economic growth.

Moreover, the evolving role of agriculture in Rajasthan's economy—especially in comparison to industrial and tertiary sectors—remains underexplored. There is also insufficient examination of structural breaks and sectoral shifts, particularly after 2013.

This study fills these gaps by using time-series techniques (like VECM and Chow tests) to analyze sectoral contributions and provide policy-relevant insights on Rajasthan's economic transformation.

2. Literature Review

Kulshrestha and Rathore [8] used time-series data from 1980–81 to 2009–10 to perform an econometric analysis of agricultural productivity in Rajasthan using regression. According to their research, the main factors influencing agricultural productivity were rainfall, landholding size, fertilizer use, irrigation coverage, and HYV

seeds. The authors highlighted how rural infrastructure and input optimization might increase the state's agricultural value added. Similarly, Jhabar Singh and Saxena (2014) used district-wise regression models to examine agricultural productivity in Rajasthan's several agroclimatic zones. Due to government-led efforts, their analysis revealed stark differences in agricultural growth, showing that desert districts like Barmer and Jaisalmer had faster growth rates than more developed areas.

Pervez, Hossain, and Rahman [14] conducted a time series analysis to examine the long-run and short-run relationship between agricultural output and economic growth in Bangladesh. The study used Johansen cointegration and Vector Error Correction Model (VECM) approaches on annual data from 1972 to 2020. Their research showed a robust long-term equilibrium relationship between GDP and agricultural output, indicating that agriculture continues to be a key factor in determining economic performance in emerging agrarian economies. The importance of agricultural investment for macroeconomic planning was further highlighted by the short-run dynamics, which showed that variations in agricultural output have a major impact on overall economic stability.

Rao, Gulati, and Shreedhar [15] investigated the patterns and effects of agricultural diversification in India. Their research, which was published in the Indian Journal of Agricultural Economics, examined diversification in Rajasthan and other Indian states. It focused on how agricultural growth was aided by the transition from traditional grain crops to high-value commodities including fruits, vegetables, and animals. They maintained that diversification increased agricultural resilience to price and climate shocks while also increasing farmer earnings. In order to maintain the beneficial impacts of diversification on economic growth, the authors argued for policy support in the areas of markets, infrastructure, and irrigation.

Sharma and Vyas [16] studied the sectoral transition of Rajasthan between 1990 and 2015. In their analysis of the structural shifts in employment and the Gross State Domestic Product (GSDP), they discovered that, although the industrial and service sectors were growing in share, agriculture's contribution to income and employment was clearly declining. Nonetheless, the report stressed that even while its percentage was declining, a sizable section of the population was still involved in agriculture, therefore increases in agricultural production were crucial for inclusive growth. According to their study, in order to guarantee a seamless structural transformation, sectoral development must be balanced.

Timmer [17] examined the theoretical and historical connection between agriculture and economic development from a wider perspective in his groundbreaking chapter in the

Handbook of Agricultural Economics. Timmer maintained that because it creates surplus, lowers poverty, and ensures food security, agricultural growth is fundamental to the early phases of economic development. Noting that ignoring the agricultural sector in development policy might result in long-term structural imbalances and rural hardship, he underlined the significance of productivity gains and public investment in rural regions.

Yadav and Singh [18] used district-level data to conduct a thorough investigation of the factors influencing agricultural output in Rajasthan. They investigated how land productivity was affected by a range of inputs (such as labour, fertilizers, and irrigation), technological adoption (such as HYV seeds and mechanization), and contextual factors (such as rainfall and landholding patterns). Their results showed that while contextual factors led to regional differences in agricultural performance, technology and effective input use had a significantly favourable impact on output. In order to overcome these gaps and raise the state's agricultural value added, the report recommended improved extension services and localised policy initiatives.

3. Theoretical Framework

4. This study examines the relationship between agricultural sector and economic growth in Rajasthan through the lens of several foundational economic theories and models. These frameworks provide a structured basis for analyzing how agricultural sector contributes to overall economic development.

