



Spatial Disparity Analysis Of Public Amenities In Kollegal Taluk

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Abstract

Backwardness in society stems from various factors, and the current research zeroes in on basic amenities to map out the spatial distribution of underdeveloped areas in Kollegal taluk, Chamarajanagar district, Karnataka. Infrastructure adequacy has long been recognized as crucial for economic growth by both scholars and policymakers, with its improvement significantly impacting income and overall development. Therefore, this study aims to assess basic amenities across educational, healthcare, economic, and communication sectors through 18 decision criteria. Geospatial techniques are employed to analyze the spatial extent of underdevelopment based on these parameters. The study identifies backward villages in need of infrastructure and centralized facilities that necessitate relocation within the study area.

Keywords: Spatial, Public amenities, Disparity, Backward, GIS

Introduction

Planning is widely recognized as an effective approach for tackling complex resource allocation and decision-making challenges. Within the realm of decentralized planning, district-level planning stands out, characterized by its integrated, area-specific strategies designed to enhance national and state plans by maximizing the use of local resources (Acharya et al., 2011). Each district plan is uniquely tailored to address the challenges posed by its resources, terrain, environmental conditions, agro-climatic dynamics, and socio-economic landscape (Das et al., 2020). These developmental strategies are meticulously crafted to meet the fundamental needs and aspirations of local communities within the overarching framework of

multi-level planning. Therefore, adopting a systematic and scientifically informed approach is crucial for promoting grassroots development through district-level planning.

Local economies evolve as a result of various factors including transportation networks (land, water, and air), population growth (both local births and migration), and the availability of land for development (Markon, 2003). As population pressure and land degradation intensify, the optimization of land use becomes increasingly vital. In response, numerous developmental schemes are proposed by governmental and non-governmental organizations, necessitating coordinated planning to align different programs and expedite district development. Typically, the formulation of physical plans involves extensive data collection and map creation. Therefore, there is an urgent need for mechanisms to systematically compile, store, and update geographically referenced information for later retrieval and analysis. To enhance data availability and management, a standard spatial unit is conventionally adopted across various planning levels, ranging from macro to micro (Gupta, n.d.)

At various planning levels, a standard spatial planning unit known as the basic spatial unit is chosen. In district-level planning, the village often serves as this fundamental spatial unit for tasks such as data collection, database creation, and spatial modeling (D. M. Diwakar 2009). Nonetheless, data can be aggregated to higher levels from the digital database generated at the smallest planning unit. India boasts extensive untapped natural and human resources in rural and remote areas. Consequently, establishing an integrated geo-database and appropriate geostatistical models to evaluate development levels at the village level can facilitate the inventorying and analysis of these resources, promoting balanced and sustainable district development (Kumar, 2015).

Study area

The research focuses on Kollegal taluk, the smallest taluk in Chamarajanagar district, Karnataka. Situated east of Chamarajanagar, it extends an area of 385.73 square kilometers. Its boundaries are defined by latitude $11^{\circ}45' 0''$ N to $12^{\circ}45' 20''$ N and longitude $77^{\circ} 00' 40''$ E to $77^{\circ}46' 30''$ E. Figure 1 illustrates the study area's location. Kollegal taluk is bordered by the Cauvery River to the north, along with its tributaries like Moyar, Palar, Bhavani, and Suvarnavathi. Known for its scenic beauty, it features popular tourist spots such as Gagana Chukki and Bara Chukki waterfalls.

