Micro, Small and Medium Enterprises (MSMEs) Development, Employment Generation and Regional Disparities in Telangana: A District-Level Analysis

B Nandivardhan[1] and Dr SP Krishnaveni[2]

Micro, Small and Medium Enterprises (MSMEs) are important sources of entrepreneurship, employment and local economic activity, but their distribution across regions can be highly uneven. This study examines the spatial concentration of registered MSMEs and MSME-associated employment across the 33 districts of Telangana and assesses their relationship with district economic scale. The analysis uses official district-level data on Udyam registrations, Gross District Domestic Product (GDDP) and employment associated with Udyam registrations. The results show considerable spatial concentration, the Gini coefficient of MSME registrations is about 0.47, the coefficient of variation is 1.18, and the three largest districts account for about 40.1 percent of registered MSMEs. A log-log cross-sectional model reports a strong positive association between GDDP and MSME registrations ($\beta = 0.977$; $p < 0.001$; $R^2 = 0.848$). The corresponding association between GDDP and reported MSME employment is also positive ($\gamma = 1.262$; $p < 0.001$; $R^2 = 0.616$). The findings indicate that MSME activity is closely linked to the geography of economic activity. However, the estimates are descriptive associations rather than causal effects because the analysis is cross-sectional and the underlying administrative series have different reference dates. The study therefore supports district-sensitive MSME policies that combine infrastructure, finance, skills, market access and enterprise scaling with locally appropriate cluster development.

Keywords: MSMEs; employment generation; regional disparities; Telangana; district economy; spatial concentration; Udyam registration; GDDP; inclusive growth; agglomeration.
JEL Classification: L26; L52; J21; R11; R12; R58

1. Introduction

Regional disparities remain an important concern in development policy because aggregate growth can conceal substantial differences in productive opportunities across locations. The

[1] Research Scholar, Department of Economics, Central University of Andhra Pradesh, nandivardhanbangi04@gmail.com
[2] Associate Professor, Department of Economics, Government City College, Hyderabad, drspkrishnaveni@gmail.com

spatial organisation of economic activity affects employment, investment, productivity, human-capital accumulation and access to markets. Regional economics has long recognised that firms do not choose locations independently of other firms and economic institutions. Market size, transport costs, labour availability, supplier networks and knowledge spillovers can create cumulative advantages for particular locations (Krugman, 1991; Fujita et al., 1999).

The Indian evidence also points to the importance of location. Lall et al. (2004) show that market access, localisation and urbanisation economies can influence industrial productivity, while Mitra (2000) finds evidence of urbanisation economies in Indian industries. Tripathi (2013) further reports that agglomeration and urban economic growth are closely related in Indian cities. These findings are relevant for MSMEs because small firms often depend strongly on local business networks, access to finance, infrastructure, labour markets and customers.

Telangana provides a useful setting for examining these issues. The state combines a large metropolitan economic centre around Hyderabad and adjoining districts with districts that differ substantially in economic structure, market access and industrial development. Official district GDDP estimates for 2022–23 illustrate this variation. Rangareddy recorded GDDP of Rs. 2,83,419 crore, Hyderabad Rs. 2,28,623 crore and Medchal-Malkajgiri Rs. 88,867 crores, whereas Mulugu recorded Rs. 6,914 crores (Government of Telangana, 2024b). Such differences raise an empirical question does MSME activity follow the geography of economic scale, or is it relatively dispersed across districts?

The Telangana Socio-Economic Outlook 2024 reports 9,21,883 Udyam-registered MSMEs as of 12 June 2024. Services accounted for 79.3 percent of these registrations, while manufacturing accounted for 20.7 percent. Micro enterprises represented 96.8 percent of the registered total (Government of Telangana, 2024a). These figures demonstrate the numerical importance of micro enterprises and the increasing relevance of services within the registered MSME sector.

Employment provides a complementary measure. A Government of India parliamentary statement reports district-wise employment associated with Udyam registrations from the beginning of the Udyam portal in July 2020 through 22 March 2023, with a Telangana total of 26,38,699 persons (Government of India, Rajya Sabha, 2023). The employment ranking is not identical to the district ranking based on 2024 MSME registrations. This difference is

analytically useful because the number of enterprises alone does not reveal the scale of employment associated with them.

