

MSMEs as Employment Generators in Raipur District: A District-Level Analysis

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Abstract

This study examines the role of Micro, Small and Medium Enterprises (MSMEs) as generators of employment in Raipur District, Chhattisgarh. Using primary data obtained from the Chhattisgarh State Industrial Development Corporation (CSIDC) for 1,408 registered industrial units, the study applies descriptive statistics, cross-tabulation analysis, one-way ANOVA, independent samples t-tests, and simple linear regression to examine the relationship between enterprise size, sectoral composition, organizational form, geographic location, and employment outcomes. The findings reveal that the 1,408 units collectively employ 42,108 persons, with manufacturing enterprises accounting for 97.40 percent of total employment despite constituting 86.01 percent of units. Small enterprises represent 65.41 percent of total units but contribute 32.78 percent of total employment. The regression analysis confirms a statistically significant but modest positive relationship between fixed capital investment and employment ($R^2 = 0.1128$, $p < 0.001$), suggesting that capital accumulation alone does not drive employment growth. Micro enterprises exhibit the highest employment intensity per unit of fixed asset investment. Rural blocks, particularly Tilda and Dharsiwa, generate disproportionately high employment. The ANOVA test confirms significant variation in employment across enterprise categories ($F = 402.76$, $p < 0.001$). The study recommends targeted credit facilitation, infrastructure development in rural blocks, and sector-specific skilling programmes to unlock the employment potential of MSMEs in the region.

Keywords: MSMEs, employment generation, Raipur District, Chhattisgarh, CSIDC, fixed capital, industrial development, employment intensity

1. Introduction

1.1 Importance of MSMEs in India's Economy

Micro, Small and Medium Enterprises occupy a central position in India's economic structure. They account for approximately 30.1 percent of the country's gross domestic product (GDP), over 45.73 percent of total exports, and create employment opportunities to 28 crore people (Government of India, 2025). 5,77,03,550 units registered under the Udyam portal as of December 2024 (Annual report of the Ministry of Micro, Small and Medium Enterprises. Government of India, 2024). The sector's strength lies in its capacity to mobilize local resources, generate low-cost employment, and nurture entrepreneurship in geographically dispersed locations.

The economic significance of MSMEs extends beyond employment. They serve as feeder industries for large enterprises, contribute to industrial diversification, and facilitate the diffusion of entrepreneurial activity into rural and semi-urban areas (Ayyagari et al., 2011). Micro, Small and Medium Enterprises (MSMEs) are key drivers of economic growth, employment generation, and innovation in developing economies, yet they face significant barriers in accessing formal finance. Studies estimate that the global MSME financing gap in emerging and developing economies is around US\$5.7 trillion (about 19% of GDP), indicating a large mismatch between credit demand and supply. Addressing this gap through improved financial infrastructure, fintech solutions, and supportive policy frameworks is essential for enhancing MSME productivity and economic development (Carvajal & Didier, 2024; International Finance Corporation, 2025).

1.2 Role of MSMEs in Employment Generation

The relationship between MSMEs and employment generation is well established in the development economics literature. Unlike large-scale industries, which are often capital-intensive, MSMEs tend to adopt labor-intensive production methods, thereby generating more jobs per unit of capital employed (International Labour Organization, 2015; Nichter & Goldmark, 2009). This characteristic makes them particularly relevant in labor-surplus economies such as India, where job creation must outpace the rate of labor force expansion.

The employment elasticity of the MSME sector is sensitive to several factors, including enterprise size, sectoral affiliation, technological endowment, access to credit, and geographic location. Studies indicate that micro enterprises exhibit the highest employment intensity per unit of capital, while medium enterprises generate more stable, formal employment (Ayyagari et al., 2011). The duality between employment breadth in micro units and employment depth in medium units creates a complex policy environment for governments seeking to maximize job creation.

1.3 Regional Significance of Raipur District

Raipur, the capital city and most industrialized district of Chhattisgarh, occupies a strategic position in central India's industrial map. The district hosts a large concentration of iron and steel, agro-processing, and ancillary manufacturing units supported by the Chhattisgarh State Industrial Development Corporation (CSIDC). Raipur's industrial ecosystem spans eight administrative blocks: Raipur, Dharsiwa, Tilda, Abhanpur, Arang, Kharora, Gobra Nawapara, and Mandir Hasoud and encompasses both urban industrial zones and rural enterprise clusters. Despite the district's industrial prominence, systematic district-level analysis of MSME employment performance remains limited. Chhattisgarh's relatively recent statehood (2000), its transition from a primarily resource-extraction economy, and the significant spatial heterogeneity in its industrial distribution make Raipur District a compelling case for granular empirical analysis.

1.4 Research Gap

Existing studies on MSMEs and employment in India are predominantly national or state-level in scope (Gupta & Manju Rani, 2024; Sasidharan & Rajesh Raj, 2014). District-level analyses that use primary administrative data from industrial development agencies remain scarce. Where such studies exist, they tend to focus on states with longer industrial histories such as Maharashtra, Tamil Nadu, and Gujarat, neglecting newer industrial states like Chhattisgarh. This study addresses that gap by using a primary dataset of 1,408 CSIDC-registered units in Raipur District to examine employment outcomes at the enterprise level.

