

An Analysis of the Financial and Socioeconomic Patterns of Gram Panchayats: A Case Study of Selected Gram Panchayats in Karnataka

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Abstract: Gram Panchayats (GPs) form the foundation of rural self governance in India, yet their financial performance varies widely despite Karnataka's advanced decentralisation framework. Understanding what drives this variation is essential for equitable rural development, fiscal stability, and effective local government. This study examines the financial and socioeconomic patterns of GPs through a descriptive cum analytical comparative case study of eight GPs across four Karnataka districts, each represented by a high revenue and a low revenue GP. Secondary data were drawn from the eGramSwaraj portal, the Census of India, the SECC, and the ANSSIRDPR Human Development Report, covering demographic composition, literacy, human development, and fiscal performance over 2020–21 to 2024–25. Data were analysed using percentages, ratios, growth rates, Pearson correlation, and multiple OLS regression. Literacy consistently aligned with revenue category, whereas population size and the Human Development Index did not. Expenditure and own source revenue emerged as the strongest determinants of revenue, with expenditure alone explaining 82 per cent of its variation, while socioeconomic characteristics showed no robust independent effect. The study concludes that a GP's financial performance is governed chiefly by its own revenue mobilisation and spending behaviour. It recommends strengthening local own source revenue collection and improving expenditure efficiency to enhance fiscal sustainability.

Keywords: Gram Panchayat, Fiscal Decentralization, Rural Governance, Fund Utilization, Karnataka, Socioeconomic Development, Human Development.

1. INTRODUCTION

The Panchayati Raj system forms the foundation of rural local self government in India. By devolving administrative and financial authority to elected village bodies, it brings decision making closer to the people than centralized administration allows. The 73rd Constitutional Amendment Act of 1992 gave the system formal constitutional status, establishing a three tier structure comprising the Gram Panchayat at the village level, the Taluk (or Block) Panchayat at the intermediate level, and the Zilla Panchayat at the district level. This structure is intended to make elected representatives directly accountable to their constituents and to encourage broader community participation in decisions concerning agriculture, water supply, and education. Existing studies suggest that decentralized governance of this kind allows scarce resources to be allocated more effectively where local demand is high, and that decisions made at the local level tend to reflect community needs more closely than those imposed from higher administrative tiers (Brahmanandam, 2018).

Gram Panchayats occupy a central position in rural governance because they engage directly with villagers on a day to day basis. They are responsible for essential local services, including roads, drinking water, sanitation, schools, primary healthcare, and welfare programmes. Favourable outcomes in these areas depend on consistent funding, adequately trained personnel, and sound administrative systems; in their absence, performance tends to suffer (Oommen, 2004). A detailed study of Karnataka's Gram Panchayats similarly found that developmental progress is closely associated with the quality of local management, leadership, and the surrounding economic context (Rao et al., 2024).

Gram Panchayats in India are funded principally through government grants, finance commission devolutions, and scheme based project funds, supplemented by locally generated revenue such as property tax, user charges, and service fees, although the latter remain inconsistent across panchayats. Karnataka is generally regarded as a frontrunner among Indian states in devolving authority to rural local bodies. Even so, increased fiscal inflows have not translated into uniform outcomes: Gram Panchayats in the state continue to display considerable variation in revenue generation, expenditure patterns, administrative efficiency, and developmental results (Gayithri et al., 2017). Village level data from Karnataka point to a widening gap between

better and worse performing panchayats, a growing dependence on external funding, and limited progress in raising local own source revenue (Billava & Hanagodimath, 2024).

Gram Panchayats located near urban centres tend to perform better on financial and administrative indicators. Kashyap (2023) finds that peri urban panchayats generally offer better healthcare facilities, stronger physical infrastructure, higher literacy, higher incomes, and longer life expectancy than more remote rural panchayats. By contrast, panchayats farther from urban centres often struggle with tax collection, face shortages of trained staff, and operate with weaker administrative systems, conditions that compound the everyday difficulties faced by residents. Housing quality, health status, and educational attainment within a panchayat area, in turn, shape how effectively local government functions and how durable its institutions are, a relationship also reported by NIRD&PR (2015).

This study examines selected Gram Panchayats in Karnataka with relatively high and low income levels, focusing on three areas: demographic composition and human development indicators, including literacy, age structure, and general living standards; patterns of revenue generation, particularly the extent to which panchayats depend on state transfers relative to locally generated income; and the relationship between expenditure efficiency and developmental outcomes such as infrastructure, services, and household income. In doing so, the study asks whether stronger fiscal management is associated with higher levels of education, how closely improvements in health and education track improvements in panchayat finances, and whether proximity to urban centres systematically shapes these outcomes. The underlying premise is that financial stability at the panchayat level is closely tied to the socioeconomic conditions of residents, and that governance outcomes vary accordingly with local capacity and context.

The Panchayati Raj system in Karnataka is well established institutionally and widely dispersed across the state, yet considerable variation persists among Gram Panchayats in financial management and developmental progress. Existing research has tended to focus on funding mechanisms and policy frameworks at a general level, with comparatively little attention paid to how local socioeconomic conditions shape a panchayat's financial performance. This study addresses that gap, and the findings are relevant to understanding what drives rural development, fiscal stability, and the effectiveness of local government, with implications for policy on panchayat funding, administrative strengthening, and the more equitable distribution of development resources. Although administrative authority has been formally devolved to these local bodies, many remain heavily dependent on state support, and their social and economic outcomes continue to diverge significantly. The recommendations offered later in this paper are accordingly grounded in what has worked in specific panchayats rather than framed as universal prescriptions, drawing on practical examples already observed in the field rather than on theory alone; in particular, improving local panchayat tax collection appears to depend less on enforcement and more on adopting practical methods that are already working successfully elsewhere.

Methodologically, the analysis moves beyond simple income figures to examine revenue sources, expenditure patterns, and the extent to which spending aligns with available resources, comparing annual inflows and outflows across the sample. These patterns are interpreted as the cumulative outcome of planning decisions, resource management practices, and local administrative choices over time, rather than as a matter of chance.

2. METHODOLOGY

2.1 Research Design

The study adopts a descriptive-analytical research design based on a comparative case study of selected Gram Panchayats (GPs) in Karnataka. It relies on secondary data and examines two dimensions of GP functioning, namely financial performance and socioeconomic conditions, together with the relationship between the two. Karnataka was selected because of its relatively advanced decentralisation framework, the institutional maturity of its Panchayati Raj institutions, the availability of structured financial records through state accounting systems, and the regularity of its State Finance Commission reforms and fiscal devolution mechanisms. These features make the state a suitable setting for examining how the financial capacity of village-level governments relates to local development outcomes. Given the small sample, the design is best understood as an exploratory comparative case study rather than a basis for confirmatory statistical inference.