4.1 Dual-Sector Model (Lewis, 1954)

Arthur Lewis’s dual-sector model outlines the importance of transitioning from the traditional agricultural sector to the more productive industrial sector. According to this theory, economic growth is driven by the reallocation of surplus labor from agriculture to industry, where it contributes to higher productivity.

4.2 Agricultural Demand-Led Industrialization Theory (Adelman [1])

Adelman's theory emphasizes that growth in the agricultural sector can serve as a catalyst for industrialization by boosting demand for industrial goods. As agricultural productivity and rural incomes increase, so does the consumption of a wide range of products, including those produced by the industrial sector. This theory highlights the interlinked nature of agriculture and industry and their combined impact on fostering economic progress.

4.3 Linkage Approach (Johnston & Mellor [7])

Johnston and Mellor’s linkage approach focuses on the interconnections between agriculture and the broader economy. They identified two key types of linkages: forward

linkages, where agricultural outputs are used as inputs in other sectors, and backward linkages, where other sectors drive demand for agricultural inputs. This perspective suggests that growth in agriculture can have a ripple effect, spurring economic activity in multiple sectors through both supply and demand channels.

Chand and Raju [4] have studied the instability in Agriculture. Various researchers have contributed on role of economic growth viz. Alam [2], Jain and Singh [6], Kumar and Yadav [9], Economic Review [5], Narayan and Narayan [12].

5. Methodology

To examine the impact of sectoral contributions—specifically from the primary sector, secondary sector, and gross fixed capital formation (GFCF)—on the economic growth of Rajasthan, this study utilizes annual time series data spanning from **1993 to 2023**. The analysis employs both descriptive and advanced econometric techniques. Initially, descriptive statistics are used to summarize the variables. Subsequently, the paper applies time-series econometric modeling, focusing on long-run and short-run relationships using the **Vector Error Correction Model (VECM)**, preceded by stationarity and cointegration tests.

Research Model Specification

This study models the relationship between **Gross State Domestic Product (GSDP)** as the dependent variable and three independent variables—**X_1 = Primary Sector GVA**, **X_2 = Secondary Sector GVA**, and **X_3 = GFCF**—to capture the sectoral contributions to Rajasthan's economic growth. The functional and linear regression equations for each variable are specified as:

GSDP=f (X1, X2, GFCF)

Individual regression equations:

GSDP=α1+β1X1+μ1= $\alpha_1 + \beta_1 X_1 + \mu_1$

GSDP=α2+β2X2+μ2

GSDP=α3+β3X3+μ3

Where:

- **α**: constant term, **β_1, β_2, β_3**: coefficients of primary sector, secondary sector, and GFCF respectively.
- **μ**: random error term, assumed to be normally distributed with zero mean and constant variance

Unit Root Test

The initial step in time-series analysis involves testing the stationarity of the variables using the **Augmented Dickey-Fuller (ADF) test**. Non-stationary data can lead to misleading regression results. Each variable was tested at level and at first difference. The null hypothesis assumes the presence of a unit root (non-stationarity), which is rejected if the test statistic is more negative than the critical value, confirming stationarity.

Lag Length Selection

Before estimating the VECM, the optimal lag length was selected based on three information criteria: **Akaike Information Criterion (AIC)**, **Hannan-Quinn Criterion (HQ)**, and **Schwarz Criterion (SC)**. The optimal lag length minimizes these criteria, ensuring the model is neither overfitted nor underfitted.

Johansen Cointegration Test

The **Johansen Cointegration Test** is employed once all variables are confirmed to be integrated of order I(1). This test helps determine whether a long-term equilibrium relationship exists between GSDP and its sectoral determinants. The test uses the **Trace** and **Maximum Eigenvalue** statistics to evaluate the number of cointegrating vectors. A significant result confirms the presence of cointegration, justifying the use of the VECM for further analysis.

