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Assessing Challenges and Policy Interventions for MSMEs in Industrial Estates: Insights from Assam, India

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Abstract. This study examines the operational challenges faced by Micro, Small, and Medium Enterprises (MSMEs) within Assam's primary industrial estates, specifically Kamrup Rural and Kamrup Metro districts, regions with Assam's highest MSME density and strategic significance under India's Act East Policy. As Guwahati serves as a gateway to Southeast Asia, the resilience of MSMEs in these districts is crucial to regional economic integration. Using Garrett's Ranking Technique, the study identifies and ranks critical issues in finance, marketing, raw materials, labour, technical management, and power, while a one-way ANOVA assesses variations across business types: sole proprietorships, partnerships, and private limited companies. The findings reveal pervasive challenges across these categories, with significant strain from high financial costs, raw material scarcity, and inconsistent power supply, alongside gaps in labour and waste management. Policy recommendations highlight the need for adaptive financial assistance, improved industrial infrastructure, and targeted skill development to strengthen MSMEs' contributions to Assam's industrial landscape. This research offers valuable insights into creating a supportive environment for MSMEs, underscoring the broader implications for economic growth in Northeast India. The study's relevance lies in its potential to inform policy and foster sustainable growth pathways for MSMEs in line with the Act East Policy.

Keywords: MSMEs, industrial estates, Assam, operational challenges.

1. INTRODUCTION

Micro, Small, and Medium Enterprises (MSMEs) serve as vital pillars in the economic framework of emerging economies, driving job creation, regional development, and industrial growth. In India, MSMEs contribute approximately 30% to the GDP and generate employment for over 110 million people, underscoring their importance in fostering socioeconomic balance. As per the 2020 notification from the Ministry of MSME, Indian enterprises are categorized based on investment and turnover limits: micro enterprises have investments up to ₹1 crore and turnover up to ₹5 crore; small enterprises up to ₹10 crore investment and ₹50 crore turnover; and medium enterprises up to ₹50 crore investment and ₹250 crore turnover. This structured classification helps target policy support, ensuring that these enterprises receive appropriate resources based on their scale and financial capacity. Recognizing this, the Government of India has developed various policies, including the establishment of industrial estates and parks, to strengthen MSME growth through enhanced infrastructure, resource access, and simplified regulatory measures (Sarda & Baruah, 2020; Ghosh & Lama, 2024).

Within this national framework, Assam occupies a unique position as a strategic economic hub under India's Act East Policy, aimed at strengthening ties with Southeast Asia. Assam's location, with Guwahati as the gateway to Northeast India, positions it as a focal point for cross-border trade and industrial expansion. Specifically, the Kamrup and Kamrup Metro districts are particularly significant, housing the highest concentration of MSMEs in Assam, making them representative of the state's industrial landscape. According to data from the District Wise Udyog Aadhaar Registration, Kamrup Metro alone has 5,724 registered MSMEs, the highest among Assam's districts, followed by Kamrup with 2,166 MSMEs. The industrial estates and growth centres within these districts are pivotal for nurturing MSMEs, providing centralized facilities that enhance market access, support operational efficiency, and contribute to balanced regional development (Ghosh & Lama, 2024). Despite these provisions, MSMEs in Assam face numerous barriers that restrict their growth and inhibit their economic contributions.

A major challenge lies in securing adequate finance. MSMEs frequently encounter loan delays, high collateral requirements, and frequent rejections, which impede their access to formal financing and push them toward informal, costlier lending alternatives (Choudhury, 2018; Biswas, 2014; Gupta et al., 2018). Regional disparities in investment capacity and infrastructure further complicate the growth prospects for MSMEs, contributing to employment stagnation and economic imbalances within the state (Ghosh & Lama, 2024). These economic barriers are compounded by infrastructure deficiencies, such as unreliable power supply, inadequate storage facilities, and substandard transportation, which limit MSME productivity and competitiveness (Dua, 2022; Bisht & Singh, 2020; Khatri, 2019).