2.2 Study Area and Sampling Design

A multistage purposive sampling design was employed. At the first stage, four districts were selected to represent the major regions of the state, with Belagavi and Kalaburagi drawn from northern Karnataka and Bengaluru Urban and Mysuru from southern Karnataka. This spread captures variation between the relatively developed southern districts and the comparatively backward Kalyana Karnataka region. At the second stage, within each district, two GPs were chosen to form a contrasting pair: the GP with the highest and the GP with the lowest total receipts reported over the study period (2020–21 to 2024–25) in the eGramSwaraj portal.

District	High-revenue GP	Low-revenue GP
Belagavi	Halaga	Rangadolli
Bengaluru Urban	Neraluru	Ragihalli
Kalaburagi	Taj Sultanpura	Anoor
Mysuru	Chakkodanahalli	Chamundibetta

Table 1. Selected sample Gram Panchayats by district and revenue category. Classification is on total receipts over 2020–21 to 2024–25 (eGramSwaraj).

2.3 Sources of Data

The study is based entirely on secondary data drawn from official sources, organised into two groups corresponding to the two dimensions of analysis. Financial data were obtained from the eGramSwaraj portal of the Ministry of Panchayati Raj, which records receipts and payments at the GP level, supplemented where available by the Panchatantra and PRIASoft accounting records maintained by the Government of Karnataka. Socioeconomic data were compiled from the Census of India 2011, the Socio-Economic and Caste Census (SECC) 2011, the Human Development Report of the Abdul Nazir Sab State Institute of Rural Development and Panchayat Raj (ANSSIRDPR, 2015), and GP-level survey data from Mission Antyodaya, with administrative identifiers obtained from the Local Government Directory (LGD).

It should be noted that the latest village-level data from the Census and the SECC pertain to 2011, and the ANSSIRDPR human development data to 2015, whereas the financial data cover 2020–21 to 2024–25. This temporal gap is a genuine limitation for any cross-sectional comparison of socioeconomic conditions with recent fiscal flows; more recent socioeconomic information from Mission Antyodaya was used where available.

2.4 Variables

The dependent variable is total revenue (five-year mean, 2020–21 to 2024–25, in ₹ lakh). The explanatory variables are of two kinds. The fiscal variables—expenditure and own-source revenue (OSR), both five-year means in ₹ lakh—capture the GP's own financial behaviour. The socioeconomic and demographic variables—literacy rate, HDI, total population, and number of households—are single observed values for each GP, drawn from the 2011 Census and the 2015 ANSSIRDPR report.

2.5 Analytical Methods

Descriptive analysis used percentages, ratios, and averages, presented as tables and figures. To identify the correlates of financial performance, Pearson product-moment correlation coefficients were computed between revenue and each explanatory variable. With eight GPs ($n = 8$, $df = 6$), the critical values of r are 0.707 at the 5 per cent level and 0.834 at the 1 per cent level. To examine the joint and independent contributions of the explanatory variables, multiple OLS regression models of increasing parsimony were estimated and compared. Because the full model leaves a single residual degree of freedom, model adequacy was assessed using the F test, adjusted R^2 , variance inflation factors (VIF), and the condition number, and the analysis is treated as exploratory throughout. Where a single influential observation was found to drive a result, its influence was tested by re-estimating the relationship with that observation removed.

2.6 Tools of Analysis

Data were compiled and descriptive statistics computed in Microsoft Excel. Correlation and regression analyses, including the variance inflation factors, condition number, and model-comparison diagnostics reported below, were carried out using the Python statistical libraries statsmodels and SciPy. Results are presented in tabular and graphical form.

2.7 Limitations of the Study

The study is based on secondary data for the financial years 2020–21 to 2024–25, and GP-level own-source revenue data were not consistently available for all years and all GPs. The sample is limited to eight GPs across four districts, which restricts both the statistical power to detect moderate associations and the generalisability of the findings to the state as a whole. The most recent village-level socioeconomic data (Census and SECC) pertain to 2011 and the human development data to 2015, which introduces a temporal mismatch with the financial data. Differences in reporting and accounting practices across GPs may also affect the comparability of certain figures; specific anomalies—Neraluru's reported OSR exceeding its total revenue, and the Belagavi receipts—are flagged in the relevant sections and warrant reconciliation against source records.

3. RESULTS AND DISCUSSION

3.1. Demographic Status

The demographic status of the eight selected Grama Panchayats (G1 to G8) is presented in Table 1. The sample comprises 6,467 households and 29,493 persons, of whom 15,458 are male and 14,035 are female. Population size varies widely, from 1,120 persons in Rangadolli (G2) to 7,048 in Halaga (G1), more than a sixfold difference. A pattern is observed by revenue category. In Belagavi, Bengaluru Urban, and Kalaburagi, the high revenue GP is considerably larger than its low revenue counterpart, and the number of households follows the same order. This suggests that a larger population, with its wider base of taxable households and economic activity, contributes to stronger revenue. The Mysore pair departs from this pattern, as the low revenue Chamundibetta (G8) records 1,280 persons against 1,134 in the high revenue Chakkodanahalli (G7), which indicates that population size alone does not determine fiscal strength. The overall sex ratio is 908 females per 1,000 males, below the Karnataka average of 973 and the rural figure of 979 (Census of India, 2011). Halaga (G1) records the most balanced ratio at 1,003, while Neraluru (G3) records the lowest at 743, consistent with male in migration in this peri urban GP of Bengaluru Urban, the district with the state's lowest sex ratio at 916. No consistent relationship is found between the sex ratio and revenue category. Average household size is 4.6 persons, with the Kalaburagi GPs (G5 and G6) largest at 5.2 and 5.0 and Neraluru (G3) smallest at 3.7. Demographic size thus offers only a partial explanation of GP performance.

GP Code	Households	Male	Female	Total Population	Sex Ratio (F per 1,000 M)	Avg. Household Size
G1	1,442	3,518	3,530	7,048	1,003	4.9
G2	250	578	542	1,120	938	4.5
G3	1,500	3,217	2,391	5,608	743	3.7
G4	402	852	803	1,655	942	4.1
G5	1,303	3,502	3,241	6,743	925	5.2
G6	974	2,553	2,352	4,905	921	5.0
G7	276	586	548	1,134	935	4.1
G8	320	652	628	1,280	963	4.0
Total	6,467	15,458	14,035	29,493	908	4.6

Table 1. Number of households, population, sex ratio, and average household size of the selected Gram Panchayats. Source: Census of India, 2011 (Village Directory / District Census Handbook); sex ratio and household size computed by the authors.