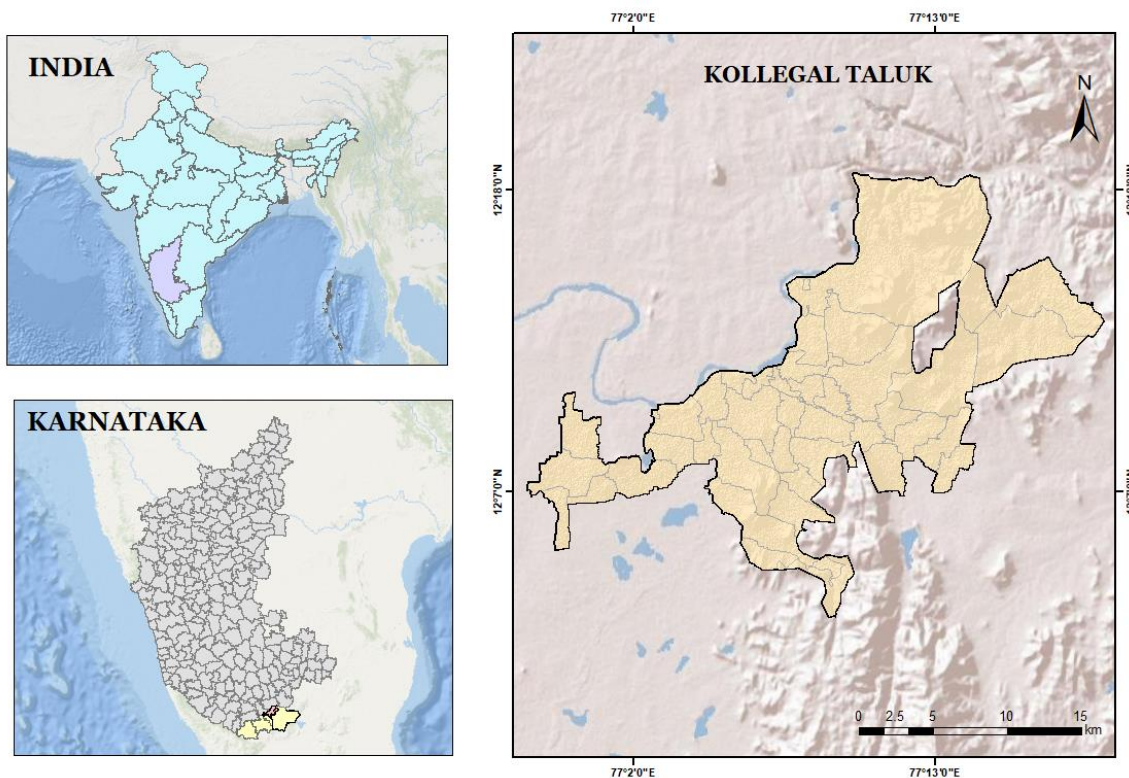


Fig 1: Study area, the Kollegal taluk in Karnataka

Database and Methodology

The research relies essentially on secondary data gathered from diverse sources, notably the statistical handbook for the year 2001. The analysis employs an aggregate weighted method to examine the spatial distribution of socioeconomic development. Disparities across regions stem from differences in social, economic, historical, and demographic factors, underscoring the importance of identifying them to mitigate developmental gaps. Considering the current socioeconomic landscape, 18 indicators are chosen and categorized into four groups: educational, health, economic, and communicational. These indicators include:

Tab 1: list of selected variables, Kollegal taluk 2001

Categories	Variables	Details
Educational aspects	X1	Number of Primary School
	X2	Number of Middle School
	X3	Number of Secondary School
	X4	Number of Senior Secondary School
	X5	Number of College
	X6	Number of Primary Health Center
Health aspects	X7	Number of Primary Health sub-Center
	X8	Number of Vetrernity hospitals
	X9	Number of Maternity child welfare
	X10	Number of Family welfare center
Economic aspects	X11	Number of Commercial Bank
	X12	Number of Cooperative Bank
	X13	Number of Agriculture credit society

Communicational aspects	X14	Number of Self-help group
	X15	Number of Post office
	X16	Number of Sub Post office
	X17	Number of Post/teleoffice
	X18	Number of Public call office

Weighted Overlay Method

Utilizing these data and indicators, an effort has been made to assess the development of Kollegal taluk at the village level. The spatial variation in socio-economic development is analyzed using an aggregate weightage method. To evaluate the socio-economic amenities in Kollegal taluk, a village-wise differentiation is conducted, employing various indicators. These indicators are ranked based on their total count, with villages having the highest number of socio-economic amenities categorized as 1, while others are labeled as 2, 3, 4,5 so forth.

The collected data are tabulated, analyzed, and interpreted through tables and diagrams. Both numerical and non-numerical information are subjected to appropriate statistical techniques for analysis. The comprehensive indices of all selected educational, health, economic, and communicational indicators depict the overall scenario of village disparities in development levels. The taluk is classified into very high, high, moderate, low, and very low developed categories based on the combined scores of 18 indicators. Table 1 illustrates the broad categories of developmental disparities.