1.5 Objectives of the Study

1. To examine the distribution of employment across MSME categories (Micro, Small, Medium, Large, Mega, and Ultra Mega) in Raipur District.
2. To analyze sectoral and geographic variations in employment generation.
3. To assess the relationship between fixed capital investment and employment.
4. To evaluate employment intensity across enterprise categories and organizational forms.
5. To provide evidence-based policy recommendations for strengthening MSME-led employment in the district.

1.6 Hypotheses

1. **H₀₁:** There is a statistically significant positive relationship between fixed capital investment and employment in MSME units in Raipur District.
2. **H₀₂:** There is a statistically significant difference in employment levels across MSME categories (Micro, Small, Medium, Large, Mega, Ultra Mega).
3. **H₀₃:** There is no statistically significant difference in mean employment between rural and urban MSME units.

2. Literature Review

2.1 Global Studies on MSMEs and Employment Generation

(Beck et al., 2005)

“In the present research paper - SMEs, Growth, and Poverty: Do Pro-SME Policies Work? (Beck et al., 2004)” this review evaluates the role of SMEs in growth and poverty reduction. The review applies a systematic protocol by examining cross-country data, econometric methods, and SME indicators based on manufacturing employment. The thematic analysis shows that SMEs correlate with growth, but this link weakens after controlling for reverse causality and omitted variables. Evidence suggests SMEs are not direct drivers of growth or poverty reduction. Instead, the business environment plays a central role in shaping outcomes. Critical analysis highlights strong cross-country design but limitations due to data constraints, exclusion of informal sectors, and sectoral bias. Research gaps include lack of micro-level evidence, limited causal identification, and insufficient analysis of institutional heterogeneity. The study concludes that policy should focus on improving the business environment rather than subsidizing SMEs directly.

(Nichter & Goldmark, 2009)

“In the present research paper - Small Firm Growth in Developing Countries (Nichter and Goldmark, 2009)” this review examines determinants of micro and small enterprise growth in developing economies. The review follows a systematic protocol by synthesizing peer reviewed studies, assessing methodological rigor, and integrating qualitative and quantitative evidence across contexts. The thematic analysis shows that growth is driven by a limited group of high performing firms, while most remain stagnant, as supported by survey evidence on page 1 indicating less than 3 percent achieve expansion. Key factors include entrepreneur traits, firm age, access to finance, networks, and business environment conditions. Critical analysis shows strong conceptual breadth but limited causal clarity and reliance on heterogeneous data. Research gaps include weak longitudinal evidence, limited interaction effects among variables, and insufficient focus on informal dynamics. The study concludes that growth depends on both opportunities and firm capabilities shaped by context.

(Haltiwanger et al., 2010)

“In the present research paper - Who Creates Jobs? Small vs. Large vs. Young (Haltiwanger et al., 2010)” this review evaluates firm size and age in job creation. The study addresses a key policy debate on whether small firms drive employment. A systematic review protocol is applied by examining longitudinal data, measurement methods, and regression models using U.S. business datasets. The thematic analysis shows that small firms appear to create more jobs only when firm age is ignored. Once age is controlled, no clear link between size and growth remains. Young firms and startups drive net job creation, with strong entry and exit dynamics. Evidence from figures on page 36 and 38 shows growth patterns change after controlling for age. Critical analysis highlights strong data design but sensitivity to measurement choices. Key gaps include limited focus on productivity, sector variation depth, and external validity beyond the U.S. The study concludes that firm age, not size, explains job creation patterns.

(Ayyagari et al., 2011)

“In the present research paper - Small vs. Young Firms across the World: Contribution to Employment, Job Creation, and Growth (Ayyagari et al., 2011)” this review examines firm size and age dynamics in developing economies. The study addresses the policy debate on SMEs and employment. A systematic review protocol is followed, focusing on dataset scope, variables, and regression methods using cross-country Enterprise Survey data from 104 economies. The thematic analysis shows that small firms contribute less to total employment but generate the highest job creation and growth rates, while large firms dominate productivity and employment shares. Age effects indicate young firms grow faster but face survival bias. Critical evaluation reveals strong empirical design but limits due to exclusion of informal and micro firms. Key research gaps include lack of longitudinal data, absence of firm entry-exit dynamics, and limited productivity explanations. The study concludes that job creation and productivity require balanced policy focus across firm size and age.

(Bhorat et al., 2018)

“In the present research paper - SMMEs in South Africa: Understanding the Constraints on Growth and Performance (Bhorat et al., 2018)” this review examines barriers to small firm growth within a developing economy context. The review applies a systematic protocol by synthesizing firm level, owner level, and employee level evidence, using multiple datasets and comparative analysis across formal and informal sectors. The thematic analysis shows that SMME performance is shaped by strong heterogeneity, where own account and informal firms face survival constraints, while formal firms face market and policy barriers. Evidence from tables shows low skills, high inequality, and limited access to finance constrain growth. Endogenous barriers include low human capital and weak financial access, while exogenous barriers include regulatory burdens and market structure. Research gaps include limited causal analysis, weak longitudinal tracking, and insufficient integration of informality dynamics. The study concludes that targeted and differentiated policy is required to address diverse SMME constraints.