The policy context has also evolved. The Telangana MSME Policy 2024 places emphasis on employment, entrepreneurship, technology adoption, competitiveness, inclusive growth and enterprise development (Government of Telangana, 2024c). The RAMP programme has additionally emphasised institutional coordination and strengthening of the MSME ecosystem (Government of Telangana, RAMP, 2026). These policy directions make district-level evidence particularly relevant for deciding whether interventions should focus on enterprise creation, scaling, infrastructure, finance, skills or market integration.

Against this background, the present study examines three related issues the spatial distribution of registered MSMEs, the distribution of MSME-associated employment, and the relationship between district economic scale and MSME activity. The paper does not assume that concentration is automatically undesirable. Agglomeration can generate productivity and market-access benefits, but excessive spatial concentration may also leave weaker districts with limited enterprise ecosystems. The policy challenge is therefore to balance productive agglomeration with broader access to entrepreneurial opportunities.

2. Review of Literature and Research Gap

2.1 Agglomeration and regional economic concentration

The theoretical basis for spatial concentration is closely associated with increasing returns and agglomeration economies. Krugman (1991) explains how increasing returns, transport costs and market interactions can generate geographical concentration. Fujita et al. (1999) formalise the interaction between market size, transport costs and the location of economic activity. These approaches suggest that firms may benefit from locating near markets and other firms because proximity reduces transaction costs and facilitates access to specialised inputs and services.

Marshall's concept of industrial districts similarly emphasises specialised labour, supplier networks and knowledge spillovers. In empirical work on India, Lall et al. (2004) distinguish market-access effects, intra-industry localisation economies and inter-industry urbanisation economies. Their results indicate that infrastructure and market access can be particularly important for productivity. Mitra (2000) also finds that urbanisation and industrial spread are related to productivity growth in several Indian industries. Tripathi (2013) shows

that agglomeration is associated with urban economic growth in India. Together, this literature provides a theoretical basis for expecting MSME concentration to be related to district economic scale.

2.2 MSMEs, finance and regional development

MSME performance is also shaped by institutional constraints. Access to formal finance is one of the most persistent concerns for smaller enterprises. Vidyarani and Maheshkumar (2022), using Indian enterprise data, identify significant regional differences in access to formal credit and argue for region-specific programmes. This is important for district-level policy because uniform financial interventions may not address the different constraints faced by metropolitan, intermediate and less-developed districts.

Indian MSME research also highlights constraints relating to technology, infrastructure, market access and enterprise capabilities. These constraints can interact with spatial concentration. A district with a developed business ecosystem may offer firms better access to banks, skilled workers, suppliers and customers, while a district with a weaker ecosystem may face higher costs of establishing and expanding an enterprise. Consequently, regional disparities in MSMEs can reflect both market-based agglomeration and differences in the local institutional environment.

2.3 Research gap

Existing evidence provides substantial information on the contribution and constraints of MSMEs, but state-level totals can conceal important differences among districts. For Telangana, district-level evidence that simultaneously examines enterprise concentration, MSME-associated employment and the relationship with district economic scale remains limited. The present study addresses this gap by combining concentration measures with a parsimonious cross-sectional regression framework. Its contribution is primarily empirical, it establishes a district-level baseline against which future research can examine population, urbanisation, credit, infrastructure, human capital and spatial dependence.

3. Objectives and Research Hypotheses

1. To measure the spatial distribution and concentration of registered MSMEs across the districts of Telangana.
2. To examine the district-level distribution of employment associated with Udyam-registered MSMEs.

3. To estimate the association between district economic size and MSME registration/employment concentration.

The empirical hypotheses are:

H1: Registered MSMEs are spatially concentrated across Telangana's districts.

H2: District economic size is positively associated with registered MSMEs.

H3: District economic size is positively associated with MSME-associated employment.

4. Conceptual and Analytical Framework

The analysis combines agglomeration economics with a simple regional production framework. Let M_i represent registered MSMEs in district i and Y_i represent district economic output. MSME formation may depend on market size, infrastructure, finance, labour availability, institutions, industrial linkages and entrepreneurial capability. District GDDP is used here as a summary indicator of the scale of the local economic system rather than as an exogenous policy variable.

