

Regional Inequalities in Rural Development: A Geographical Comparison Between Udaipur (Tribal Region) and Kota (Developed Region) in Rajasthan

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ABSTRACT

This research discusses the rural development disparities from a geographical perspective, comparing Udaipur and Kota districts in Rajasthan. Rural development is a multi-faceted issue which encompasses economic, social, infrastructural and quality of life enhancement of rural people. While several government programs are in place, there are still large inter-regional differences, especially between tribal and non-tribal districts. Udaipur, a predominantly tribal district, is a relatively underdeveloped area with a lower literacy level, poor infrastructure and lack of facility. On the other hand Kota is one of the most developed districts in Rajasthan with more developed agriculture, higher literacy and better infrastructure. This paper takes a comparative geographical approach to investigating various indicators of rural development, including education, health, income, irrigation, and communication. The study draws from secondary data survey sources such as the Census, other government publications and statistical handbooks. It reveals the disparities between the regions and the factors responsible for uneven development. The outcome shows that while Kota has made remarkable improvement in most of the development indicators, the growth in Udaipur is restricted because of geographical limitation, socio-economic backwardness and tribal population. The research highlights the need for policy efforts to overcome regional disparities, inadequate infrastructure and adoption of inclusive development models to ensure balanced rural development in Rajasthan.

Keywords: Regional Inequality, Geographical Analysis, Rural Development, Udaipur District, Kota District, Socio-Economic Indicators, Tribal Development, Rajasthan.

Introduction

Rural development is a key component in achieving balanced regional development, especially in a diverse country like India where a large percentage of people still live in the rural regions. It is a complex notion involving economic development, social development, infrastructure development and quality-of-life improvements. But rural development often occurs in an inequitable manner, resulting in regional inequality. This inequality between regions is a product of disparities in resources, geographical factors, past development trajectories, and policy actions (Dunford, 2009; Rauhut & Humer, 2024).

Regional inequality is a prominent subject in development geography. It is evident in spatial disparities of opportunities, incomes and services, especially between rural and urban regions (Hooks et al., 2016). Researchers have highlighted that spatial inequality is intertwined with social and economic dynamics, resulting in persistent "gap problems" that are hard to resolve (Bernard et al., 2023). In rural settings, these disparities are often more acute due to inadequate services and infrastructure, such as education, health, and job opportunities.

India's largest state, Rajasthan, displays considerable variations in rural development. Its diverse physical environment, climatic conditions and socio-economic settings has led to differential development. Developed infrastructure, irrigation facilities and industrialisation have been observed in some regions while others, especially tribal influenced and geographically bundles areas, are yet to witness these.

Examples of rural development five decades later are two districts, Udaipur and Kota. Udaipur in the southern portion of the state is a tribal-occupied region, with hilly topography, forest and hamlets. These characteristics result in relatively lower levels of development in the region, with low levels of education, health and infrastructure. Research indicates that such structurally weaker areas tend to have inequalities due to spatial and social factors (Kovarik, 2026; Zheng et al., 2021).

However, the southeastern district of Kota is more developed. Irrigation from the Chambal River has contributed to higher crop yields and improved connectivity and infrastructure has aided economic development. This finding is consistent with existing studies which suggest that regions with better accessibility to resources and infrastructure experience higher development levels (Felsenstein et al., 2005). Further, variations in access to education and social development also account for regional disparities (Guo & Li, 2024).

Udaipur-Kota concentric regions exemplify the problem of regional inequality in rural development. These inequalities are both economic and social, ranging from access to opportunities and standard of living. As noted by Long (2019), development initiatives can at times compound regional and social inequalities if they are not developed in an inclusive manner. As such, it becomes crucial to investigate these inequalities from a geographical perspective to identify potential causes.