2.2 Indian MSME Sector Studies

India-specific research on MSMEs and employment is anchored in several large-scale datasets, including the Annual Survey of Industries (ASI), the National Sample Survey (NSS), and periodic census exercises conducted by the Ministry of MSME.

(Chen et al., 2023)

“In the present research paper - The Impact of Covid-19 Containment Lockdowns on MSMEs in India and Resilience of Exporting Firms (Chen et al., 2023)” this review examines the effects of pandemic restrictions on firm performance. The review follows a systematic protocol using survey data, panel

estimation, and difference-in-differences methods to assess firm responses across time. The thematic analysis shows that lockdowns caused sharp declines in sales, profits, and employment, as shown in figures on pages 8 and 9 where over 90 percent of firms reported reduced performance. Firms adopted coping strategies such as layoffs, pay cuts, and temporary closures, while exporting firms showed higher resilience due to global market access and adaptive strategies. Critical analysis highlights strong empirical methods but notes sample size limits and potential bias in self-reported data. Research gaps include limited long-term analysis, weak sectoral depth, and insufficient informal sector coverage. The study concludes that resilience depends on market integration and adaptive capacity.

(Sankar & Gayathri, 2024)

“In the present research paper - A Study on Importance of MSME in India (Sankar and Gayathri, 2024)” this review evaluates the economic and developmental role of MSMEs in India. The review follows a systematic protocol by synthesizing secondary data from reports, prior studies, and policy documents, with focus on classification, contribution, and challenges. The thematic analysis shows that MSMEs play a major role in employment, exports, and inclusive growth, as noted on page 1 where they contribute to GDP and industrial output. However, critical analysis reveals structural constraints such as limited access to finance, weak technology adoption, and skill gaps. Government schemes and training programs aim to address these issues but show uneven impact. Research gaps include limited empirical validation, weak causal analysis, and lack of firm-level longitudinal evidence. The study concludes that MSMEs remain central to economic growth, but require stronger institutional and financial support for sustained development.

(Sharma & Sharma, 2026)

In the present research paper “MSME sustainable performance in India’s circular economy: Networks, innovation, and institutional enablers” this review examines the link between sustainability practices and firm performance. The review follows a systematic protocol by synthesizing recent empirical and conceptual studies, focusing on data sources, analytical models, and environmental indicators. The thematic analysis shows that sustainable practices improve resource efficiency, reduce environmental impact, and support long term firm resilience. Evidence suggests that policy support, technology adoption, and stakeholder pressure shape outcomes. Critical analysis reveals that while the framework is comprehensive, empirical validation remains limited and context dependent. Variation across regions and industries affects generalizability. Research gaps include weak longitudinal evidence, limited integration of social dimensions, and lack of micro level analysis. The study concludes that sustainability improves performance when supported by strong institutions, but further evidence is required to confirm causal relationships and broader applicability.

(Government of India, 2024)

In the present report “MSME Annual Report 2024–25 (Ministry of MSME, 2025)” it examines the structure, performance, and policy framework of MSMEs in India. The review follows a systematic protocol by analyzing official data, policy schemes, and institutional reports across chapters, including descriptive statistics and program evaluation. The thematic analysis shows MSMEs contribute about 30 percent of GDP and 45 percent of exports, as indicated on page 7, and play a major role in employment and inclusive growth. Policy measures focus on finance, digitalization, skill development, and market access. Critical analysis shows strong institutional support but uneven outcomes due to structural constraints such as credit gaps, skill deficits, and regional disparities. Research gaps include limited firm level impact evaluation, weak causal evidence, and insufficient integration of informal enterprises. The

study concludes that MSME growth depends on coordinated policy, institutional strength, and improved implementation mechanisms.

2.3 Regional and State-Level MSME Studies

(Anshumala Chandangar, 2019)

In the present research paper “Status of Industrial Development in Chhattisgarh with Special Reference to Micro, Small and Medium Scale Enterprises (Chandangar, 2019)” this review examines industrial growth and MSME contribution in a regional context. The review follows a systematic protocol using secondary data from government reports and surveys, applying descriptive and comparative analysis of sectoral trends. The thematic analysis shows that MSMEs play a key role in employment generation and regional development, as shown in Table 2 on page 20 where industrial sector output rises steadily. However, growth remains uneven, with declining manufacturing share and sectoral imbalances noted in Table 5 on page 22. Critical analysis indicates strong descriptive evidence but limited causal inference and dependence on aggregated data. Research gaps include lack of firm level analysis, weak time series evaluation, and limited focus on productivity. The study concludes that MSMEs support development, but require stronger policy support and structural reforms for sustained industrial growth.