Result and discussion

Identifying backward or deprived regions is crucial for minimizing disparities and crafting developmental strategies. Conversely, regions exhibiting high development across educational, health, economic, and communicational domains can experience notable growth and enhance land utilization and agricultural efficiency (Sharma & Joshi, 2016).

Disparities in the Level of Overall Development

Socio-economic disparities stem from various factors, spanning from historical to present conditions in health, education, and other amenities. Using the combined rank score of 18 indicators, the overall level of development has been assessed. The spatial distribution pattern highlights inter-village discrepancies in overall development within the region.

The composite index of all selected indicators provides an overview of inter-village disparity and overall development in the taluk. To elucidate prevailing inter-village disparities in overall development, the study area is categorized into the following levels:

Highly developed region

The highly developed region consists of five villages namely Sathegala (7.45), Chilakavadi (1.18), Palya (3.57), Maduvanahalli (4.68) and Kamagere (4.96) % of the population have high-level of development in this taluk. Most of the villages under these villages have been covered under other facilities.

Developed region

The developed region consists of four villages namely Kunthur (2.57), Dhanagere (1.41), Singanallur (2.03), and Tellanur (4.16) % of the population found to be in the developed category. These villages have rural areas and have the favorable presence of indicators like educational, medical facilities, and other facilities.

Moderately developed region

This classification, ranging from 21.07 to 49.42, encompasses Tagarapura, Mullur, Kunagalli, Jakkalli, Linganapura, Doddinduvadi, and D.M Samudra villages. These areas boast moderate access to amenities like primary and higher secondary schools, medical facilities, and sub-post offices, contributing to a moderate level of development in the region. However, many indicators in these villages reflect a lower level of progress.

Less developed region

In this category seventeen villages are found to be in less developed or backward category. The rank score is least for many indicators. The development is less due to small number of higher secondary and senior secondary school, medical facility and post office, etc.

Very less developed region

Regions scoring above 6.70 have been classified as very underdeveloped areas, comprising only 12 villages. The ranking, determined by various indicators, categorizes these villages as low in development primarily due to insufficient hospital facilities, limited educational institutions, a scarcity of banks, low population density, and literacy rates, among other factors.

The examination of development levels and spatial variations reveals that diverse human development indices and the quality of healthcare facilities are significant contributors to these differences. Optimal developmental strategies for the taluks can be achieved through rural transformation, emphasizing efficient implementation at the village level. Shifting focus from macro to micro-level plans can be transformative, ensuring that the benefits of development permeate down to the grassroots level.

Tab 2: level of development of Kollegal taluk 2001

S.N.	Level of Development	2001	Percentage
1	Highly Backward	12	27.91
2	Backward	17	39.53
3	Moderate	5	11.63
4	Developed	4	9.3
5	Highly Developed	5	11.63
	Total	43	100