Technological gaps and skill shortages exacerbate these issues. In industrial estates, MSMEs often struggle to adopt modern technologies due to high costs and lack of skilled personnel, which affects both their domestic and international market reach (Wijaya et al., 2017; Noorinasab et al., 2016). Human resource challenges, including high turnover rates and limited training access, further impact MSME stability and performance (Shrija & Pavithra, 2024)

Research in other regions reflects similar challenges. Studies in Jammu and Kashmir highlight infrastructure and energy shortages, while those in Visakhapatnam point to skill shortages and regulatory obstacles (Hamid, 2017; Noorinasab et al., 2016). These findings underline the role of regional factors in shaping MSME growth.

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For Assam, targeted interventions that address specific infrastructural and financial constraints are essential to optimize the economic role of MSMEs and strengthen the state's strategic position under the Act East Policy.

This study investigates the financial, infrastructural, and human resource barriers faced by MSMEs in Assam's industrial estates. By examining these challenges, the research provides actionable insights for policymakers to develop targeted interventions that support MSME growth, strengthen Assam's economic landscape, and maximize its strategic potential as a regional hub in Northeast India.

1.1. Objective of the Study

This study aims to analyse the challenges faced by MSMEs in Assam's industrial estates and parks and to propose actionable recommendations to support their growth and sustainability. The research addresses:

1. Operational Challenges: What are the main challenges in finance, raw materials, power, market access, and labour faced by MSMEs?
2. Business Type Differences: How do these challenges vary across sole proprietorships, partnerships, and private limited companies?
3. Policy Recommendations: What policy actions and strategic measures can address these challenges and promote MSME development within Assam's industrial estates?

2. METHODOLOGY

The study focuses on two primary groups within Kamrup and Kamrup (Metro) districts, Assam: all 11(eleven) industrial infrastructure establishments (industrial estates, growth centers, mini-industrial estates) and 227 MSMEs operating within them. With data collected from 95% of the MSMEs (227 out of 239), the study captures a substantial portion of the MSME sector in these districts. Kamrup and Kamrup Metro, having the highest MSME concentration in Assam (with 5,724 registered MSMEs in Kamrup Metro and 2,166 in Kamrup Rural), represent the industrial core of the state. Guwahati, located in Kamrup Metro, serves as the "Gateway to Northeast India" and a key trade hub under India's Act East Policy, adding strategic value to the study area.

3. DATA COLLECTION

Data collection for this study utilized both primary and secondary sources. Primary data was obtained through interviews and structured questionnaires directed at MSME owners/managers and officials from AIIDC, ASIDC, and AIDC, providing detailed insights into operational challenges. Secondary data was gathered from government reports, research papers, and relevant articles to corroborate and enhance the primary findings.The distribution of the 227 MSMEs across 11 distinct industrial infrastructural establishments is summarized in the table below:

Table 1: List of MSMEs.

Industrial Infrastructure	Micro	Small	Medium	Total Units Functioning
Industrial Area, Rani	4	2	-	6
Industrial Estate, Bamunimaidam	34	12	-	46
Industrial Area, Kalapahar	14	2	-	16
Food Park, Chaygaon	3	2	-	5
EPIP, Amingaon	6	7	3	16
Industrial Growth Centre, Jambari	7	8	5	20
Industrial Growth Centre, Chatabari	10	10	8	28
Industrial Area, Chaygaon	7	8	-	15
Integrated Infrastructure Development Centre, Rangia	5	8	1	14
Mini Industrial Estate, Kalapahar	23	5	-	28
Industrial Area, Bonda	28	4	1	33
Total	141	68	18	227

3.1. Analytical Framework and Techniques

To assess the problems faced by MSMEs, the study employed both qualitative and quantitative methodologies:

1. **Garrett Ranking Method**: This qualitative technique was applied to rank the problems faced by MSMEs, such as finance, raw material availability, market access, labour, technical management, and power supply. The data collected from MSME units were converted into mean scores, and these were then ranked using Garrett's Ranking Technique to prioritize the challenges based on their severity and impact.
2. **One-Way ANOVA**: To determine whether the type of business structure (Sole Proprietorship, Partnership, or Private Limited Company) significantly influences the extent of the challenges faced by MSMEs, a One-Way ANOVA test was conducted. The analysis considered various problem categories (finance, raw materials, market access, labour, technical and management issues, and power supply) as dependent variables, with business structure as the independent variable.