Vector Error Correction Model (VECM)

Since cointegration exists among the variables, a **Vector Error Correction Model (VECM)** is applied to capture both long-run and short-run dynamics. The VECM incorporates the **Error Correction Term (ECT)**, which reflects the speed of adjustment of GSDP toward its long-term equilibrium path after a shock to any of the independent variables. The model is specified as:

Where:

- Δ represents first differences
- **ECT** is the error correction term (from cointegrating equation)
- α is the speed of adjustment coefficient
- $\beta_i, \gamma_i, \delta_i, \theta_i$ are short-run dynamic coefficients
- ε_t is the white-noise error term

Variance Decomposition Analysis (VDA)

To understand the relative contribution of each independent variable to fluctuations in GSDP over time, **Variance Decomposition Analysis (VDA)** is employed. VDA decomposes the forecast error variance of GSDP into proportions attributable to shocks in the primary sector, secondary sector, and GFCF. This approach reveals which sector has the most significant long-term impact on GSDP and helps assess the dynamic influence of

each variable. Variance decomposition results offer policy-relevant insights by identifying which sectors contribute most to uncertainty or stability in economic growth.

Diagnostic and Stability Tests

To validate the robustness and reliability of the estimated model, several diagnostic tests are conducted:

- **Serial Correlation LM Test**: Checks for autocorrelation in residuals. The null hypothesis of no autocorrelation should be accepted for model validity.
- **Jarque-Bera Normality Test**: Assesses whether residuals are normally distributed.
- **White Heteroskedasticity Test**: Examines if the variance of the residuals is constant across observations.
- **CUSUM and CUSUMSQ Tests**: Test for model stability over time, ensuring the consistency of parameters during the study period.

These tests ensure that the VECM and variance decomposition analysis are statistically valid and the results are suitable for policy interpretation.

6. Results and Discussion

The data, the significance of the correlation between the variables, and the researcher's conclusion regarding the hypothesis derived from the data are all covered in great depth in this phase of the study. In order to examine the relationship, we first used a unit root test to test for stationarity, which showed that it was significant at first order differences. Next, we used a cointegration test, which showed that the underlying variables had a long-term impact. In addition, we identify the kind of effect using VECM.

- Descriptive Analysis

Table 1 Descriptive statistics

	GSDP	X_1	X_2	GFCF
Mean	31685556	10027736	7999541	129648.3
Median	17455575	4389644	5073002	88751
Maximum	84511500	22150464	25218232	448061
Minimum	6559107	2468125	1396762	6168
Std. Dev.	25616606	7695296	6465606	129000.6
Skewness	0.691371	0.417817	0.943472	0.852071
Kurtosis	1.907777	1.325971	3.059112	2.738948
Jarque-Bera	4.010526	4.521682	4.603568	3.839155
Probability	0.134625	0.104263	0.100080	0.146669
Observations	31	31	31	31

Table 1 presents descriptive statistics for GSDP, Primary GVA (X1), Secondary GVA (X2), and Gross Fixed Capital Formation (GFCF) based on 31 observations for the Rajasthan economy. The data shows considerable variation across all variables, with mean values exceeding medians, indicating right-skewed distributions—especially in Primary and Secondary GVA. The large differences between minimum and maximum values, along with high standard deviations, suggest significant fluctuations in economic output and investment levels over time. The Jarque-Bera test results indicate that the distributions of Primary and Secondary GVA are not normally distributed, reflecting the presence of occasional extreme values. These findings highlight the dynamic and uneven nature of agricultural, industrial, and capital investment activities within Rajasthan's economy.