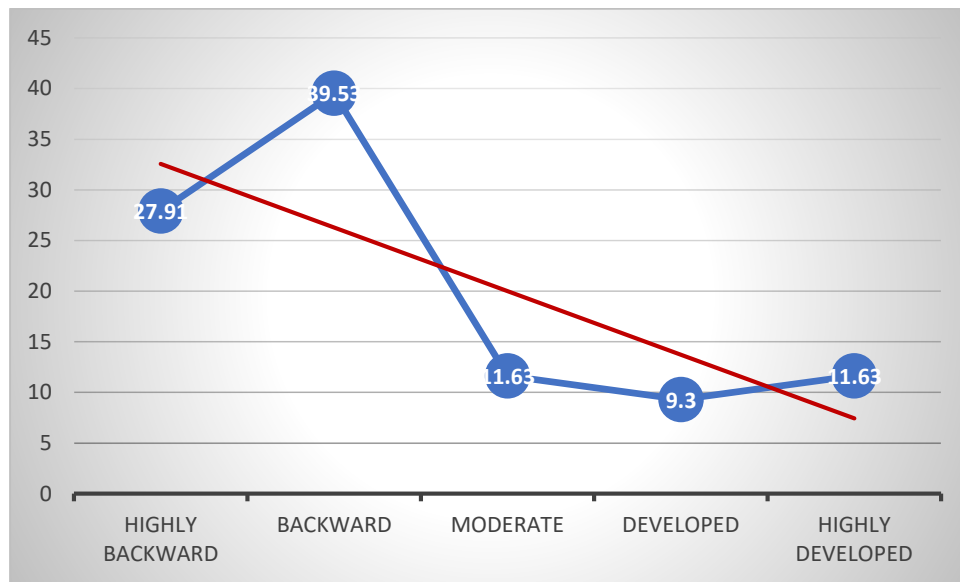


Fig 2: Spatial distribution of amenity in 2001

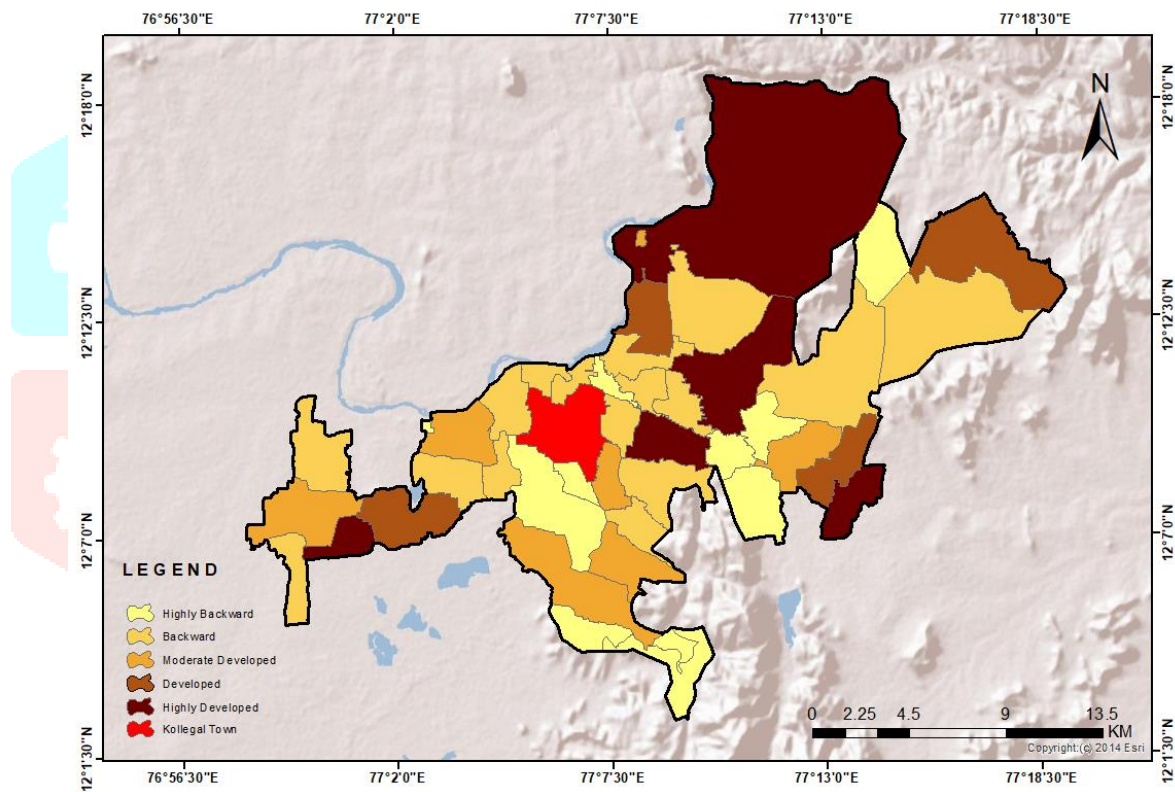


Fig 3: Level of Amenities development of Kollegal taluk 2001

Conclusion

The study reveals that rural amenities such as education, healthcare, economic resources, and communication infrastructure are unevenly distributed across the study area, resulting in several issues including disengagement from local governance, disparities in living standards barona among villagers, and environmental degradation. Analysis of eighteen public amenities indicates a disparity in provision among villages, with some significantly more developed in certain areas while others lag far behind the average level of development. This inequality stems from the absence of rural policies for Kollegal Taluk, leading to unplanned rural structures and an uneven distribution of amenities. Proper planning is crucial to address

these issues; without it, the provision of public facilities may cluster, exacerbating the taluk's environmental challenges.

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