- **Null Hypothesis (H_0)**: There is no significant difference in the mean levels of problems faced by MSMEs across different business structures (Sole Proprietorship, Partnership, and Private Limited Company).

- **Alternative Hypothesis (H_1)**: There is a significant difference in the mean levels of problems faced by MSMEs across different business structures.

For each problem type, the mean score was calculated for each business structure category. The F-ratio was used to evaluate between-group and within-group variances, and the corresponding p-value was calculated to determine statistical significance. A p-value of less than 0.05 would indicate that the differences between the business structures are statistically significant.

4. RESULTS AND DISCUSSION

The researcher, after conducting an extensive review of existing literature and an in-depth field survey of 227 MSMEs operating within the industrial estates and parks in Assam, identified a series of core operational challenges that hinder the growth and sustainability of these enterprises. These challenges have been classified into six primary categories based on their impact and relevance to MSME operations:

1. Problems relating to Finance
2. Problems relating to Marketing
3. Problems relating to Raw Materials
4. Problems relating to Labour
5. Problems relating to Technical and Management
6. Problems associated with Power

Each of these categories reflects the multifaceted nature of the obstacles faced by MSMEs and underscores the need for targeted interventions to enhance the operational environment within Assam's industrial infrastructure. The following sections explore each category, analysing specific issues and their implications for MSME sustainability and growth. The findings on identified financial problems are systematically presented, utilizing responses from 227 MSMEs analysed through Garrett's Ranking Technique.

4.1. Financial Challenges

MSMEs within Assam's industrial estates face critical financial challenges, with high interest rates identified as the foremost issue (Garrett mean scores: 71.70 for micro, 72.94 for small, and 71.67 for medium enterprises), limiting their access to essential funds. Government assistance ranks second, as restrictive criteria and bureaucratic delays hinder support, particularly for micro (71.38) and medium enterprises (64.44). Delays in financial assistance further disrupt operations, especially for small and medium firms. Working capital shortages, ranked fourth, constrain day-to-day activities, while fixed capital shortages impact long-term growth, especially for micro and small businesses with limited credit. These findings (Tables II, III, and IV) highlight the need for streamlined financial policies to strengthen MSME operations within Assam's industrial estates.

Table 2: Garrett Ranking Selection Factor Results for micro enterprise.

Sl. No.	Problems	1	2	3	4	5	Garrett Score	Average	Garrett Rank
1	Interest rate is high	8550	1260	300	0	0	10110	71.70213	1
2	Shortage of working capital	0	0	50	3240	1475	4765	33.79433	5
3	Assistance from government	8025	2040	0	0	0	10065	71.38298	2
4	delay in getting financial help	525	900	2800	360	1350	5935	42.0922	3
5	Shortage of fixed capital	0	240	3050	920	1325	5535	39.25532	4

Table 3: Garrett Ranking Selection Factor Results for small enterprise.

Sl. No.	Problems	1	2	3	4	5	Garrett Score	Average	Garrett Rank
1	Interest rate is high	4575	360	0	0	25	4960	72.94118	1
2	Shortage of working capital	75	0	50	1360	800	2285	33.60294	5
3	Delay in getting financial help	3450	1260	0	40	0	4750	69.85294	2
4	Assistance from government	600	120	1400	280	575	2975	43.75	3
5	Shortage of fixed capital	0	0	1400	640	600	2640	38.82353	4

Table 4: Garrett Ranking Selection Factor Results.