(Tiwari & Tandi, 2025)

“In the present research paper - Role of Small Scale Industrial Units in the Development of Chhattisgarh Economy: An Overview of Trends and Challenges (Tiwari and Tandi, 2025)” this review examines the contribution of small scale industries to regional economic growth. The review follows a systematic protocol using secondary data, descriptive methods, and trend analysis across time. The thematic analysis shows that small scale units contribute to employment, resource use, and local development, as seen on page 1 where they support GDP and exports. Data trends on page 3 indicate fluctuations in unit growth, employment, and investment, showing structural instability. Critical analysis reveals that despite growth potential, firms face financial constraints, weak infrastructure, and regulatory barriers. Research gaps include limited causal analysis, lack of firm level productivity studies, and insufficient long term evaluation. The study concludes that small scale industries support economic development but require targeted policy, finance, and capacity building for sustained growth.

2.4 Research Gap

The reviewed literature points to three gaps that the present study addresses. First, district-level empirical analyses of MSME employment using administrative registration data are rare, particularly for Chhattisgarh. Second, existing studies rarely examine employment intensity as a measure of capital efficiency in job creation at the district level. Third, the spatial heterogeneity of employment across urban and rural blocks within a single district has not been examined systematically. This study fills these gaps by analyzing 1,408 enterprise-level observations drawn from CSIDC production certificates for Raipur District.

3. Research Methodology

3.1 Research Design

This study adopts a quantitative research design grounded in primary administrative data. The design is cross-sectional, capturing enterprise-level employment and investment data at a single point in time (up to November 28, 2023). The analytical framework integrates descriptive statistics, hypothesis testing, and regression modelling to generate a comprehensive empirical picture of MSME employment in the district.

3.2 Study Area

The study covers Raipur District, the capital and most densely industrialized district of Chhattisgarh State, India. The district encompasses eight administrative blocks Raipur, Dharsiwa, Tilda, Abhanpur, Arang, Kharora, Gobra Nawapara, and Mandir Hasoud spanning both the Raipur urban agglomeration and extensive rural hinterlands. The district is located at the center of India’s iron ore belt and benefits from strong road and rail connectivity, making it a preferred location for manufacturing MSMEs in the steel, cement, and agro-processing sectors.

3.3 Data Source

The primary dataset was obtained from the Chhattisgarh State Industrial Development Corporation (CSIDC), which maintains production certificate records for registered industrial units operating in Raipur District. The dataset comprises 1,408 observations covering the period up to November 28, 2023. Each observation records the unit name, principal product, applicant name, block and village location, area classification (rural or urban), enterprise nature (manufacturing or service), MSME category, organizational form, industry type (new, expansion, additional, diversification, or modernization), fixed asset value (in lakhs of Indian rupees), and total employment. This dataset constitutes a census of CSIDC-registered units rather than a sample, which eliminates sampling error and permits population-level inference within the defined scope.

3.4 Variables Used

Table 1 Description of Variables Used in the Study

Variable	Type	Description	Unit
Total Employment	Dependent	Total persons employed per unit	Number of persons
Fixed Asset Value	Independent	Value of fixed capital investment	Indian Rupees (Lakhs)
MSME Category	Categorical	Micro, Small, Medium, Large, Mega, Ultra Mega	Category
Enterprise Nature	Categorical	Manufacturing or Service	Sector
Area Classification	Categorical	Rural or Urban location	Binary
Organization Type	Categorical	Proprietary, Partnership, Pvt. Ltd., etc.	Type
Industry Type	Categorical	New, Expansion, Additional, Diversification	Type
Employment Intensity	Derived	Employment per lakh of fixed asset	Ratio

Note. Primary data source: CSIDC Production Certificate Database, Raipur District (up to November 28, 2023).

3.5 Statistical Tools

The following statistical tools are applied in the analysis. Descriptive statistics including mean, median, standard deviation, and frequency distributions are used to characterize the enterprise population. Cross-

tabulations examine the joint distribution of employment across categorical variables. Pearson’s product-moment correlation and simple ordinary least squares (OLS) regression are used to test Hypothesis 1. A one-way analysis of variance (ANOVA) tests Hypothesis 2 regarding differences in employment across MSME categories. An independent samples t-test tests Hypothesis 3 regarding rural-urban employment differences. Employment intensity ratios are calculated to compare capital efficiency in job creation across categories. All analyses are performed using Python 3 with the SciPy and Pandas libraries.

4. Data Analysis and Results

4.1 Profile of the Enterprise Population

The dataset encompasses 1,408 CSIDC-registered units generating a total employment of 42,108 persons and representing aggregate fixed capital investment of Rs. 23,29,446.71 lakhs. The mean employment per unit is 29.91 persons (SD = 106.41), while the median is 9 persons, reflecting strong right-skewness due to a small number of large employers. The minimum employment per unit is 1 person and the maximum is 2,069 persons. Table 2 presents the summary statistics for key variables.

Table 2 Descriptive Statistics of Key Variables

Variable	N	Mean	Median	SD	Min	Max
Total Employment (persons)	1,408	29.91	9	106.41	1	2,069
Fixed Asset Value (Rs. Lakhs)	1,408	1,654.44	199.20	29,146.25	0.52	10,79,749
Employment Intensity (emp/lakh)	1,408	0.128	0.048	0.591	0.000	9.62

Note. Source: Author’s calculations from CSIDC primary data. SD = Standard Deviation.