3.2. Literacy Status

The literacy status of the selected Grama Panchayats is presented in Table 2, covering the overall, male, and female literacy rates. Literacy ranges from 62.1 per cent in Anoor (G6) to 84.3 per cent in Neraluru (G3), a spread of more than twenty two percentage points across the sample. The average literacy rate of the selected GPs is 74.1 per cent, marginally below the Karnataka figure of 75.36 per cent recorded in the 2011 Census (Census of India, 2011). A consistent pattern is observed across all four districts, as the high revenue GP records higher literacy than its low revenue counterpart in every pair. Halaga (G1) exceeds Rangadolli (G2) by 7.3 points, Neraluru (G3) exceeds Ragihalli (G4) by 7.5 points, Tajsultanpura (G5) exceeds Anoor (G6) by 6.3 points, and Chakkodanahalli (G7) exceeds Chamundibetta (G8) by 4.7 points. Unlike the demographic findings, where the Mysore pair was an exception, literacy aligns with revenue category in every case, which suggests a positive association between the fiscal strength of a GP and the educational attainment of its residents. A wide gender gap is found throughout. Male literacy averages 82.7 per cent against female literacy of 65.7 per cent, a gap of about seventeen points that exceeds the state gap of 14.4 points. The gap is widest in the low revenue GPs Anoor (G6) and Rangadolli (G2), where female literacy falls to 51.8 and 55.1 per cent, and narrowest in Neraluru (G3). Literacy thus moves with the financial position of a GP more closely than demographic size.

Gram Panchayat	Literacy Rate (%)	Male Literacy (%)	Female Literacy (%)
G1	72.5	81.2	63.8
G2	65.2	75.4	55.1
G3	84.3	89.7	78.9
G4	76.8	83.5	70.2
G5	68.4	77.6	59.2
G6	62.1	72.3	51.8
G7	74.2	82.1	66.3
G8	69.5	78.9	60.4
—	74.1	82.7	65.7

Table 2. Literacy status in the sample Gram Panchayats (in percentage). Source: Census of India, 2011 (Primary Census Abstract).

3.3. Status of Human Development

The status of human development in the selected Grama Panchayats is presented in Table 3, drawn from the 2015 ANSSIRDPR report and based on four measures, namely the standard of living, health, and education indices and the composite Human Development Index (HDI). As these data relate to 2015, they are read alongside the 2011 Census figures reported above. The HDI ranges from 0.2727 in Anoor (G6) to 0.5876 in Neraluru (G3), which rank 5,830 and 152 respectively among the GPs of the state, indicating a wide development gap within the sample. In three of the four districts the high revenue GP records a higher HDI than its low revenue counterpart, in Belagavi, Bengaluru Urban, and Kalaburagi. The Mysore pair again forms the exception, as the low revenue Chamundibetta (G8, 0.5630) exceeds the high revenue Chakkodanahalli (G7, 0.4777). This repeats the pattern seen in the demographic data and contrasts with literacy, where the high revenue GP led in every pair. The exception is driven by the standard of living, on which Chamundibetta (0.2456) exceeds Chakkodanahalli (0.1572), while in education Chakkodanahalli (0.7109) still leads, consistent with its higher literacy. The standard of living accounts for most of the variation in the sample, falling to 0.0470 in Anoor (G6) and 0.0770 in Rangadholi (G2), the low revenue GPs of the more backward regions. The health index is uniformly high and adds little differentiation. Human development therefore follows fiscal strength in most cases, although local economic conditions can override it.

Gram Panchayat	SoL Value	SoL Rank	Health Value	Health Rank	Edu. Value	Edu. Rank	HDI Value	HDI Rank
G1	0.2183	691	0.8992	5081	0.6684	2838	0.5081	1072
G2	0.0770	5212	1.0000	1	0.5015	5575	0.3379	5345
G3	0.2838	153	1.0000	1	0.7149	1192	0.5876	152
G4	0.2402	458	1.0000	1	0.7112	1320	0.5549	387
G5	0.1666	1789	0.9758	2796	0.6724	2709	0.4781	1704
G6	0.0470	5789	0.9510	4134	0.4536	5734	0.2727	5830
G7	0.1572	2068	0.9758	2796	0.7109	1329	0.4777	1718
G8	0.2456	2,100	0.7892	2,800	0.6543	2,300	0.5630	1,450

Table 3. Status of human development in the selected Gram Panchayats. Source: Performance of Grama Panchayats in Karnataka, Human Development – 2015, ANSSIRDPR, GoK. (SoL = standard of living; Edu. = education; rank is out of all GPs in the state.)

3.4. Year wise revenue and expenditure

The year wise revenue and expenditure of the eight selected Gram Panchayats during 2020–21 to 2024–25 are presented in Tables 4 and 5 and in Figure 1. Revenue and expenditure are important indicators of the financial performance and fiscal sustainability of local governments, reflecting their capacity to mobilize resources and deliver essential public services. The analysis reveals considerable variation in financial performance among the selected Gram Panchayats, mainly due to differences

in demographic characteristics, literacy, human development, urbanization, economic activities, and administrative efficiency. During the study period, revenue ranged from 21.81 lakh to 337.45 lakh, while expenditure varied from 3.26 lakh to 205.38 lakh, indicating substantial disparities in fiscal capacity. Neraluru (G3) consistently recorded the highest revenue and expenditure, with revenue increasing from 297.21 lakh in 2020–21 to 337.45 lakh in 2023–24 before declining to 282.31 lakh in 2024–25. This superior financial performance is associated with rapid urbanization, diversified economic activities, a broader tax base, and the highest literacy rate (84.3%) and Human Development Index (0.5876). Halaga (G1), Chakkodanahalli (G7), and Taj Sultanpura (G5) also maintained relatively stable financial performance due to stronger socioeconomic characteristics and effective financial management.

In contrast, Ragihalli (G4), Chamundibetta (G8), and Anoor (G6) recorded comparatively lower revenue and expenditure. Anoor experienced the largest decline in revenue, decreasing from 212.45 lakh in 2023–24 to 26.79 lakh in 2024–25, representing a reduction of approximately 87.4%. Expenditure generally followed the revenue trend across all Gram Panchayats, indicating prudent utilization of available financial resources and sound fiscal management. The observed variations reflect the combined influence of population, literacy, human development, urbanization, government grants, own source revenue, administrative efficiency, and the post COVID 19 recovery. Overall, Gram Panchayats with better socioeconomic conditions and stronger institutional capacity demonstrated superior financial performance, emphasizing the need to strengthen local revenue mobilization and improve fiscal sustainability.