Sl. No.	Problems	1	2	3	4	5	Garrett Score	Average	Garrett Rank
1	Assistance from government	450	660	50	0	0	1160	64.44444	2
2	Shortage of fixed capital	0	0	100	40	375	515	28.61111	5
3	Interest rate is high	1050	240	0	0	0	1290	71.66667	1
4	Delay in getting financial help	0	180	700	40	0	920	51.11111	3
5	Shortage of working capital	0	60	750	80	0	890	49.44444	4

4.2. Strategic Recommendations to Address Financial Challenges for MSMEs

To enhance financial support for MSMEs in Assam's industrial estates, targeted strategies are necessary to

address high borrowing costs, limited government assistance, delays in financial access, and working and fixed capital shortages.

1. **Reduce Borrowing Costs**: Lower interest rates can make credit more affordable for MSMEs. Collaborating with financial institutions to offer MSME-specific loan products at concessional rates or subsidized interest can alleviate financial pressures. Government support in the form of interest subvention schemes may also be explored to lower the effective cost of borrowing.
2. **Simplify Government Assistance**: Streamline eligibility criteria and reduce bureaucratic barriers to ensure that government financial assistance is accessible. Fast-track processes for MSMEs, especially micro and medium enterprises, would make existing support mechanisms more effective and prevent delays that could disrupt business operations.
3. **Promote Fintech Solutions**: Fintech platforms offer faster and more flexible credit options, helping MSMEs bypass traditional banking limitations. AI-driven credit assessments and digital lending platforms can enable faster loan approvals and disbursals. Encouraging partnerships between MSMEs and fintech providers, along with promoting mobile payment systems like UPI, will improve cash flow management.
4. **Enhance Working Capital Access**: Establish revolving credit schemes and working capital loans tailored to MSMEs, allowing businesses to meet short-term needs and manage operational expenses. A focus on digital banking solutions for quicker fund access could also improve day-to-day cash flow.
5. **Support Fixed Capital Investment**: Address fixed capital shortages by offering long-term, low-interest loans specifically aimed at asset purchases, facility expansions, or technology upgrades. Asset-based lending and collateral-free loans for MSMEs could be introduced, making it easier for smaller enterprises to secure funding for growth.

4.3. Problems Relating to Marketing

MSMEs in Assam's industrial estates encounter major marketing challenges, with competition from larger firms ranking as the primary obstacle (Garrett score: 75 across all enterprise sizes), as limited resources restrict MSMEs' market presence. Limited access to broader markets, especially for small (74.78) and medium enterprises (70.83), ranks second, as investment in outreach is constrained. Poor distribution channels pose a third challenge, with micro enterprises (65.25) particularly affected by the lack of established distribution networks. Pricing policy constraints also hinder competitiveness, with micro (71.06) and small enterprises (69.70) struggling to balance affordability and profitability. Lastly, demand slackness, though lower in priority, impacts growth for small enterprises (62.65). These findings underscore the importance of targeted marketing support to enhance MSME sustainability and growth in Assam's industrial landscape.

Table 5: Garrett Ranking Selection Factor Results for medium enterprise.

Sl. No.	Problems	1	2	3	4	5	Garrett Score	Average	Garrett Rank
1	Demand slackness	0	60	100	0	375	535	29.72222	5
2	Pricing policy	300	660	0	120	0	1080	60	4
3	Poor distribution channel	600	600	0	0	0	1200	66.66667	3
4	Competition from large firm	1350	0	0	0	0	1350	75	1
5	Non accessibility to market	975	300	0	0	0	1275	70.83333	2

Table 6: Garrett Ranking Selection Factor Results for micro enterprises.

Sl. No.	Problems	1	2	3	4	5	Garrett Score	Average	Garrett Rank
1	Demand slackness	150	60	3750	160	1475	5595	39.68085	5
2	Poor distribution channel	6600	1380	100	1120	0	9200	65.24823	4
3	Non accessibility to market	9975	480	0	0	0	10455	74.14894	2
4	Competition from large firm	10575	0	0	0	0	10575	75	1
5	Pricing policy	7800	2220	0	0	0	10020	71.06383	3

Table 7: Garrett Ranking Selection Factor Results for small enterprises.