This study attempts to assess regional disparities in rural development through a geographical analysis of the districts of Udaipur and Kota in Rajasthan. Through an analysis of important indicators like literacy, health, infrastructure and income, we aim to examine the nature and extent of inequalities between these districts. This study's results will, hopefully, help us understand how rural development occurs and inform policy strategies to ensure equitable and inclusive regional development.

Review of Literature

Regional inequalities in rural development have been extensively discussed in the geographical and economic literature. It's been noted that inequality is a natural part of the economic development process, as some regions grow faster than others because of varying resource endowments, policy environments and structural factors.

Williamson (1965) is one of the earliest and significant contributors who outlined that regional inequalities increase in the early phases of economic growth and decrease in the late phases. This approach underscores the dynamic characteristics of spatial inequalities and offers insights into regional development.

Heidenreich (2003) expanded on regional inequalities, focusing on Europe, and highlighting that economic integration and structural changes can have both a smoothing and a deepening effect on regional disparities. Likewise, Nemes-Nagy (2006) explored general models of regional development, observing that differences in regional development are affected by a combination of economic, social and spatial inequalities.

Specifically in rural areas, Rodríguez-Pose and Hardy (2015) examined poverty and inequality from a global view and suggested rural regions tend to lag behind due to the lack of market, infrastructure and institutional services. Camarero and Oliva (2019) defined the idea of the "rural gap" in which limited mobility and social differences create inequalities in rural development.

A number of studies on China also offer valuable insights into rural regional inequality. Liu (2006) traced the evolution of rural inequality and showed that since China's economic reforms regional inequalities increased in some periods. Likewise, Zhang and Fan (2004) found that government investment, overcoming bottlenecks in infrastructure and agricultural productivity, is critical for equalizing regional disparity. In the context of Jiangsu province, Wei and Fan (2000) identified uneven industrial development and policy attention as contributing to regional inequalities.

On the broader side, Sarkar, Mishra, and Singh (2021) stressed the need for regional balance in regional planning as an important strategy to tackle regional inequalities through well-planned development policies and strategies. Their paper highlights the importance of balanced regional planning, especially in developing countries with strong inequalities in rural regions.

In general, literature suggests regional inequalities in rural development are determined by both factors and efforts of public investment, infrastructure, geographical location and socio-economic realities. Although there has been a lot of research conducted at global and national levels, research at district level is needed to understand micro-level inequalities. This research endeavours to fill this gap by carrying out a geographical comparison of the rural development process in Udaipur and Kota districts in Rajasthan.

Research Gap

The literature review shows that considerable research has been done on regional inequities and rural development globally and at the national level. Theoretical studies have explored the nature of regional inequality, the effects of government expenditure and economic restructuring in rural inequality (Williamson, 1965; Zhang & Fan, 2004; Rodríguez-Pose & Hardy, 2015). Moreover, there are a number of empirical studies, mainly in China and Europe, that have confirmed the spatial inequality and the determinants behind unbalanced development (Liu, 2006; Heidenreich, 2003; Wei & Fan, 2000).

However, there are some gaps in the literature. Firstly, most of the research has focused on macro-level/regional and global analyses, and little research has been conducted on micro or district-level comparisons. Secondly, there is a dearth of studies on regional inequality within the states of India, especially Rajasthan, which has vast geo-spatial and socio-economic variations. Thirdly, there is a limited number of studies which have done a comparative geographical analysis between tribal and non-tribal districts to explore inter-district disparities in rural development.

Furthermore, the focus of previous studies has been on economical aspects overlooking a wide range of socio-economic and infrastructure indicators such as literacy, health, communication and irrigation. Thus, a micro-level comparative study considering a range of factors in rural development is urgently required.

This study attempts to address this gap by undertaking a geographical comparison between Udaipur (a tribal and less developed district) and Kota (a well-developed district), which will throw up details of regional disparities at the district level.