Gram Panchayat	2020 21	2021 22	2022 23	2023 24	2024 25
G1	6905329	5977035.5	7654923.5	10343310.5	6890626.5
G2	7882348	9370082	12119367	15432711	8876723
G3	29721033	23073328	24599999	33744974	28230620
G4	8037818	2814637	2181251	3681566	4244807
G5	15809785	16675779	10907011	12464102	10769809
G6	19397568.15	19690416.3	12235123	21244553	2678661
G7	16466899	12609852	13425430	12825735	15885838
G8	5353968	3193187	2860227.33	7535966	2442760.33

Table 4. Revenue Trends Across the Selected Gram Panchayats. Where G1–Halaga, G2–Rangadolli, G3–Neraluru, G4–Ragihalli, G5–Tajsultanpura, G6–Anoor, G7–Chakkodanahalli, and G8–Chamundibetta. Source: e Swaraj Accounting Records (FY 2020–21 to FY 2024–25).

Gram Panchayat	2020 21	2021 22	2022 23	2023 24	2025 26
G1	3883450	1067835	1271773	1522314	1234412
G2	2527659	1924683	2383534	1512025	1819566
G3	20537536	13597348	2468775	13536409	11511430
G4	2962406	2416341	631343	326293	810260
G5	6382242	9238488	4746144	5853412	2699207
G6	2849151	3121907	1687790	2266793	798002
G7	6132407	7363206	3932448	4227182	6666426
G8	1913903	1909031	2198480	1272780	852839

Table 5. Expenditure patterns Across the Selected Gram Panchayats. Where G1–Halaga, G2–Rangadolli, G3–Neraluru, G4–Ragihalli, G5–Tajsultanpura, G6–Anoor, G7–Chakkodanahalli, and G8–Chamundibetta. Source: e Swaraj Accounting Records (FY 2020–21 to FY 2024–25).

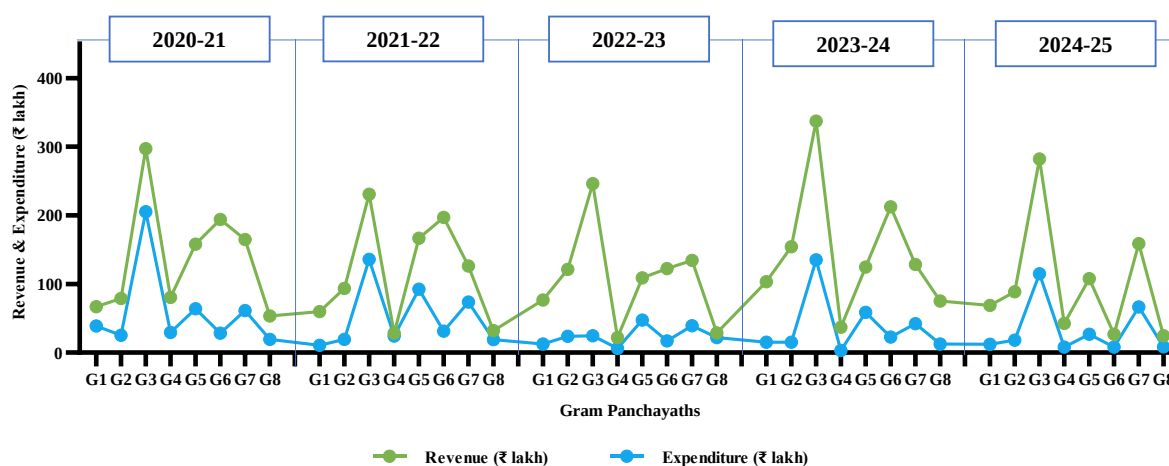


Figure 1. Revenue and Expenditure patterns Across the Selected Gram Panchayats. Where G1–Halaga, G2–Rangadolli, G3–Neraluru, G4–Ragihalli, G5–Tajsultanpura, G6–Anoor, G7–Chakkodanahalli, and G8–Chamundibetta. Source: e Swaraj Accounting Records (FY 2020–21 to FY 2024–25).

3.5. Expenditure as Proportion of Revenue

Expenditure as a proportion of revenue for the selected Gram Panchayats during 2020–21 to 2024–25 is presented in table 6 and figure 02. This ratio indicates the extent to which available financial resources are utilized for developmental and administrative activities. Higher values reflect greater utilization of revenue, while lower values indicate relatively higher savings or unutilized financial resources. The expenditure to revenue ratio varied considerably across the selected Gram Panchayats, ranging from 8.86% to 85.85%, demonstrating differences in financial management and expenditure priorities. Ragihalli (G4) recorded the highest ratio (85.85%) in 2021–22, followed by Chamundibetta (G8) (76.86%) in 2022–23 and Neraluru (G3) (69.10%) in 2020–21, indicating that a larger share of available revenue was utilized for public services and development activities during these years. In contrast, the lowest ratios were observed in Ragihalli (8.86%) during 2023–24, Neraluru (10.04%) in 2022–23, and Anoor (10.67%) in 2023–24, suggesting lower expenditure relative to available revenue.

Overall, the expenditure ratio remained below 60% for most Gram Panchayats, indicating prudent financial management and the maintenance of financial reserves. The year to year variations may be attributed to differences in government grants, implementation of development projects, own source revenue generation, administrative efficiency, and the effects of the COVID 19 pandemic. These findings suggest that effective financial planning and efficient resource utilization are essential for improving the fiscal sustainability and developmental performance of Gram Panchayats.

Gram Panchayat	2020 21	2021 22	2022 23	2023 24	2024 25
G1	58.18	17.87	16.61	14.72	17.91
G2	32.07	20.54	19.67	9.80	20.50
G3	69.10	58.93	10.04	40.11	40.78
G4	36.86	85.85	28.94	8.86	19.09
G5	40.37	55.40	43.51	46.96	25.06
G6	14.69	15.85	13.79	10.67	29.79
G7	37.24	58.39	29.29	32.96	41.96
G8	35.75	59.78	76.86	16.89	34.91

Table 6. Expenditure as Proportion of Revenue Across the Selected Gram Panchayats. Where G1–Halaga, G2–Rangadolli, G3–Neraluru, G4–Ragihalli, G5–Tajsultanpura, G6–Anoor, G7–Chakkodanahalli, and G8–Chamundibetta.