SL. No.	Problems	1	2	3	4	5	Garrett Score	Average	Garrett Rank
1	poor distribution channel	75	60	1450	0	925	2510	36.91176	5
2	Demand slackness	2700	840	0	720	0	4260	62.64706	4
3	Competition from large firm	5100	0	0	0	0	5100	75	1
4	Non accessibility to	5025	60	0	0	0	5085	74.77941	2

	market								
5	Pricing policy	3300	1440	0	0	0	4740	69.70588	3

4.4. Observations and Recommendations

The findings reveal a layered set of marketing challenges that vary in intensity across MSME categories. Micro enterprises face acute issues with distribution channels due to limited budgets and lack of professional networks, whereas small and medium enterprises encounter more significant barriers in accessing broader markets and pricing flexibility. Competing with larger firms remains a universal challenge across MSME sizes, emphasizing the need for strategic marketing interventions.

To address these challenges, MSMEs within industrial estates could consider the following approaches:

- **Leveraging Digital Marketing Tools**: MSMEs can enhance their market reach by adopting digital marketing strategies, including social media and e-commerce platforms, to build brand visibility and access new customer segments.
- **Forming Joint Ventures and Collaborations**: Partnering with other small firms or distributors could improve market access and reduce distribution costs.
- **Seeking Support from Local Business Associations**: Engaging with regional business associations or government programs designed to assist small enterprises can offer MSMEs guidance on pricing strategies, distribution options, and access to larger markets.
- **Investing in Employee Training**: Skill development in marketing and customer relationship management can enable MSMEs to better compete with larger firms and strengthen their position in the market.

In summary, MSMEs in Assam's industrial estates face substantial marketing constraints, with large-scale competition and limited market accessibility emerging as the most significant issues. By employing collaborative strategies, enhancing digital outreach, and seeking targeted support, MSMEs can improve their marketing capabilities and build a more sustainable presence in the competitive landscape.

4.5. Problems Relating to Raw Materials

For MSMEs in Assam's industrial estates, raw material supply is critical to sustaining production, yet multiple challenges hinder consistent access. The high cost of raw materials ranked as the most severe issue (Garrett mean score of 75 across all MSME sizes), with elevated expenses due to reliance on out-of-state suppliers, leading to increased transport and import fees. Transportation challenges follow, with scores of 75 for medium and micro enterprises and 74.63 for small enterprises, highlighting frequent delays, fluctuating transport costs, and occasional network disruptions, which impact timely production. Inaccessibility of raw materials ranks third (Garrett scores: 73.62 for micro, 73.67 for small, and 65.83 for medium enterprises), as limited local suppliers force dependency on external sources, increasing vulnerability to logistical disruptions. Low quota allotment is the fourth challenge, restricting material access during peak demand and impeding growth (mean scores: 72.55 for micro, 73.01 for small, and 61.11 for medium enterprises). Finally, while lower in priority, raw material quality concerns (mean scores: 48.06 for medium, 60.35 for micro, and 59.04 for small enterprises) affect product standardization and customer satisfaction, emphasizing the need for reliable quality control. These findings illustrate critical areas for intervention to stabilize raw material access for MSMEs in Assam's industrial estates.

Table 8: Garrett Ranking Selection Factor Results for medium enterprises

SL. No.	Problems	1	2	3	4	5	Garrett Score	Average	Garrett Rank
1	Inaccessibility to raw materials	525	660	0	0	0	1185	65.83333	3
2	low quality	75	180	250	360	0	865	48.05556	5
3	higher cost	1350	0	0	0	0	1350	75	1
4	low quota allotment	600	0	500	0	0	1100	61.11111	4
5	Transportation problem	1350	0	0	0	0	1350	75	2

Table 9: Garrett Ranking Selection Factor Results for micro enterprises

SL. No.	Problems	1	2	3	4	5	Garrett Score	Average	Garrett Rank
1	Inaccessibility to raw materials	9600	780	0	0	0	10380	73.61702	3
2	low quality	3825	1500	3000	160	25	8510	60.35461	5
3	higher cost	10575	0	0	0	0	10575	75	1
4	low quota allotment	9150	780	300	0	0	10230	72.55319	4
5	Transportation problem	10575	0	0	0	0	10575	75	2