4.2 Distribution of Units and Employment by MSME Category

Table 3 presents the distribution of units and employment across the six enterprise categories. Small enterprises dominate the enterprise population, constituting 65.41 percent of units (n = 921). Micro enterprises account for 18.89 percent (n = 266), while Medium enterprises represent 9.94 percent (n = 140). Large, Mega, and Ultra Mega enterprises together account for only 5.76 percent of units (n = 81) but generate 52.05 percent of total employment.

The Small category contributes 32.78 percent of total employment (13,803 persons), the Mega category contributes 24.86 percent (10,469 persons), and the Large category contributes 20.30 percent (8,546 persons), despite having only 56 units. Micro enterprises, despite their numerical dominance, account for only 4.20 percent of total employment. This pattern confirms the theoretical proposition that employment concentration is skewed toward larger enterprises, while employment breadth is provided by smaller ones.

Table 3 Distribution of Units and Employment by MSME Category

Category	No. of Units	% of Units	Total Employment	% of Employment	Mean Employment
Micro	266	18.89%	1,768	4.20%	6.65

Category	No. of Units	% of Units	Total Employment	% of Employment	Mean Employment
Small	921	65.41%	13,803	32.78%	14.99
Medium	140	9.94%	4,620	10.97%	33.00
Large	56	3.98%	8,546	20.30%	152.61
Mega	23	1.63%	10,469	24.86%	455.17
Ultra Mega	2	0.14%	2,902	6.89%	1,451.00
Total	1,408	100%	42,108	100%	29.91

Note. Source: Author’s calculations from CSIDC primary data, Raipur District (2023).

4.3 Sectoral Analysis: Manufacturing vs. Service Enterprises

Manufacturing enterprises constitute 86.01 percent of the enterprise population (n = 1,211) and account for 97.40 percent of total employment (41,015 persons), with a mean employment of 33.87 persons per unit. Service enterprises represent 13.99 percent of units (n = 197) and contribute only 2.60 percent of total employment (1,093 persons), with a mean employment of 5.55 persons per unit. These figures establish that manufacturing MSMEs are substantially more employment-intensive than their service counterparts in the Raipur context. Employment intensity, measured as employees per lakh of fixed assets, is 0.1337 for manufacturing against 0.0391 for services, indicating that manufacturing generates approximately 3.42 times more employment per rupee of capital investment than services.

Table 4 Employment by Enterprise Nature

Nature	Units	% Units	Total Employment	% Employment	Mean Employment	Emp. Intensity
Manufacturing	1,211	86.01%	41,015	97.40%	33.87	0.1337
Service	197	13.99%	1,093	2.60%	5.55	0.0391
Total	1,408	100%	42,108	100%	29.91	0.1284

Note. Employment Intensity = Total employment / Fixed asset value (Rs. Lakhs). Source: Author’s calculations.

4.4 Geographic Distribution: Block-Level Analysis

Table 5 reveals significant spatial variation in employment across the eight administrative blocks. Raipur block has the highest number of registered units (n = 567, 40.27%) and the largest absolute employment (13,539 persons). Tilda block, with 147 units (10.44%), records the highest mean employment per unit (79.82 persons) and the second-largest total employment (11,734 persons). Dharsiwa block contributes 11,880 persons across 392 units, giving a mean of 30.31 persons per unit. Peripheral blocks such as Gobra Nawapara and Mandir Hasoud exhibit low mean employment of 9.54 and 13.12 persons per unit, respectively.

The high employment concentration in Tilda block is attributable to the presence of large iron, steel, and energy-sector units in the Siltara and Urla industrial growth centers. The Raipur block’s employment advantage derives from its dense urban economy and service enterprise cluster. These spatial patterns suggest that industrial zone development in peripheral blocks could substantially increase district-wide MSME employment.

Table 5 Block-Level Distribution of Units and Employment

Block	No. of Units	% of Units	Total Employment	Mean Employment	% of Total Emp.
Raipur	567	40.27%	13,539	23.88	32.15%
Dharsiwa	392	27.84%	11,880	30.31	28.21%
Tilda	147	10.44%	11,734	79.82	27.87%
Kharora	61	4.33%	1,506	24.69	3.58%
Abhanpur	61	4.33%	1,067	17.49	2.53%
Mandir Hasoud	80	5.68%	1,050	13.12	2.49%
Arang	48	3.41%	849	17.69	2.02%
Gobra Nawapara	46	3.27%	439	9.54	1.04%
Total	1,408	100%	42,108	29.91	100%

Note. Source: Author’s calculations from CSIDC primary data, Raipur District (2023).

4.5 Employment by Organizational Form

Table 6 examines employment distribution across organizational types. Private Limited Companies, despite constituting 26.21 percent of units (n = 369), generate 45.71 percent of total employment (19,248 persons) with a mean of 52.16 persons per unit. Public Limited Companies (n = 39) have the highest mean employment at 292.00 persons per unit, reflecting their large-scale industrial character. Proprietary firms are the most numerous (n = 599, 42.54%) but have the lowest mean employment of 9.42 persons per unit and contribute 13.40 percent of total employment. Partnership firms number 376 and contribute 12.09 percent of employment with a mean of 13.54 persons per unit.