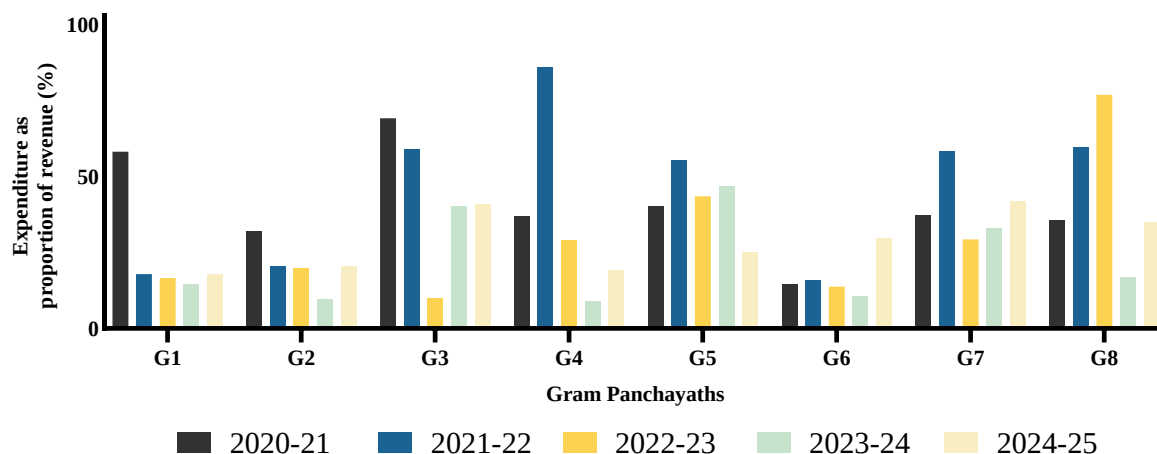


Figure 2. Expenditure as Proportion of Revenue Across the Selected Gram Panchayats. Where G1–Halaga, G2–Rangadolli, G3–Neraluru, G4–Ragihalli, G5–Tajsultanpura, G6–Anoor, G7–Chakkodanahalli, and G8–Chamundibetta.

3.6. Own Source Revenue

Own Source Revenue (OSR) and OSR as a percentage of total revenue for the selected Gram Panchayats during 2020–21 to 2024–25 is presented in table7 and figure 3. OSR reflects the financial autonomy of Gram Panchayats by measuring their ability to generate revenue through local taxes, fees, user charges, and other internal sources. Higher OSR indicates greater financial independence and reduced reliance on government grants. The analysis shows considerable variation in OSR across the selected Gram Panchayats. Neraluru (G3) consistently recorded the highest OSR, increasing from ₹537.15 lakh in 2020–21 to ₹1,043.78 lakh in 2024–25, reflecting its strong urban economy, diversified commercial activities, and broader tax base. Taj Sultanpura (G5) also demonstrated significant improvement, with OSR increasing from ₹5.59 lakh to ₹50.3 lakh over the study period. Similarly, Chamundi Bette (G8) and Ragihalli (G4) recorded gradual improvements in both OSR and its share of total revenue. In contrast, Anoor (G6) generated the lowest OSR, ranging from ₹0.78 lakh to ₹3.83 lakh, indicating heavy dependence on intergovernmental fiscal transfers. The proportion of OSR to total revenue remained below 15% for most rural Gram Panchayats, whereas Ragihalli, Taj Sultanpura, and Chamundi Bette recorded substantial improvements during later years. However, the exceptionally high OSR percentages reported for Neraluru (G3) exceed 100%, suggesting possible inconsistencies in the reported financial data that require verification. Overall, the findings indicate that urbanization, economic diversification, administrative efficiency, and effective tax collection play a crucial role in strengthening the financial autonomy of Gram Panchayats.

FY Year	2020–21		2021–22		2022–23		2023–24		2024–25	
Gram Panchayat	OSR	OSR %	OSR	OSR %	OSR	OSR %	OSR	OSR %	OSR	OSR %
G1	5.27	7.63	2.89	4.84	4.19	5.47	3.35	3.24	9.63	13.97
G2	4.38	5.56	4.7	5.01	1.91	1.58	2.6	1.68	10.14	11.42
G3	537.15	180.73	397.06	172.04	293.43	119.28	797.83	236.43	1043.78	369.73
G4	7.71	9.60	11.9	42.27	18.34	84.10	11.98	32.54	11.58	27.29
G5	5.59	3.54	9.42	5.65	15.87	14.55	24.07	19.31	50.3	46.71
G6	2.07	1.07	1.46	0.74	1.04	0.85	0.78	0.36	3.83	14.29
G7	9.74	5.92	7.94	6.30	6.47	4.82	8.48	6.61	15.85	9.98
G8	4.9	9.15	8.08	25.29	13.31	46.55	21.3	28.26	21.64	88.57

Table 7: Own Source Revenue (OSR) and OSR as a percentage of total revenue for the selected Gram Panchayats during 2020–21 to 2024–25. Source: Panchatantra 2.0 (Ministry of Panchayati Raj, Government of India).

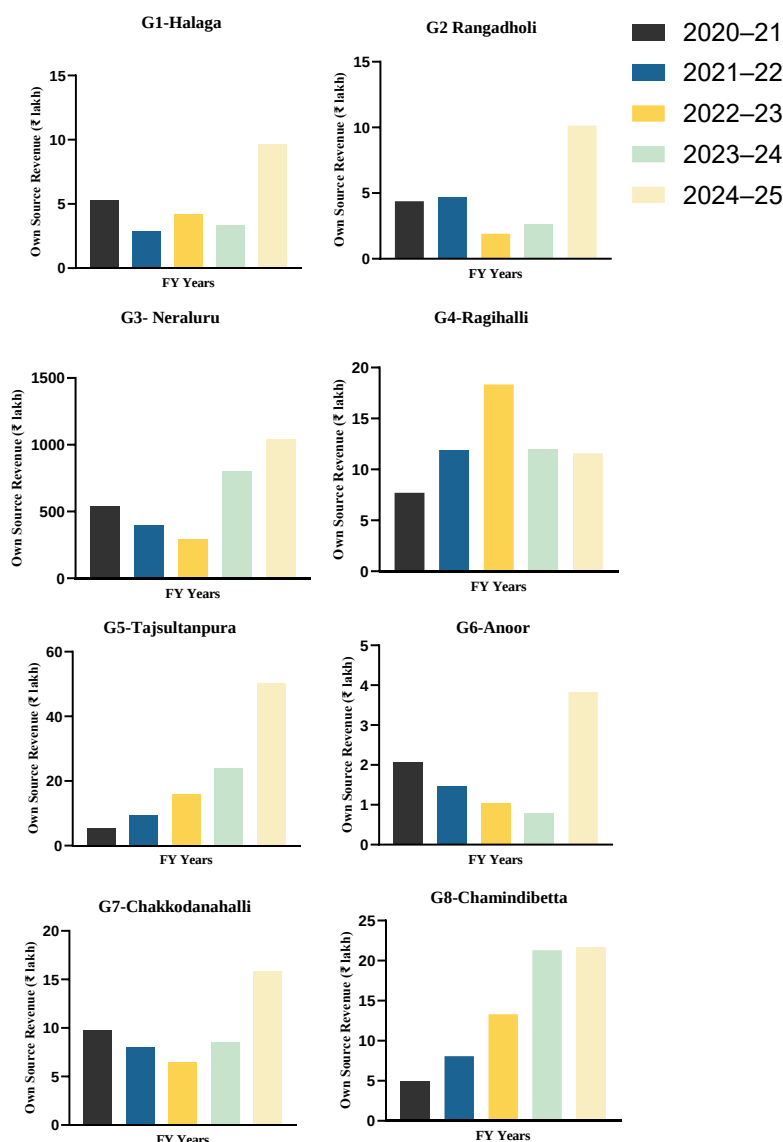


Figure 3: Own Source Revenue (OSR) and OSR as a percentage of total revenue for the selected Gram Panchayats during 2020–21 to 2024–25. Source: Panchatantra 2.0 (Ministry of Panchayati Raj, Government of India).