The baseline log-log specification is given by:

$$\boldsymbol{ln(M_i) = \alpha + \beta ln(Y_i) + \varepsilon_i}$$

where M_i denotes the number of registered MSMEs and Y_i denotes district GDDP.

The coefficient β is interpreted as an elasticity-type cross-sectional association. A coefficient close to one implies that MSME registrations vary approximately proportionately with district economic scale. The second model is:

$$\boldsymbol{ln\,(E_i) \;=\; \alpha \;+\; \gamma\, ln\,(Y_i) \;+\; u_i}$$

where E_i is reported employment associated with Udyam registrations. The log specification reduces the influence of very large districts and permits comparison across districts with different economic scales. Since the models contain only one explanatory variable, the coefficients are not interpreted as causal effects.

5. Data and Methodology

5.1 Data sources

The principal MSME dataset is Annexure 43 of the Telangana Socio-Economic Outlook 2024, which reports district-wise Udyam registrations as of 12 June 2024 (Government of Telangana, 2024a). District GDDP is taken from the Directorate of Economics and Statistics and refers to

2022–23 estimates at current prices (Government of Telangana, 2024b). Employment data are taken from a Government of India Rajya Sabha response reporting district-wise employment associated with Udyam registrations through 22 March 2023 (Government of India, Rajya Sabha, 2023).

The reference periods are intentionally kept separate. The paper does not treat the 2024 enterprise count and 2023 employment series as contemporaneous observations. The employment series is therefore used to describe the spatial distribution of reported MSME-associated employment rather than to calculate a current employment-per-enterprise ratio.

5.2 Measures of spatial concentration

Three complementary measures are used. The coefficient of variation measures dispersion relative to the mean. The Gini coefficient summarises inequality in the distribution of registered MSMEs across districts. Concentration ratios identify the share of total registrations accounted for by the three, five and ten largest districts (CR3, CR5 and CR10). These measures provide a simple way to assess whether registrations are broadly distributed or concentrated in a limited number of districts.

5.3 Econometric estimation

Two OLS log-log models are estimated for the 33 districts. Heteroskedasticity-robust HC1 standard errors are used. Spearman rank correlations are also reported because the relationship may be influenced by non-normal distributions and large metropolitan observations. The models are treated as baseline descriptive specifications. Potential omitted variables include population, urbanisation, bank credit, infrastructure, industrial land, human capital, electricity availability, sectoral structure and government support. Their omission limits causal interpretation.

6. Empirical Results

6.1 Structure of registered MSMEs

Telangana recorded 9,21,883 Udyam-registered MSMEs as of 12 June 2024. Of these, 1,90,669 were manufacturing enterprises and 7,31,214 were service enterprises. Micro enterprises accounted for 8,92,147 registrations, followed by 26,708 small and 3,028 medium enterprises (Government of Telangana, 2024a). Thus, the registered sector is dominated numerically by micro enterprises, while services constitute the largest broad activity category.

Category	Number	Share
Total MSMEs	9,21,883	100.0%
Manufacturing	1,90,669	20.7%
Services	7,31,214	79.3%
Micro	8,92,147	96.8%
Small	26,708	2.9%
Medium	3,028	0.3%

Source: *Government of Telangana (2024a), Telangana Socio-Economic Outlook 2024, Annexure 43 (Udyam registrations as of 12 June 2024).*