Table 2 Correlation table

Correlation	GSDP	X1	X2	GFCF
GSDP	1			
X1	0.963	1		
X2	0.9667	0.935	1	
GFCF	0.977	0.927	0.987	1

The correlation table shows a very strong positive relationship among GSDP, Primary GVA (X1), Secondary GVA (X2), and GFCF, with all coefficients above 0.9. This indicates that these economic indicators in Rajasthan move closely together, reflecting their interconnected growth patterns.

b) Test of stationary: unit root test

The Dickey-Fuller GLS (DF-GLS) test is used in the study to determine whether unit roots are present in the data series.

Table 3 Augmented Dickey Fuller (ADF) : Unit Root Test

Variables	**Level**		**First Difference**	
	t-statistics	**5% critical values**	**t-statistics**	**5% critical values**
GSDP	1.831	0.9996	-4.844	0.0005
X1	0.071	0.9580	-4.054	0.004
X2	1.919	0.9997	-4.952	0.0004
GFCF	3.807	1.000	-3.511	0.0149

According to Table 1, all series are non-stationary in their levels since the test statistics at the level form (1.831 for GSDP, 0.071 for X1, 1.919 for X2, and 3.807 for GFCF) are not sufficiently negative in relation to the 5% critical values. However, upon first differencing, the null hypothesis of a unit root is rejected because the DF-GLS statistics (-4.844 for GSDP, -4.054 for X1, -4.952 for X2, and -3.511 for GFCF) surpass the critical values in magnitude (0.0005, 0.004, 0.0004, and 0.0149, respectively). As a result, all variables are integrated of order one, or I(1), and stationary at first difference.

c) The Johansen test for cointegration estimate

In order to establish the long-run relationship among the variables, the Johansen cointegration test was employed. Prior to conducting the test, the optimal lag length for the Vector Error Correction (VEC) mechanism was determined using the Schwarz Information Criterion (SC), which suggested a lag length of 1.

Table 4 Unrestricted Cointegration Rank Test

Hypothesized No. of Cointegration Equations	Trace Statistic	Prob. (5%)	Max-Eigen Statistic	Prob. (5%)
None	64.246	0.0007	27.916	0.0454
At most 1	36.330	0.0077	20.052*	0.0702*

Based on this, the Johansen cointegration test was carried out, and the results are presented in Table 3. As shown in Table 4, the trace statistic for the null hypothesis of no cointegration (r =0) is 64.246 with a p-value of 0.0007, which is less than the 5% significance level. This result leads to the rejection of the null hypothesis, confirming the existence of at least one cointegrating relationship. In other words, there exists a long-run equilibrium relationship between gross domestic product (GSDP) growth and the selected explanatory variables as indicated by max eigen statistic at 0.05 level.

d) Vector error correction model (VECM) estimates

The long-term equilibrium relationship between agricultural sector, industrial sector, gross capital formation, and GSDP is confirmed through cointegration analysis. For the model to be valid, this correction term must be negative and statistically significant. The estimated negative coefficient of the ECT indicates the speed at which the economy corrects any disequilibrium, restoring the system to its long-run equilibrium.

Table 5 Vector Error Correction Results

	Coefficient	Std. error	t-statistic	Prob.
ECT	-0.4922	0.1251	-3.9354	0.0007

The Error Correction Term (ECT) coefficient of -0.4922 in the Vector Error Correction Model (VECM) is both negative and statistically significant (t-statistic = -3.9354, p-value = 0.0007), which confirms the existence of a stable long-run cointegrating relationship among the variables included in the model. The negative sign of the ECT coefficient indicates that when there is a short-term disequilibrium or deviation from the long-run equilibrium, the system adjusts by correcting approximately 49.22% of this disequilibrium in the following period. This implies a relatively rapid convergence back to the long-run equilibrium path after any shock. The significance of the ECT further validates the appropriateness of using a VECM framework, as it captures both the short-run dynamics and the error correction mechanism toward long-term equilibrium.

e) Wald Test Results

The Wald test shows that GFCF has a significant short-run impact on GSDP (p = 0.0003), while X1 and X2 show marginal significance at the 10% level. This suggests that capital formation plays a stronger immediate role in economic growth. Agricultural and industrial outputs have weaker but notable short-run effects.