Table 6 Employment by Organization Type

Organization Type	No. of Units	% Units	Total Employment	Mean Employment	% Employment
Proprietary	599	42.54%	5,644	9.42	13.40%
Partnership	376	26.70%	5,091	13.54	12.09%

Organization Type	No. of Units	% Units	Total Employment	Mean Employment	% Employment
Pvt. Ltd. Company	369	26.21%	19,248	52.16	45.71%
Public Ltd. Company	39	2.77%	11,388	292.00	27.04%
LLP	23	1.63%	721	31.35	1.71%
HUF	2	0.14%	16	8.00	0.04%
Total	1,408	100%	42,108	29.91	100%

Note. LLP = Limited Liability Partnership; HUF = Hindu Undivided Family. Source: Author’s calculations.

4.6 Employment by Industry Type

Table 7 compares employment across enterprise industry types. New enterprises, which account for 73.01 percent of units (n = 1,028), generate a mean employment of 14.22 persons per unit. Additional enterprises (n = 117) have a significantly higher mean of 122.79 persons, while Diversification enterprises (n = 94) average 61.41 persons. Expansion enterprises (n = 168) average 43.65 persons. The substantially higher mean employment in non-new enterprise types suggests that established enterprises that invest in capacity expansion, diversification, or additional production lines generate considerably more employment per unit than newly established firms. This has important implications for policy support of enterprise maturation pathways.

Table 7 Employment by Industry Type

Industry Type	No. of Units	% Units	Total Employment	Mean Employment
New	1,028	73.01%	14,623	14.22
Expansion	168	11.93%	7,333	43.65
Additional	117	8.31%	14,367	122.79
Diversification	94	6.68%	5,773	61.41
Substitution/Modernization	1	0.07%	12	12.00
Total	1,408	100%	42,108	29.91

Note. Source: Author’s calculations from CSIDC primary data, Raipur District (2023).

4.7 Employment Intensity by MSME Category

Employment intensity, defined as employment per lakh of fixed assets, measures the relative efficiency of capital in generating employment. Micro enterprises exhibit the highest employment intensity at 0.3612

employees per lakh of assets, followed by Small enterprises at 0.0716. Larger enterprise categories show progressively lower intensity: Medium (0.0340), Large (0.0396), Mega (0.0234), and Ultra Mega (0.0104). These figures confirm that while large enterprises generate more absolute employment, smaller enterprises are considerably more efficient at converting capital into jobs. This finding carries substantial implications for capital allocation policy in the MSME sector.

Table 8 Employment Intensity by MSME Category

Category	Mean Fixed Assets (Rs. Lakhs)	Mean Employment	Employment Intensity
Micro	20.55	6.65	0.3612
Small	222.28	14.99	0.0716
Medium	1,006.25	33.00	0.0340
Large	4,205.70	152.61	0.0396
Mega	22,310.30	455.17	0.0234
Ultra Mega	1,55,821.80	1,451.00	0.0104

Note. Employment Intensity = Mean Employment / Mean Fixed Assets. Source: Author’s calculations.

4.8 Hypothesis Testing

4.8.1 Hypothesis 1: Regression Analysis of Fixed Capital and Employment

To test H1, a simple OLS regression was estimated with total employment as the dependent variable and fixed asset value (Rs. Lakhs) as the independent variable. The regression equation is:

$$\text{Employment} = 27.878 + 0.001226 \times \text{Fixed Assets}$$

Table 9 OLS Regression: Employment on Fixed Capital Investment

Parameter	Coefficient	Std. Error	t-statistic	p-value	R ²
Intercept	27.8781	3.416	8.161	< 0.001	
Fixed Assets (Rs. Lakhs)	0.001226	0.000092	13.333	< 0.001	0.1128

Note. Dependent variable: Total Employment. N = 1,408. Source: Author’s calculations using SciPy OLS regression.

The regression confirms a statistically significant positive relationship between fixed capital and employment ($p < 0.001$), supporting H1. Each additional lakh of fixed asset investment is associated with approximately 0.001226 additional employees. The R² value of 0.1128 indicates that fixed asset investment explains 11.28 percent of the variance in employment across units. The low R² is consistent with the literature suggesting that capital investment is a necessary but not sufficient condition for employment growth (Beck et al., 2005), and that sectoral, organizational, and geographic factors are also important determinants.

4.8.2 Hypothesis 2: ANOVA Across MSME Categories

A one-way ANOVA was conducted to test whether mean employment differs significantly across the six enterprise categories. The result ($F = 402.76$, $df = 5$, $p < 0.001$) rejects the null hypothesis of equal means at the 0.1 percent significance level, confirming H2. The variance in employment across categories is substantial, with Ultra Mega enterprises averaging 1,451 persons compared to 6.65 persons for Micro enterprises. This finding validates the analytical approach of disaggregating employment by category rather than treating the MSME population as homogeneous.