6.2 Spatial concentration of MSMEs

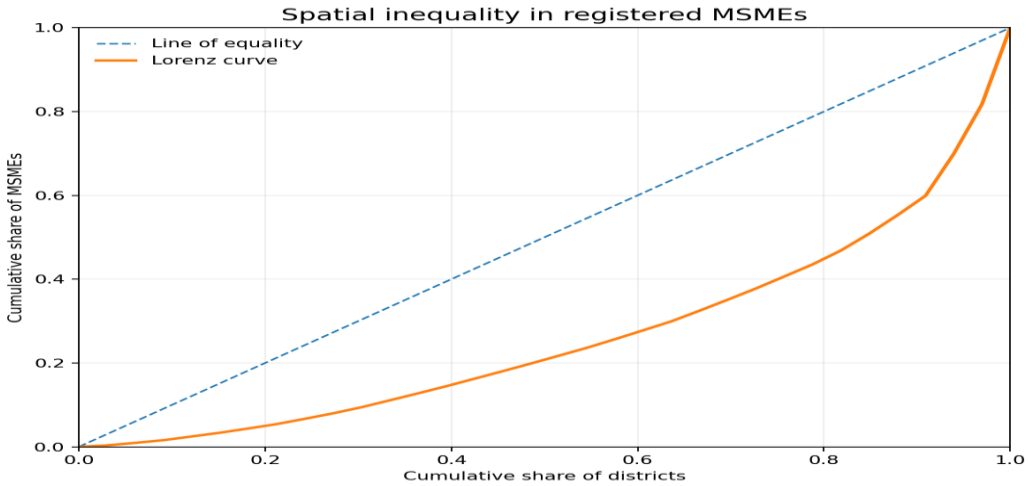
The district distribution shows substantial concentration. Hyderabad recorded 1,68,077 registered MSMEs, followed by Rangareddy with 1,09,164 and Medchal-Malkajgiri with 92,235. Together, the three districts accounted for approximately 40.1 percent of the state total. The five largest districts accounted for about 49.1 percent, while the ten largest accounted for approximately 64.9 percent.

Rank	District	MSMEs
1	Hyderabad	168,077
2	Rangareddy	109,164
3	Medchal-Malkajgiri	92,235
4	Nalgonda	42,988
5	Nizamabad	40,599
6	Karimnagar	36,969
7	Khammam	30,494
8	Hanumakonda	26,514
9	Sangareddy	26,299
10	Suryapet	24,706

Source: *Government of Telangana (2024a), Telangana Socio-Economic Outlook 2024, Annexure 43 (district-wise Udyam registrations as of 12 June 2024).*

The coefficient of variation was approximately 1.18 and the Gini coefficient approximately 0.47. These indicators point to considerable inequality in the geographical distribution of registered MSMEs. The result provides evidence in support of H1. The concentration is also consistent with the agglomeration literature, which suggests that market access, infrastructure, labour pools and business networks can reinforce enterprise location in economically dense areas (Krugman, 1991; Lall et al., 2004).

Figure 1. Lorenz curve for the distribution of registered MSMEs across Telangana's districts.



Source: *Author's calculation from Government of Telangana (2024a), Annexure 43.*

6.3 Spatial distribution of MSME-associated employment

The Government of India employment series reports 26,38,699 persons associated with Udyam registrations through 22 March 2023. The largest reported employment figures were Mahabubnagar (4,56,019), Rangareddy (4,25,737), Hyderabad (3,32,711), Medchal-Malkajgiri (2,36,030) and Suryapet (1,93,027). These five districts together represented approximately 62.3 percent of the reported employment (Government of India, Rajya Sabha, 2023).

The employment ranking differs from the ranking based on the 2024 number of registered enterprises. This is an important distinction. Enterprise count measures the number of registered units, whereas employment reflects the accumulated employment reported through the registration system. Differences may therefore arise from enterprise size, sector composition, registration timing and the cumulative nature of the employment measure. H2 is supported descriptively by the concentration pattern, although the employment series should not be treated as a contemporaneous outcome of the 2024 enterprise distribution.

7. Econometric Results

7.1 MSME registrations and GDDP

The log-log OLS model produces an estimated coefficient of 0.977 on log GDDP. The HC1 robust standard error is 0.097 and the robust p-value is below 0.001. The model R^2 is 0.848. The Spearman rank correlation is 0.886 ($p < 0.001$). The evidence therefore indicates a strong positive cross-sectional association between district economic scale and registered MSMEs.

Variable	Coefficient	Robust SE	p-value
Constant	-0.075	0.975	0.9389
ln(GDDP)	0.977	0.097	<0.001

***Source**: Author's calculations based on district-wise MSME and GDDP data from Government of Telangana (2024a, 2024b).*

Observations = 33; $R^2 = 0.848$; Spearman $\rho = 0.886$ ($p < 0.001$).