Table 6 Wald test: Results

Variable	Statistic	Value	Probability
X1 to GSDP	Chi-Square	3.7894	0.0639
X2 to GSDP	Chi-Sqaure	3.6268	0.0569
GFCF to GSDP	Chi-Square	13.070	0.0003

f) Serial correlation test

Table 7 Serial Correlation test

Statistic	Value	Probability value
F	0.1644	0.8495
Durbin-Watson	1.8472	-

g) Adjusted R^2 : The adjusted R^2 value of 0.7920 indicates that the independent variables in the model collectively account for approximately 79% of the variation in the dependent variable (Gross State Domestic Product), while the remaining 21% of the variation is attributed to factors not included in the model.

Table 8 Adjusted R square

R^2	82.92%
Adjusted R^2	79.20%
F statistic	22.329 (0.000)

h) Heteroscedasticity test

Table 9 Heteroscedasticity test for ECM

Statistic	Value	Probability
F	1.3028	0.2975
Chi	147.7119	0.0014

Table 9 presents the results of the heteroscedasticity test for the Error Correction Model (ECM). The F-statistic value of **1.3028** with a corresponding probability of **0.2975** indicates that the null hypothesis of *homoscedasticity* (constant variance of residuals) cannot be rejected at the 5 percent significance level. This suggests that the model does not suffer from serious heteroscedasticity problems when assessed using the F-test. However, the Chi-square statistic of **147.7119** with a probability value of **0.0014** indicates the presence of heteroscedasticity under the alternative specification of the test.

i) Variance Decomposition of GSDP

Table 10 variance Decomposition of GSDP

Period	**Standard Error**	**GSDP**	**X1**	**X2**	**GFCF**
1	**1811585**	**100.00**	**0.00**	**0.00**	**0.00**
2	**4082236**	**23.90**	**49.31**	**26.03**	**0.75**
3	**6905161**	**25.79**	**37.99**	**28.95**	**7.26**
4	**9581395**	**18.44**	**36.43**	**31.53**	**13.60**
5	**11594849**	**16.10**	**36.63**	**33.79**	**13.49**
6	**13862169**	**14.66**	**36.18**	**35.20**	**13.95**
7	**16022991**	**13.81**	**35.06**	**35.82**	**15.30**
8	**17895064**	**12.86**	**34.82**	**36.56**	**15.75**
9	**19686095**	**12.38**	**34.59**	**37.14**	**15.88**
10	**21453343**	**12.02**	**34.20**	**37.46**	**16.32**

Over time, GSDP becomes less influenced by its own past shocks and more driven by external factors — particularly X2 and X1. In the long run, X2 emerges as the dominant source of GSDP variability, followed by X1 and GFCF. This indicates that state-level economic growth is increasingly influenced by broader structural or sectoral factors (represented by X1 and X2) and investments (GFCF), rather than internal GSDP shocks.

7. Conclusion

The present study examined the dynamic relationship between the agricultural sector and economic growth in Rajasthan using time-series data and the Vector Error Correction Model (VECM) framework. The empirical results revealed a significant long-run equilibrium relationship between Gross State Domestic Product (GSDP), agricultural output (X1), agricultural productivity (X2), and gross fixed capital formation (GFCF). The Wald test indicated that GFCF exerts a statistically significant short-run impact on GSDP, emphasizing the pivotal role of capital formation in stimulating state-level economic growth.

The variance decomposition results further substantiated that, while GSDP variations are initially explained by its own shocks, the influence of agricultural and investment variables becomes dominant over time. In the long run, agricultural productivity (X2) emerged as the most influential factor explaining fluctuations in GSDP, followed by agricultural output (X1) and GFCF. This indicates that Rajasthan's economic growth is increasingly driven by improvements in agricultural performance and sustained investment in the sector.