3.7. Pearson Correlation Analysis

To identify which factors are associated with stronger financial performance, Pearson product moment correlation coefficients were computed between the revenue of the eight sampled Gram Panchayats and six explanatory variables: expenditure, own source revenue (OSR), literacy, the Human Development Index (HDI), total population, and the number of households. For the fiscal variables (revenue, expenditure, and OSR), the mean value for each Gram Panchayat over the five financial years from 2020–21 to 2024–25 was used, while the socioeconomic and demographic variables (literacy, HDI, population, and households) were taken as single observed values for each Gram Panchayat. With eight Gram Panchayats ($n = 8$, $df = 6$), the critical value of the correlation coefficient is 0.707 at the 5% level and 0.834 at the 1% level; coefficients exceeding these thresholds are treated as statistically significant. The results are summarised in Table 8.

Variable correlated with Revenue	Pearson's r	r^2	p value	Significance
Expenditure	0.907	0.822	0.0019	Significant ($p < 0.01$)
Own Source Revenue (OSR)	0.827	0.684	0.0114	Significant ($p < 0.05$)
Households	0.531	0.282	0.1753	Not significant
Literacy	0.411	0.169	0.3115	Not significant
Population	0.391	0.153	0.3384	Not significant
HDI	-0.016	0.000	0.9707	Not significant

Table 8. Pearson correlation coefficients between revenue and selected financial and socioeconomic variables across the eight sampled Gram Panchayats ($n = 8$). Fiscal variables are five year means (2020–21 to 2024–25); socioeconomic and demographic variables are single observed values. r^2 denotes the coefficient of determination (shared variance).

The analysis reveals that revenue is most strongly and significantly associated with the two internal fiscal variables. The correlation between revenue and expenditure is strong, positive, and highly significant ($r = 0.907$, $p < 0.01$), with revenue accounting for roughly 82% of the variation in expenditure ($r^2 = 0.822$). This indicates that spending closely tracks the resources available to a Gram Panchayat: those that mobilise more revenue also spend more, consistent with the year wise pattern reported in Section 3.4, in which expenditure generally followed revenue. It suggests that expenditure capacity is constrained largely by resource availability rather than by independent spending decisions.

Revenue is also strongly and significantly correlated with own source revenue ($r = 0.827$, $p < 0.05$), with the two variables sharing about 68% of their variance ($r^2 = 0.684$). Gram Panchayats with higher total revenue therefore tend to generate more income from local taxes, fees, and user charges, indicating that greater fiscal strength is accompanied by greater financial autonomy. This relationship is shaped in part by Neraluru (G3), the peri urban Gram Panchayat that records both the highest total revenue and, by a wide margin, the highest OSR, reflecting its broader tax base and diversified commercial activity.

The demographic and socioeconomic variables show positive but statistically weaker associations with revenue. The correlation with the number of households is moderate ($r = 0.531$) but does not reach significance at this sample size, and the correlations with literacy ($r = 0.411$) and population ($r = 0.391$) are weak to moderate and likewise non significant. These positive signs are consistent with the descriptive finding that a larger base of taxable households and higher educational attainment tend to accompany stronger revenue, but the relationships are not robust enough to be statistically confirmed within a sample of only eight Gram Panchayats.

Notably, revenue shows virtually no linear correlation with the Human Development Index ($r = -0.016$, $p = 0.97$). While the paired district comparisons in Section 3.3 showed the high revenue Gram Panchayat recording a higher HDI than its low revenue counterpart in three of the four districts, this within pair pattern does not carry over to a linear association across the full sample when revenue is averaged over the study period. The result is influenced by Anoor (G6), which maintained relatively high revenue from 2020–21 to 2023–24 before its sharp decline in 2024–25, yet records the lowest HDI in the sample (0.2727), and by Chamundibetta (G8), which combines low revenue with a comparatively high HDI. Because HDI is a composite measure dominated by the standard of living and education components and shaped by structural conditions that accumulate over time, it does not move in step with short run fiscal flows.

Taken together, the correlation results indicate that the strongest and only statistically significant correlates of financial performance are the fiscal variables themselves—expenditure and own source revenue—whereas demographic and human development characteristics display positive but statistically weak associations at this sample size. This suggests that, within the present sample, a Gram Panchayat's financial performance is most tightly coupled with its own revenue mobilisation and spending behaviour, with socioeconomic conditions playing a supporting rather than a statistically decisive role. These findings should be read with caution given the small sample of eight Gram Panchayats, which limits the statistical power to detect moderate associations, and they reinforce the study's broader emphasis on strengthening local own source revenue generation as a route to improved fiscal sustainability.

3.8. Multiple Linear Regression Analysis

The correlation analysis in Section 3.5 identified the variables individually associated with revenue but could not establish their joint or independent contributions. To examine the combined determinants of financial performance, a multiple ordinary least squares (OLS) regression was estimated with the five year mean revenue (2020–21 to 2024–25) of each Gram Panchayat as the dependent variable and six explanatory variables as regressors: expenditure and own source revenue (OSR), both expressed as five year means in rupees lakh, together with the single value socioeconomic and demographic measures of literacy, the Human Development Index (HDI), total population, and the number of households. Revenue and expenditure were rescaled to lakh to place all monetary variables on a comparable footing with OSR. The general specification takes the form $\text{Revenue} = \beta_0 + \beta_1(\text{OSR}) + \beta_2(\text{Expenditure}) + \beta_3(\text{Literacy}) + \beta_4(\text{HDI}) + \beta_5(\text{Population}) + \beta_6(\text{Households}) + \epsilon$. It must be emphasised at the outset that the sample comprises only eight Gram Panchayats, so a model containing six regressors leaves a single residual degree of freedom ($n - k - 1 = 8 - 6 - 1 = 1$). The regression is therefore treated as exploratory rather than confirmatory, and the coefficients are interpreted with corresponding caution.