7.2 MSME-associated employment and GDDP

The employment model gives a coefficient of 1.262 on log GDDP, with a robust standard error of 0.137 and a robust p-value below 0.001. The R^2 is 0.616, while the Spearman rank correlation is 0.793 ($p < 0.001$). The positive association supports H3. However, the coefficient should be read carefully because employment is measured cumulatively through March 2023, whereas GDDP refers to 2022–23.

Variable	Coefficient	Robust SE	p-value
Constant	-2.323	1.401	0.1073
ln(GDDP)	1.262	0.137	<0.001

***Source**: Author's calculations based on district-wise employment reported through the Udyam Registration Portal in Government of India, Rajya Sabha (2023), and district GDDP data from Government of Telangana (2024b).*

Observations = 33; $R^2 = 0.616$; Spearman $\rho = 0.793$ ($p < 0.001$).

7.3 Interpretation

The two models point to a common spatial pattern districts with larger economic systems tend to contain more registered MSMEs and higher reported MSME-associated employment. The result is compatible with agglomeration mechanisms identified in the regional economics literature, including market access, labour-market pooling and business linkages (Mitra, 2000; Lall et al., 2004). At the same time, the evidence cannot establish that higher GDDP causes MSME growth. The relationship may operate in both directions, while common factors such as population, urbanisation, infrastructure and public investment may influence both variables.

The employment coefficient above one is particularly noteworthy as a descriptive result, but it should not be interpreted as an employment multiplier. The employment series and enterprise series are not measured over identical periods and the model does not include controls for enterprise size or sector. A stronger claim would require a harmonised panel and a richer identification strategy.

8. Discussion

The findings suggest that Telangana's MSME geography is closely connected with its wider economic geography. The concentration of enterprises around Hyderabad, Rangareddy and Medchal-Malkajgiri is consistent with the expectation that firms value access to markets, infrastructure, skilled labour and business services. This pattern does not necessarily imply policy failure. Agglomeration can generate genuine productivity benefits, and attempts to disperse firms without considering local comparative advantage may reduce efficiency (Krugman, 1991; Lall et al., 2004).

The policy issue is therefore one of opportunity and capability rather than simple geographical equalisation. Districts with weak enterprise ecosystems may face cumulative disadvantages: a small market reduces incentives for suppliers and services, limited business networks raise transaction costs, and weak financial access can constrain enterprise formation and scaling. The literature on regional credit access reinforces the importance of location-specific financial conditions (Vidyarani & Maheshkumar, 2022).

The dominance of micro enterprises also has implications for employment policy. A large number of registrations does not automatically translate into large-scale employment or high productivity. Policy evaluation should therefore move beyond registration counts and monitor enterprise survival, graduation from micro to small and medium categories, turnover, productivity, wages, exports, investment and employment. Such measures would provide a clearer picture of whether formalisation is accompanied by sustained economic upgrading.

9. Policy Implications

Adopt district-sensitive MSME strategies. District plans should reflect differences in enterprise density, sector composition, infrastructure, market access and employment potential rather than applying identical interventions everywhere.

Strengthen business ecosystems outside the metropolitan core. Industrial estates, common facility centres, logistics, testing facilities, digital connectivity and reliable utilities can reduce location-specific operating costs.

Support enterprise graduation. Because micro enterprises dominate registrations, policy should track and facilitate movement from micro to small and from small to medium enterprises through technology, quality certification, managerial training and market development.

Improve access to institutional finance. District-level credit facilitation, credit guarantees, receivables finance and financial-literacy support can help address financing constraints, particularly for smaller firms.

Align skills with district industrial demand. Skill development programmes should be linked to local sector profiles so that training improves labour-market matching and enterprise productivity.

Develop locally viable clusters. Districts can build clusters around agro-processing, food processing, textiles, engineering, tourism-linked activities and other sectors consistent with local resources and market opportunities.

Use employment and productivity as core policy indicators. Registration should be treated as an administrative input, while employment, enterprise survival, investment, turnover and productivity should be used to assess economic outcomes.

Improve district-level data integration. Udyam, Udyam Assist, industrial approvals, District Industries Centre records and relevant finance and employment information should be progressively integrated, subject to data-protection safeguards.

10. Limitations

Udyam registration data capture registered/formalised enterprises and do not represent the entire informal enterprise universe.

The MSME and employment datasets have different reference periods; therefore, the paper does not calculate a contemporaneous employment-per-enterprise ratio.