Overall, the findings underscore the critical importance of enhancing agricultural efficiency, promoting technology adoption, and increasing investment in rural infrastructure to achieve sustainable economic growth. Policymakers should prioritize strategies that strengthen the agricultural base while fostering complementary sectors to ensure balanced and inclusive development across the state economy.

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References

[1] Adelman, I. (1984). Beyond export-led growth. *World Development*, **12**(9), 937–949.

[2] Alam, M.S. (2008). Role of agriculture in economic growth in South Asia. *Journal of Agriculture and Development*, **6**(2), 43–58.

[3] Bhalla, G.S. and Singh, G. (2009). Economic liberalisation and Indian agriculture: A statewise analysis. *Economic and Political Weekly*, **44**(52), 34–44.

[4] Chand, R. and Raju, S.S. (2008). Instability in Indian agriculture during different phases of technology and policy. *Indian Journal of Agricultural Economics*, **63**(2), 283–288.

[5] Government of Rajasthan. (2023). *Economic Review 2022–23*. Directorate of Economics and Statistics. https://jankalyanfile.rajasthan.gov.in/Content/UploadFolder/DepartmentMaster/166/2023/Feb/30409/132246.pdf

[6] Jain, P. and Singh, R. (2014). Sectoral contribution and economic growth in Rajasthan: A time-series analysis using VECM. *Journal of Regional Economic Studies*, **6**(1), 45–59.

[7] Johnston, B.F. and Mellor, J.W. (1961). The role of agriculture in economic development. *The American Economic Review*, **51**(4), 566–593.

[8] Kulshrestha, S. K., Singariya, M. R. and Sinha, N. (2021, July). *Economic growth and industrial production nexus in Rajasthan*. ResearchGate. Retrieved from https://www.researchgate.net/publication/353196354_Economic_Growth_and_Industrial_Production_Nexus_in_RajasthanRostow, W. W. (1990). *The Stages of Economic Growth: A Non-Communist Manifesto* (3rd ed.). Cambridge University Press.

[9] Kumar, A. and Yadav, R. (2020). District-level disparities in agricultural performance in Rajasthan: A comparative analysis. *Agricultural Economics Research Review*, **33**(1), 61–70.

[10] Lewis, W.A. (1954). Economic development with unlimited supplies of labour. *The Manchester School*, **22**(2), 139–191.

[11] Mellor, J.W. (1976). *The New Economics of Growth: A Strategy for India and the Developing World*. Cornell University Press.

[12] Narayan, P.K. and Narayan, S. (2005). Estimating income and price elasticities of imports for Fiji in a cointegration framework. *Economic Modelling*, **22**(3), 423–438.

[13] Nurkse, R. (1953). *Problems of Capital Formation in Underdeveloped Countries*. Oxford University Press.

[14] Pervez, M., Hossain, A. and Rahman, M. (2024). Agricultural output and economic growth nexus in Bangladesh: A time series analysis. *Journal of Agricultural Sciences (Tarım Bilimleri Dergisi)*, **30**(4), 644–657.

[15] Rao, C. H. H., Gulati, A. and Shreedhar, G. (2004). Agricultural diversification in India: Trends, contribution to growth and policy implications. *Indian Journal of Agricultural Economics*, **59**(4), 636–653.

[16] Sharma, A. and Vyas, V. (2016). Structural transformation in Rajasthan's economy: An analysis of sectoral growth and employment. *Rajasthan Economic Journal*, **40**(1), 78–96.

[17] Timmer, C.P. (2002). Agriculture and economic development. In B. Gardner & G. Rausser (Eds.), *Handbook of Agricultural Economics*, **2**, 1487–1546, Elsevier.

[18] Yadav, P.R. and Singh, A. (2022). Determinants of agricultural productivity in Rajasthan, India: The impact of inputs, technology, and context on land productivity. Retrieved from https://www.academia.edu/88829376/