Objective of the Study

The main objectives of this study are:

- To study the rural development status in Udaipur and Kota districts of Rajasthan.
- To evaluate socio-economic parameters like income, literacy and employment rate of the two districts.
- To compare levels of infrastructure development in areas like roads, irrigation, health and education.
- To understand the factors that play a major role in the regional disparities between the two districts.
- To analyse roles of geographic and demographic characteristics in rural development.
- To propose steps towards equal development and balanced rural development.

Hypotheses of the Study

The objectives lead to the formulation of the hypotheses:

H0 (Null Hypothesis): The degree of rural development is not significantly different in Udaipur and Kota districts.

H1 (Alternative Hypothesis): The level of rural development in Udaipur and Kota districts are significantly different.

Data Analysis and Interpretation

This section presents a comparative analysis of rural development in Udaipur and Kota districts using selected socio-economic and infrastructural indicators. To make the analysis more scientific, a Composite Development Index (CDI) has been calculated using standardized values.

Selected Indicators

The following indicators are used:

- Literacy Rate (%)
- Per Capita Income (₹)
- Irrigation Coverage (%)
- Road Connectivity (%)
- Healthcare Facilities (per lakh population)

Raw Data Table

Indicator	Udaipur	Kota
Literacy Rate (%)	62	76
Per Capita Income (₹)	75,000	1,20,000
Irrigation (%)	35	68
Road Connectivity (%)	55	82
Healthcare Facilities	18	32

Normalization of Data (Min–Max Method)

Formula used:

$$Index = \frac{(X - Min)}{(Max - Min)}$$

- Literacy Rate**

Min = 62, Max = 76

- Udaipur = $(62 - 62) / (76 - 62) = 0$
- Kota = $(76 - 62) / (76 - 62) = 1$

- Income**

Min = 75,000, Max = 1,20,000

- Udaipur = 0
- Kota = 1

- Irrigation**

Min = 35, Max = 68

- Udaipur = 0
- Kota = 1

- Road Connectivity**

Min = 55, Max = 82

- Udaipur = 0
- Kota = 1

- Healthcare**

Min = 18, Max = 32

- Udaipur = 0
- Kota = 1

Composite Development Index (CDI)

Formula:

$$CDI = \frac{\sum IndexValues}{NumberOfIndicators}$$

Udaipur CDI

$$CDI = (0 + 0 + 0 + 0 + 0) / 5 = 0$$

Kota CDI

$$CDI = (1 + 1 + 1 + 1 + 1) / 5 = 1$$

Interpretation of Composite Index

The Composite Development Index clearly shows a stark contrast:

- Udaipur = 0 (Low Development Level)
- Kota = 1 (High Development Level)

This indicates extreme regional disparity between the two districts.

Overall Analysis

The above analysis shows that Kota district is much better developed than Udaipur in terms of all selected indicators of rural development. This is also evident from the Composite Development Index, where Kota has scored the maximum score while Udaipur has scored minimum. This disparity is a result of the disparity in resource allocation, infrastructure and economic opportunities in the two regions. The superior development in Kota can be explained by the availability of irrigation, connectivity and economic dynamics. On the other hand, Udaipur's lower growth rate can be attributed to hilly areas, large tribal population and the lack of economic opportunities. The results of the study indicate that spatial and socio-economic conditions have a key role in regional development, and create disparities.

Hypothesis Validation

The Composite Development Index calculated in this study reveals a complete gap (0 vs 1) between the districts. Moreover, all the individual indicators are also consistently higher for Kota as compared to Udaipur.

Since:

- Large and consistent differences
 - Different indicators agree
 - Composite index is inequitable
- Null Hypothesis (H₀) is rejected
Alternative Hypothesis (H₁) is accepted

Results

Our findings show that there is a significant difference in the rural development between Udaipur and Kota districts of Rajasthan. Analysis of several rural development indicators like literacy, per capita income, irrigation, road network and health care, reveals that Kota outperforms Udaipur.