GDDP is treated as a measure of district economic scale, not as an exogenous explanatory treatment.

The regression models contain only one explanatory variable and cannot eliminate omitted-variable bias or reverse causality.

Changes in district boundaries and administrative classifications can complicate comparisons across years.

11. Conclusion

This study provides a district-level assessment of MSME concentration, MSME-associated employment and the relationship between economic scale and enterprise activity in Telangana. The evidence shows substantial spatial concentration. The Gini coefficient of about 0.47,

coefficient of variation of 1.18 and CR3 of 40.1 percent indicate that registered MSMEs are not evenly distributed across the state's 33 districts.

The econometric results reinforce this descriptive finding. District GDDP is strongly and positively associated with registered MSMEs and with reported MSME-associated employment. The results are consistent with the regional economics literature on agglomeration and market access, but they do not establish causality. The principal implication is that MSME policy should recognise the economic logic of agglomeration while addressing avoidable barriers that restrict enterprise development in districts with weaker ecosystems.

A future research stage should develop a district-year panel incorporating population, urbanisation, bank credit, infrastructure, human capital, industrial land, sector composition and scheme utilisation. Spatial methods such as Moran's I and spatial regression could also test whether neighbouring districts influence enterprise outcomes. Such extensions would provide a stronger basis for explaining regional disparities and evaluating the effectiveness of place-based MSME interventions.

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Appendix A. District-Level Dataset Used in the Analysis

MSMEs refer to Udyam registrations as of 12 June 2024; GDDP refers to 2022–23 current-price estimates; employment refers to persons reported under the Udyam Registration Portal through 22 March 2023.

District	MSMEs (2024)	GDDP 2022–23 (Rs. crore)	Employment (to Mar. 2023)
Hyderabad	168,077	228,623	332,711
Rangareddy	109,164	283,419	425,737
Medchal-Malkajgiri	92,235	88,867	236,030
Nalgonda	42,988	50,616	115,531
Nizamabad	40,599	36,536	57,645
Karimnagar	36,969	26,603	83,961
Khammam	30,494	40,803	61,876
Hanumakonda	26,514	23,869	47,628
Sangareddy	26,299	60,401	40,076
Suryapet	24,706	30,003	193,027
Mahabubnagar	24,220	28,960	456,019
Siddipet	23,419	28,030	22,121
Jagtial	19,858	21,217	20,021
Mancherial	19,545	21,395	13,855
Warangal	18,976	18,887	34,139
Yadadri Bhuvanagiri	17,514	24,611	16,707
Nirmal	17,331	16,956	12,805
Kamareddy	16,876	22,053	22,262
Adilabad	16,617	17,190	33,091
Peddapalli	16,447	22,353	22,157
Bhadradri Kothagudem	15,684	34,215	35,955
Medak	15,318	23,558	29,506
Vikarabad	15,184	19,840	40,167
Rajanna Sircilla	13,278	12,778	10,444
Nagarkurnool	12,059	21,277	118,946
Mahabubabad	11,628	18,172	82,786
Jangaon	9,599	13,593	11,129
Wanaparthy	9,321	14,151	22,624
Jogulamba Gadwal	8,208	14,219	11,158

District	MSMEs (2024)	GDDP 2022–23 (Rs. crore)	Employment (to Mar. 2023)
Kumuram Bheem	8,135	11,136	4,928
Jayashankar	5,906	13,809	13,431
Narayanpet	5,504	12,980	6,875
Mulugu	3,211	6,914	3,351

Source: *District-level MSME data from Government of Telangana (2024a), district GDDP data from Government of Telangana (2024b), and employment data from Government of India, Rajya Sabha (2023).*

Appendix B. Model Specification for Replication

Model 1: $\ln(\text{MSMEs}_i) = \alpha + \beta \ln(\text{GDDP}_i) + \varepsilon_i$

Model 2: $\ln(\text{Employment}_i) = \alpha + \gamma \ln(\text{GDDP}_i) + u_i$

Estimation: OLS across 33 districts with heteroskedasticity-robust HC1 standard errors; Spearman rank correlation is used as a non-parametric robustness check. The coefficients are interpreted as cross-sectional associations, not causal effects.