Table 10: Garrett Ranking Selection Factor Results for small enterprises

SL. No.	Problems	1	2	3	4	5	Garrett Score	Average	Garrett Rank
1	inaccessibility to raw materials	4650	360	0	0	0	5010	73.67647	3

2	low quality	1425	840	1750	0	0	4015	59.04412	5
3	higher cost	5100	0	0	0	0	5100	75	1
4	low quota allotment	4425	540	0	0	0	4965	73.01471	4
5	Transportation problem	5025	0	50	0	0	5075	74.63235	2

4.6. Observations and Strategic Recommendations

The data reveal a clear hierarchy of raw material-related challenges affecting MSMEs, with cost and transportation being the most significant barriers to efficient operations. In particular:

- **Cost and Accessibility**: To address high costs and limited access, MSMEs could benefit from forming purchasing cooperatives, which could help them negotiate bulk discounts and establish more favourable terms with suppliers.
- **Logistics and Distribution**: Improving logistics infrastructure and seeking partnerships with reliable local distributors could mitigate transportation delays. Engaging with local government to improve transport networks around industrial estates may also alleviate logistical bottlenecks.
- **Quality Assurance**: MSMEs can implement quality checks upon receipt of raw materials and explore alternative suppliers to mitigate the impact of inconsistent quality on production.
- **Quota Adjustments**: To address the issue of limited quota, government intervention could support MSMEs by reviewing allocation policies, particularly during high-demand periods.

In conclusion, MSMEs in Assam's industrial estates face significant raw material-related challenges, with high costs and transportation delays standing out as critical obstacles. Addressing these issues through improved supply chain management and government support could significantly enhance MSME productivity and growth.

4.7. Problems Relating to Labour

Labour-related challenges significantly affect the operational efficiency and growth of MSMEs within Assam's industrial estates. A prominent issue is the lack of organized training programs, which consistently ranked highest in importance, with Garrett scores of 75 for medium and micro enterprises and 74.63 for small enterprises. Without structured training, especially in advanced techniques and technologies, MSMEs must either arrange training independently or operate with a workforce that may lack essential skills. Addressing this training gap is vital to enhance productivity and reduce turnover.

The shortage of skilled labour ranks second (Garrett scores: 65.83 for medium, 73.33 for micro, and 73.67 for small enterprises), particularly affecting medium enterprises in need of managerial and technical expertise. Aligning training programs with industry requirements can help MSMEs access skilled labour locally. High labour turnover follows closely, with scores of 65.28 for medium, 71.45 for micro, and 70.44 for small enterprises, largely due to the informal hiring practices and lack of structured policies that affect lower-level workers. Instituting fair wages and career progression could reduce turnover.

Absenteeism, though less critical, disrupts productivity moderately (mean scores: 59.72 for medium, 69.72 for micro, and 69.49 for small enterprises). Introducing incentives and maintaining open communication with employees may improve attendance. Finally, unionism, with lower scores (50.28 for medium, 60.21 for micro, and 57.43 for small enterprises), is minimal but can still present challenges for some MSMEs in balancing union demands and labour relations. While union presence is not strong, a cooperative labour environment can help maintain fair practices across the sector.

Table 11: Garrett Ranking Selection Factor Results for medium enterprises.