Predictor	Coefficient (β)	Std. error	t	p value	VIF
Constant	224.96	93.97	2.39	0.252	—
OSR	-0.208	0.181	-1.15	0.456	138.19
Expenditure	2.040	0.347	5.88	0.107	15.85
Literacy	-0.863	1.803	-0.48	0.716	14.70
HDI	-336.36	59.39	-5.66	0.111	4.09
Population	-0.085	0.051	-1.68	0.342	1657.46
Households	0.452	0.263	1.72	0.336	1973.11

Table 9. Full multiple OLS regression of mean revenue on all six explanatory variables ($n = 8$). Model fit: $R^2 = 0.998$, adjusted $R^2 = 0.987$, $F(6, 1) = 90.23$, $p = 0.080$. VIF = variance inflation factor. Fiscal variables are five year means (2020–21 to 2024–25); socioeconomic and demographic variables are single observed values.

The full model returns an almost perfect fit, explaining 99.8 per cent of the variation in revenue ($R^2 = 0.998$; adjusted $R^2 = 0.987$). This apparent success is, however, an artefact of over parameterisation rather than genuine explanatory power. The overall F test is not statistically significant ($F = 90.23$, $p = 0.080$), which is possible only because the model is estimated on a single residual degree of freedom, and not one of the six coefficients reaches significance at the 5 per cent level. The diagnostics confirm severe multicollinearity: the model condition number is approximately 1.5×10^5 , and the variance inflation factors for households (1973.1), population (1657.5) and OSR (138.2) are far above the conventional threshold of 10. This redundancy is expected given the strong pairwise associations among the regressors, notably between population and households ($r = 0.972$), between expenditure and OSR ($r = 0.888$), and between literacy and HDI ($r = 0.820$). Under these conditions the coefficients become unstable and their signs unreliable; the large negative coefficient on HDI ($\beta = -336.36$), in particular, is a suppression artefact of collinearity rather than evidence that human development depresses revenue, and it is consistent with the near zero simple correlation between revenue and HDI ($r = -0.016$) reported in Section 3.5. The full model is thus retained only for completeness and is not a sound basis for inference.

To obtain interpretable estimates, a series of more parsimonious models was estimated and compared, as summarised in Table 10. Reducing the specification to the two internal fiscal variables—expenditure and OSR—yields a model that is significant overall ($R^2 = 0.824$, adjusted $R^2 = 0.754$, $F(2, 5) = 11.71$, $p = 0.013$) and free of serious collinearity ($VIF = 4.72$ for both regressors). Within this pair, however, only expenditure carries appreciable weight (standardised $\beta = 0.814$) while OSR contributes little once expenditure is included (standardised $\beta = 0.104$), because the two are themselves highly correlated. The point is made most clearly by the incremental fit: expenditure alone accounts for 82.2 per cent of the variance in revenue, and adding OSR raises this by a negligible 0.2 percentage points, to 82.4 per cent.

Model specification	k	R^2	Adj. R^2	F	p value
Full (all six predictors)	6	0.998	0.987	90.23	0.080
Example (OSR, Exp., Lit., HDI, Pop.)	5	0.993	0.975	54.61	0.018
Reduced (Expenditure + OSR)	2	0.824	0.754	11.71	0.013
Simple (Expenditure only)	1	0.822	0.792	27.67	0.002
Simple (OSR only)	1	0.684	0.631	12.96	0.011

Table 10. Comparison of alternative regression specifications for mean revenue ($n = 8$). k = number of predictors. The five predictor model corresponds to the illustrative specification $\text{Revenue} = \beta_0 + \beta_1(\text{OSR}) + \beta_2(\text{Expenditure}) + \beta_3(\text{Literacy}) + \beta_4(\text{HDI}) + \beta_5(\text{Population}) + \epsilon$.

The simple regression of revenue on expenditure alone is the most robust and defensible specification in the sample. It is highly significant ($R^2 = 0.822$, adjusted $R^2 = 0.792$, $F(1, 6) = 27.67$, $p = 0.002$) and yields the estimated relationship $\text{Revenue} = 46.16 + 1.838 \times \text{Expenditure}$, both terms measured in rupees lakh, with the slope significant at $p = 0.002$. The coefficient indicates that each additional lakh of expenditure is associated with roughly 1.84 lakh of revenue, which reflects the tight coupling between the two also observed in the year wise analysis (Section 3.4) and the correlation results (Section 3.5), where expenditure was the strongest correlate of revenue ($r = 0.907$). Own source revenue, taken on its own, is likewise a significant determinant ($R^2 = 0.684$, $p = 0.011$; $\text{Revenue} = 96.31 + 0.296 \times \text{OSR}$), consistent with its second ranked correlation ($r = 0.827$). Figure 4 illustrates these findings, plotting observed against predicted revenue for the reduced model in panel (a) and the fit–complexity trade off across the five specifications in panel (b); the adjusted R^2 peaks at the parsimonious models and the gain from adding demographic and socioeconomic regressors is marginal relative to the instability it introduces.

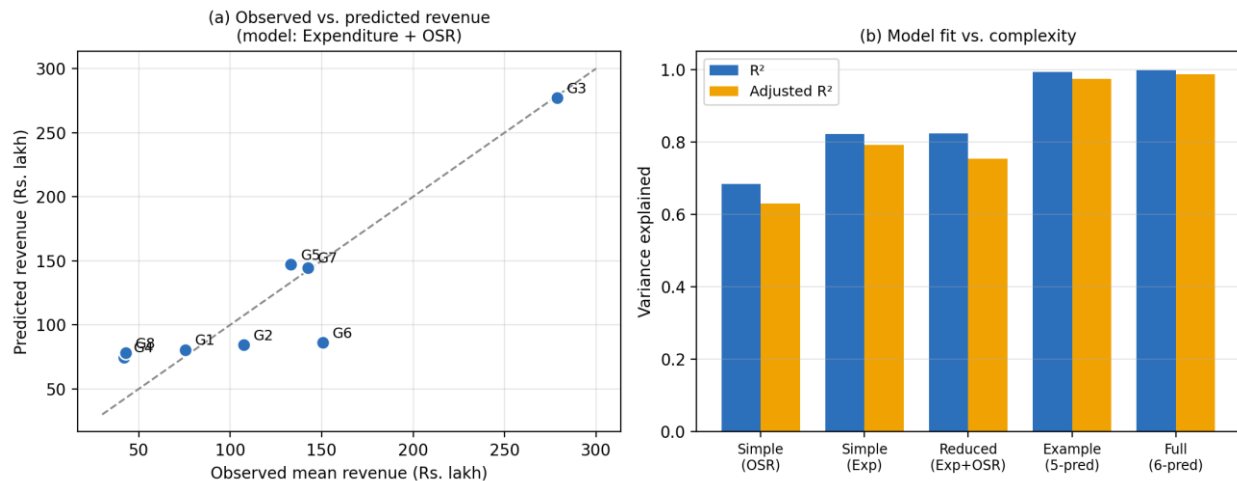


Figure 4. Regression diagnostics for the determinants of Gram Panchayat revenue. (a) Observed versus predicted mean revenue for the reduced model (Expenditure + OSR), with the dashed line denoting perfect prediction; (b) R^2 and adjusted R^2 across the five specifications in Table 10, showing that fit is largely captured by expenditure alone.