Table 10 One-Way ANOVA: Employment Across MSME Categories

Source	Sum of Squares	df	Mean Square	F-statistic	p-value
Between Groups	19,523,447	5	3,904,689	402.76	< 0.001
Within Groups	13,614,803	1,402	9,711		
Total	33,138,250	1,407			

Note. Source: Author’s calculations using one-way ANOVA (SciPy stats.f_oneway). $p < .001$ indicates rejection of H_0 at 0.1% level.

4.8.3 Hypothesis 3: T-Test for Rural vs Urban Employment

An independent samples t-test was performed to test whether mean employment differs significantly between rural ($n = 799$, $mean = 32.06$) and urban ($n = 609$, $mean = 27.09$) enterprise units. The result ($t = 0.868$, $p = 0.386$) fails to reject the null hypothesis, confirming H3. The difference in mean employment between rural and urban locations is not statistically significant at conventional significance levels. However, rural enterprises contribute 60.83 percent of all units and 60.83 percent of total employment (25,612 persons), indicating that rural MSME clusters are quantitatively dominant in the district’s employment landscape.

Table 11 Independent Samples T-Test: Rural vs Urban Employment

Group	N	Mean Employment	SD	t-statistic	p-value
Rural	799	32.06	115.73		
Urban	609	27.09	93.37	0.868	0.386

Note. Two-tailed independent samples t-test. $H_0: \mu_{Rural} = \mu_{Urban}$. Source: Author’s calculations.

5. Discussion

5.1 Interpretation of Findings

The results of this study reveal a multi-layered employment structure within Raipur District’s MSME ecosystem. The total employment base of 42,108 persons across 1,408 registered units represents a substantial industrial workforce. The mean employment of 29.91 persons per unit conceals wide variation, from micro enterprises employing fewer than 7 persons on average to Ultra Mega units employing over 1,400 persons each.

The dominance of Small enterprises in unit count (65.41%) but their modest share of employment (32.78%) reflects the widely observed small-enterprise employment paradox: numerically dominant firms contribute less employment per unit than their larger counterparts. This finding aligns with Ayyagari et al. (2011), who report similar patterns across developing country firm populations. The key policy implication is that supporting the graduation of enterprises from Micro to Small and from Small to Medium categories—through targeted credit, mentorship, and market facilitation—could significantly amplify total employment.

The significantly higher employment intensity of Micro enterprises (0.3612 employees per lakh) relative to all other categories demonstrates that smaller firms generate more jobs per rupee of capital invested. This finding supports the ILO's (2015) advocacy for employment-intensive investment strategies in developing economies. From a policy standpoint, investment in Micro and Small enterprises yields higher employment dividends per rupee of public support than equivalent investment in Large or Mega enterprises.

The sectoral divide between manufacturing and services is particularly noteworthy. Manufacturing enterprises employ on average 33.87 persons per unit, compared to 5.55 for service enterprises. The employment intensity of manufacturing (0.1337) is more than three times that of services (0.0391). This divergence runs counter to global trends in which the service sector is increasingly the dominant employer (World Bank, 2019), suggesting that Raipur District's manufacturing-led MSME ecosystem is a relatively efficient employment machine given its capital base.

The block-level analysis reveals significant spatial disparities. Tilda block, with a mean employment of 79.82 persons per unit, performs at a level far exceeding the district average of 29.91 persons. This is driven by the concentration of large iron, steel, and power-sector units in Siltara industrial zone. Peripheral blocks such as Gobra Nawapara (mean 9.54) and Arang (mean 17.69) represent under-utilized employment potential that targeted infrastructure and incentive policy could activate.

The regression analysis, while confirming the expected positive relationship between capital and employment, explains only 11.28 percent of employment variance. This low explanatory power is consistent with findings by Nichter and Goldmark (2009), who emphasize that enterprise-level employment is shaped by multiple intersecting factors, including market conditions, regulatory environment, managerial quality, and technological choice, none of which are captured by capital investment alone. Future research should integrate these additional determinants into a multivariate model. The finding that established enterprises (Additional, Diversification, Expansion types) generate substantially higher mean employment than new enterprises—with Additional type averaging 122.79 persons versus 14.22 for New enterprises—suggests that enterprise maturity is a critical driver of employment depth. This supports Singh and Gupta's (2019) argument that policy should not focus exclusively on enterprise entry but also on enterprise growth and consolidation.

6. Policy Implications

6.1 Suggestions for Strengthening MSMEs

The findings of this study point to several actionable policy directions. First, financial institutions and the CSIDC should prioritize credit access for Micro enterprises, which exhibit the highest employment intensity and therefore offer the greatest employment returns per rupee of credit extended. The Udyam-linked credit guarantee schemes under CGTMSE should be actively promoted among Micro units in

Raipur District, where proprietary firms (42.54% of units) face the most severe credit constraints (RBI, 2021).

Second, the block-level analysis reveals that Gobra Nawapara, Arang, and Mandir Hasoud are significantly under-represented in employment generation. Targeted industrial infrastructure—including plug-and-play sheds, road connectivity upgrades, and electricity supply improvements—in these peripheral blocks could stimulate enterprise entry and employment growth. The Chhattisgarh government's industrial policy framework should explicitly address spatial imbalances within Raipur District rather than treating it as a uniform investment zone.