Sl. No.	Problems	1	2	3	4	5	Garrett Score	Average	Garrett Rank
1	High labour turnover	525	600	50	0	0	1175	65.27778	3
2	unionism	75	120	550	160	0	905	50.27778	5
3	Lack of skilled labour	525	660	0	0	0	1185	65.83333	2
4	Lack of training	1350	0	0	0	0	1350	75	1
5	Increasing absenteeism	525	0	550	0	0	1075	59.72222	4

Table 12: Garrett Ranking Selection Factor Results for micro enterprises

Sl. No.	Problems	1	2	3	4	5	Garrett Score	Average	Garrett Rank
1	High turnover	8475	1200	400	0	0	10075	71.4539	3
2	Unionism	4350	2100	600	1440	0	8490	60.21277	5
3	Lack of skilled labour	9450	840	50	0	0	10340	73.33333	2
4	Lack of training	10575	0	0	0	0	10575	75	1

5	Increasing absenteeism	7650	1380	800	0	0	9830	69.71631	4

Table 13: Garrett Ranking Selection Factor Results for small enterprises

Sl. No.	Problems	1	2	3	4	5	Garrett Score	Average	Garrett Rank
1	High turnover	3900	600	250	40	0	4790	70.44118	3
2	Unionism	1725	1020	200	960	0	3905	57.42647	5
3	Lack of skilled labour	4650	360	0	0	0	5010	73.67647	2
4	Lack of training	5025	0	50	0	0	5075	74.63235	1
5	Increasing absenteeism	3525	900	300	0	0	4725	69.48529	4

4.8. Observations and Strategic Recommendations

The results reveal a hierarchy of labour-related challenges faced by MSMEs, with a particular emphasis on training and skill development needs. The following recommendations are suggested for each issue:

- **Enhanced Training Programs**: Establishing structured training programs with support from industry bodies and local government can help MSMEs improve worker skills, which in turn supports productivity and reduces turnover.
- **Skill Development Initiatives**: Collaborating with technical institutes to develop industry-aligned curricula can address the skills gap and improve MSMEs' access to a skilled workforce.
- **Retention Strategies**: Introducing fair pay, structured career progression, and an improved workplace culture can reduce turnover rates, particularly among lower-level employees.
- **Addressing Absenteeism**: Absenteeism could be reduced by implementing attendance-based incentives and fostering open communication between employers and employees.
- **Balancing Union Relations**: Encouraging cooperative dialogue with labour groups, if present, and promoting fair labour practices can create a more positive work environment without compromising managerial flexibility.

In conclusion, labour-related challenges remain significant for MSMEs in Assam's industrial estates, with lack of training and skilled labour as primary issues. Addressing these barriers with targeted initiatives in training, recruitment, and employee engagement will help build a more resilient and efficient workforce.

4.9. Problems Relating to Technical and Management

Technical and managerial issues are major obstacles for MSMEs in Assam's industrial estates, affecting efficiency and growth. Inadequate waste management, ranked highest with a mean score of 75 across enterprise types, poses significant operational and regulatory risks, particularly for medium-sized enterprises that require more robust waste disposal solutions. Lack of warehousing facilities, with scores close to 75 for all categories, limits efficient inventory control and production continuity, underscoring the need for infrastructure support.

The shortage of proficient managers, ranked third, reveals a skills gap, especially in strategic management and HR, impacting MSME competitiveness. Poor security services, with lower scores around 44-48, expose micro and small enterprises to risks, highlighting a need for accessible security solutions. Finally, regulatory compliance, though ranked lowest, remains challenging due to complex requirements that divert resources from core operations. Addressing these issues through infrastructural support, training, and simplified regulations could enhance MSME resilience and growth within Assam's industrial estates.

Table 14: Garrett Ranking Selection Factor Results for medium enterprises

Sl. No.	Problems	1	2	3	4	5	Garrett Score	Average	Garrett Rank
1	Lack of proficient manager	1125	180	0	0	0	1305	72.5	3
2	Regulatory Compliance	150	120	0	40	325	635	35.27778	5
3	Inadequate waste management	1275	60	0	0	0	1335	74.16667	2
4	Poor security services	0	0	50	520	100	670	37.22222	4
5	Absence of warehouse facility	1350	0	0	0	0	1350	75	1

Table 15: Garrett Ranking Selection Factor Results for micro enterprises

Sl. No.	Problems	1	2	3	4	5	Garrett Score	Average	Garrett Rank
1	lack of proficient manager	10200	300	0	0	0	10500	74.46809	3
2	poor security service	4425	120	300	360	1625	6830	48.43972	4