Taken together, the regression analysis reinforces and sharpens the conclusions of the correlation analysis. When the determinants of revenue are examined jointly, the financial performance of a Gram Panchayat is explained almost entirely by its own fiscal behaviour, and above all by its level of expenditure, while the demographic and human development characteristics—population, households, literacy and HDI—add no robust independent explanatory power once the fiscal variables are accounted for. This does not imply that socioeconomic conditions are irrelevant; rather, their influence appears to operate indirectly, through the fiscal capacity they help to shape, rather than as direct determinants of revenue in a sample of this size. The results should nonetheless be read with caution: with only eight Gram Panchayats, the statistical power to detect moderate multivariate effects is limited, and the estimates are sensitive to individual cases such as the peri urban Neraluru (G3). Within these limits, the analysis lends quantitative support to the study’s central recommendation that strengthening local revenue mobilisation and expenditure efficiency offers the most direct route to improved fiscal sustainability at the Gram Panchayat level.

4. Findings

The principal demographic, socioeconomic, and financial findings for the eight sampled Gram Panchayats are consolidated in Table 11. The revenue, expenditure, and own source revenue (OSR) figures are five year means (2020–21 to 2024–25) in rupees lakh, while literacy, HDI, and population are single observed values. The high revenue and low revenue classifications follow the total receipts basis described in Section 2.2.

GP	Gram Panchayat (District)	Category	Popn.	Literacy (%)	HDI	Revenue	Exp.	OSR	Key observation
G1	Halaga (Belagavi)	High	7,048	72.5	0.508	75.5	18.0	5.1	Largest population; balanced sex ratio; stable finances but low OSR
G2	Rangadolli (Belagavi)	Low	1,120	65.2	0.338	107.4	20.3	4.8	Low literacy and wide gender gap; grant dependent
G3	Neraluru (Bengaluru Urban)	High	5,608	84.3	0.588	278.7	123.3	613.9	Top performer on all indicators; peri urban; OSR figures need verification
G4	Ragihalli (Bengaluru Urban)	Low	1,655	76.8	0.555	41.9	14.3	12.3	Lowest mean revenue; highly volatile expenditure ratio
G5	Taj Sultanpura (Kalaburagi)	High	6,743	68.4	0.478	133.3	57.8	21.1	Strongest OSR growth; largest households
G6	Anoor (Kalaburagi)	Low	4,905	62.1	0.273	150.5	21.5	1.8	Lowest literacy, HDI and OSR; revenue collapsed in 2024–25
G7	Chakkodanahalli (Mysore)	High	1,134	74.2	0.478	142.4	56.6	9.7	Small but stable; strong education index
G8	Chamundibetta (Mysore)	Low	1,280	69.5	0.563	42.8	16.3	13.9	Low revenue yet higher HDI than its high revenue pair

Table 11. Summary of the main demographic, socioeconomic, and financial findings for the eight sampled Gram Panchayats. Revenue, expenditure, and OSR are five year means (2020–21 to 2024–25) in ₹ lakh; literacy, HDI, and population are single observed values. Note: For the Belagavi pair, the five year mean revenue of Rangadolli (G2) exceeds that of Halaga (G1)

because the high/low classification was assigned on total receipts over the study period rather than on the annual mean; this pair, and the OSR values for Neraluru (G3) that exceed total revenue, warrant reconciliation against the source records.

5. Recommendations

On the basis of these findings, the following measures are recommended to strengthen the fiscal sustainability and developmental performance of Gram Panchayats. They are grounded in practices already observed to work within the sample rather than framed as universal prescriptions.

- a) Strengthen own source revenue mobilisation. OSR remained below 15 per cent of total revenue for most rural Gram Panchayats. The gains achieved by Taj Sultanpura, Chamundibetta, and Ragihalli show that improvement is feasible; these can be replicated through updated property tax mapping, revised user charges, and digitised collection rather than through enforcement alone.
- b) Reduce grant dependence in weaker Gram Panchayats. Panchayats such as Anoor, which generate negligible internal revenue, require targeted handholding and a phased local revenue plan to lower their reliance on intergovernmental fiscal transfers.
- c) Improve expenditure efficiency and fund utilisation. With expenditure to revenue ratios below 60 per cent for most Gram Panchayats and falling as low as 8.9 per cent, better financial planning and the timely utilisation of available funds would translate revenue more fully into development outcomes.
- d) Invest in literacy, especially female literacy. Because literacy tracked fiscal strength most closely, closing the wide gender gaps in Anoor and Rangadolli, where female literacy falls to 51.8 and 55.1 per cent, would support both human development and long run revenue capacity.
- e) Prioritise administrative capacity building in backward regions. Gram Panchayats in the Kalyana Karnataka region lag on staffing and administrative systems; targeted training and stronger support would help narrow the intra state development gap.
- f) Standardise financial reporting and resolve data anomalies. Inconsistencies such as Neraluru's reported OSR exceeding total revenue, and the Belagavi classification noted under Table 11, should be reconciled to improve the comparability of financial figures across Gram Panchayats.
- g) Promote peer learning across Gram Panchayats. Institutionalising the exchange of successful revenue and expenditure practices would allow field tested approaches to spread across panchayats rather than remaining confined to isolated cases.

6. Conclusion

This study examined the financial and socioeconomic patterns of eight Gram Panchayats across four Karnataka districts and found substantial variation in both dimensions. Literacy aligned consistently with revenue category in every district, whereas population size and the Human Development Index did not, with the Mysore pair repeatedly departing from the expected order. The correlation and multiple regression analyses converged on a clear result: a Gram Panchayat's financial performance is governed chiefly by its own fiscal behaviour, with expenditure and own source revenue as the only robust determinants of revenue expenditure alone explaining about 82 per cent of its variation while demographic and human development characteristics contributed no statistically robust independent effect at this sample size. Peri urban Gram Panchayats such as Neraluru markedly outperformed remote ones such as Anoor across financial and developmental indicators, confirming that proximity to urban centres, a broader tax base, and economic diversification shape fiscal strength. The findings suggest that socioeconomic conditions influence revenue indirectly, through the fiscal capacity they help to build, rather than as direct determinants. These conclusions should be read as indicative rather than definitive, given the small sample of eight Gram Panchayats, the temporal mismatch between the 2011 socioeconomic data and the recent financial records, and differences in reporting practices across Gram Panchayats.

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