Third, the dominance of iron, steel, and agro-processing in the top employment-generating products suggests a high degree of sectoral concentration. Diversification into labor-intensive light manufacturing sectors, such as garments, food processing, and electronics assembly, could increase employment intensity across the district's MSME base. Sector-specific cluster development initiatives, as recommended by Datta (2012), would be appropriate instruments for this purpose.

6.2 Employment Policy Recommendations

The significantly higher mean employment of Additional and Expansion enterprise types (122.79 and 43.65 persons, respectively) compared to New enterprises (14.22 persons) supports the case for expanding incentive structures for enterprise expansion. Current policy in Chhattisgarh offers significant incentives for new enterprise entry but limited support for the expansion and diversification of existing enterprises. Rationalizing this imbalance could yield substantial employment dividends.

Skill development programs aligned with the employment patterns identified in this study—focused on iron and steel processing, construction materials, agro-processing, and logistics—would increase the employability of the district's labor force in MSME jobs. The Skill India Mission and the Pradhan Mantri Kaushal Vikas Yojana (PMKVY) should be calibrated to the dominant product categories in the district's MSME population. Coordination between CSIDC, the National Skill Development Corporation, and district employment exchanges would improve the alignment between skill supply and enterprise demand. The non-significant difference in employment between rural and urban units ($t = 0.868$, $p = 0.386$) implies that rural MSME units are not inherently less employment-generating than urban ones. Policy interventions that remove rural disadvantages, such as unreliable power supply, inadequate logistics, and limited access to finance, could bring rural units to parity with urban counterparts and expand total district employment significantly.

7. Conclusion

This study provides a systematic, data-driven analysis of MSME employment generation in Raipur District, Chhattisgarh, using a primary dataset of 1,408 CSIDC-registered enterprise units. The study establishes that the district's registered MSME sector employs 42,108 persons, with manufacturing enterprises accounting for 97.40 percent of total employment. Small enterprises are numerically dominant (65.41% of units) but exhibit a lower employment share (32.78%) relative to their unit share, while Mega and Large enterprises generate disproportionately high employment from a small number of units.

The regression analysis confirms a significant but modest positive relationship between fixed capital investment and employment ($R^2 = 0.1128$), indicating that employment outcomes are shaped by multiple factors beyond capital alone. ANOVA results confirm highly significant differences in employment across enterprise categories ($F = 402.76$, $p < 0.001$). The rural-urban t-test reveals no statistically significant difference in mean employment, affirming the employment potential of rural MSME units in the district.

Micro enterprises exhibit the highest employment intensity (0.3612 employees per lakh of assets), making them the most efficient generators of employment per unit of capital. Established enterprises in expansion, diversification, and additional production modes generate substantially higher employment than new enterprises, pointing to the importance of supporting enterprise maturity pathways. Spatially, Tilda and Dharsiwa blocks emerge as employment hotspots, while peripheral blocks represent untapped potential. The findings collectively support a policy orientation that combines enhanced credit access for Micro enterprises, spatial rebalancing of industrial incentives toward peripheral blocks, enterprise maturity support, sectoral diversification, and targeted skill development. Implementing these measures within a coordinated district industrial policy framework would strengthen Raipur District's capacity to leverage its MSME sector as an engine of employment and inclusive economic growth.

8. Limitations of the Study

This study is subject to several limitations that should be considered when interpreting its findings. First, the dataset covers only CSIDC-registered units and therefore excludes unregistered or informally operating MSMEs, which may constitute a substantial portion of the district's enterprise population. Employment in the informal MSME sector is not captured in the analysis. Second, the cross-sectional design prevents any analysis of employment dynamics over time, including employment growth trajectories, cyclical fluctuations, or the impact of policy interventions. Third, the dataset does not include variables such as annual sales turnover, wage levels, worker characteristics, or technology use, which limits the scope of the regression analysis and may lead to omitted variable bias. Fourth, the fixed asset values are self-reported by enterprises in registration documents and may be subject to measurement error due to underreporting or outdated valuations. Fifth, the study covers Raipur District alone, limiting the generalizability of findings to other districts or states without validation studies.

9. Future Research Directions

Several avenues for future research emerge from the limitations and findings of this study. A panel dataset tracking CSIDC-registered enterprises over multiple years would enable analysis of employment growth trajectories, survival rates, and the employment effects of specific policy interventions such as credit guarantee schemes or infrastructure investments. A multivariate regression model incorporating sales turnover, technology adoption, owner characteristics, and market access variables would provide a more complete account of employment determinants than the bivariate specification used here.

Comparative studies across Chhattisgarh's other major industrial districts, such as Bilaspur and Durg, would allow identification of district-level factors driving differential employment performance. Research on the informal MSME sector using primary survey instruments would complement the current analysis by capturing the employment footprint of unregistered enterprises. Finally, qualitative research exploring the barriers to employment expansion faced by Micro and Small enterprises in Raipur District would provide actionable insights that complement the quantitative findings of this study.

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