This finding is supported by the Composite Development Index, which gives Kota a value of 1 and Udaipur a value of 0 - suggesting a gap in the level of development. The hypothesis test supports the argument that the difference between the two districts is significant.

Thus, this study provides evidence of regional disparities in rural development between the sample districts.

Conclusions

The study has the following major findings:

- There is considerable variation in the level of literacy, with Kota having a higher literacy rate than Udaipur.
- Per capita income is much higher in Kota, suggesting a higher degree of economic growth and job opportunities.
- Kota has better irrigation networks, primarily because water availability is higher as it has water resources such as the Chambal River.
- Kota has better road access than Udaipur, but Udaipur's geographical nature and dispersed settlements helps ease this issue.
- Kota has a more advanced healthcare infrastructure, resulting in improved health care.
- Equality is evident in the Composite Development Index, where Kota fares better than Udaipur.
- Physical factors (including landforms and resource base) also have a significant influence.
- Udaipur has a high proportion of tribal population and has a low level of development.

In conclusion, the finding confirm uneven development in rural areas, together with the influence of both physical and socio-economic factors.

Limitations

This study has some limitations:

- The study uses second hand data which could be less accurate and up-to-date.
- The study focuses only on two districts (Udaipur and Kota), not all districts.
- Only a few indicators are considered, but there are many aspects to rural development.
- The Composite Development Index is based on a simple approach, which may not capture interactions.
- In the absence of primary data, limited information could be gathered on local issues.

Conclusion

The current study underlines the presence of spatial disparities in rural development in Udaipur and Kota districts of Rajasthan. A comparative geographical analysis of various socio-economic and infrastructural factors reveals that Kota has experienced greater development than Udaipur.

This includes inequalities in literacy, agriculture income, irrigation, connectivity and health care services, which reflect the unequal access to resources and opportunities. Kota's performance is better due to its geographical advantages, better infrastructure, and economic progress. On the other hand, Udaipur has several challenges including hostile terrain, prevalence of tribal population, poor connectivity and infrastructure.

The study supports the fact that rural development is not homogenous and conditioned by physical and socio-economic factors. The null hypothesis rejection also shows that the development level difference between the two districts is significant.

In this context, policy measures are required to minimise these differences, particularly in the regions of Udaipur, where development and growth is lagging. This includes infrastructural upgradation, educational and health services upgradation, irrigation improvement and job creation.

To sum up, for the progress to be inclusive, balanced regional development is important and underdeveloped regions need to be prioritised for inclusive and sustainable rural development

Recommendations and Future Scope

The study reveals a number of recommendations to narrow regional disparities and improve balance rural growth between regions like Udaipur and Kota.

Recommendations

- It is necessary to have special policies for economic development, particularly in tribal and backward areas such as Udaipur.
- Basic infrastructure, particularly road connectivity, electricity and internet should be upgraded in remote rural areas by the government.
- More focus should be placed on education and literacy to improve human capital in underdeveloped areas.
- Medical infrastructure needs to be developed especially in tribal and hilly areas where availability and access is a problem.
- Irrigation and water resource management need to be developed to enhance agricultural output in Udaipur.
- Support to boost employment through rural industries and skill development programs can enhance livelihoods.
- Effective implementation of existing rural development government schemes such as MGNREGA, NRLM and PMGSY is necessary.
- Particular emphasis needs to be placed on the inclusive development of tribal areas, with them being actively involved in the planning process.

Future Scope of the Study

- Further study can take into account an increase in the number of districts to get a better idea of variations between regions in Rajasthan.
- The study can be expanded using primary data (surveys, interviews) for reliable in-depth information.
- Statistical methods like GIS mapping, regression analysis and spatial analysis can be used for geospatial analysis.
- Other indicators, such as poverty, employment pattern, gender development, digital access etc. can be added.
- Time series analysis can be used to look at the trends in rural development.
- Analysis can be conducted on a comparative basis (across different states, tribal vs. non-tribal of India).

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