3	absence of warehouse facility	10425	120	0	0	0	10545	74.78723	2
4	Regulatory Compliance	3825	0	200	1080	1475	6580	46.66667	5
5	inadequate waste management	10575	0	0	0	0	10575	75	1

Source: Table 1 & 28

Table 16: Garrett Ranking Selection Factor Results for small enterprises

Sl. No.	Problems	1	2	3	4	5	Garrett Score	Average	Garrett Rank
1	lack of proficient manager	5025	0	0	0	25	5050	74.26471	3
2	poor security services	1800	0	200	80	950	3030	44.55882	4
3	absence of warehouse facility	4875	120	0	0	25	5020	73.82353	2
4	Regulatory Compliance	1425	60	250	240	925	2900	42.64706	5
5	inadequate waste management	5100	0	0	0	0	5100	75	1

4.10. Observations and Strategic Recommendations

This analysis highlights critical technical and management issues for MSMEs, with implications for both individual business operations and the broader industrial framework in Assam. To address these challenges, the following measures are recommended:

- **Enhanced Waste Management Solutions**: Industrial estates should provide adequate waste management facilities or collaborate with private service providers to ensure efficient waste disposal for MSMEs.
- **Improved Access to Warehouse Facilities**: MSMEs could benefit from additional warehousing support, potentially through government-backed programs or shared storage facilities within industrial parks.
- **Management Training Programs**: Establishing skill development initiatives focused on management competencies could empower MSME owners and enhance overall business productivity.
- **Affordable Security Options**: MSMEs could benefit from security cooperatives or shared services within industrial estates, particularly for smaller enterprises that cannot afford dedicated security personnel.
- **Regulatory Simplification**: Streamlining compliance processes for MSMEs, perhaps through online platforms or simplified documentation, could reduce the regulatory burden and allow MSMEs to allocate resources more effectively.

In conclusion, technical and management issues present notable challenges for MSMEs within Assam's industrial estates. Addressing these obstacles requires strategic interventions, including infrastructural enhancements, capacity-building programs, and supportive policies tailored to the unique needs of MSMEs.

4.11. Problems Relating to Power

Power-related challenges significantly affect MSME operations within Assam's industrial estates, with high energy costs ranked as the top issue (mean score: 75 for micro and small, 72.5 for medium enterprises). The lack of subsidies on electricity charges limits profitability and growth potential. Low voltage issues (mean scores: ~74.8) disrupt production and increase maintenance expenses, necessitating infrastructure upgrades. Power scarcity, with mean scores around 74, causes frequent disruptions and delays, pointing to a need for expanded and diversified energy sources. Limited access to reliable energy and reliance on costly backup power further hinder operational efficiency. Addressing these issues through targeted policies, such as tariff relief, infrastructure improvements, and renewable energy support, could enhance MSME resilience and competitiveness.

Table 17: Garrett Ranking Selection Factor Results for medium enterprise

SL. No.	Problems	1	2	3	4	5	Garrett Score	Average	Garrett Rank
1	Limited access to reliable energy	525	60	500	0	0	1085	60.27778	4
2	Dependency on backup power	0	0	0	160	350	510	28.33333	5
3	Scarcity	975	300	0	0	0	1275	70.83333	3
4	Low voltage	1050	240	0	0	0	1290	71.66667	2
5	High charge	1125	180	0	0	0	1305	72.5	1

Source: table 1 & 32

Table 18: Garrett Ranking Selection Factor Results for micro enterprises.

SL. No.	Problems	1	2	3	4	5	Garrett Score	average	Garrett Rank
1	Limited Access to	9525	480	300	0	0	10305	73.08511	4

	reliable energy								
2	Dependency	0	0	2500	1720	1200	5420	38.43972	5
3	Scarcity	9975	480	0	0	0	10455	74.14894	3
4	Low Voltage	10500	60	0	0	0	10560	74.89362	2
5	High Charge	10575	0	0	0	0	10575	75	1

Table 19: Garrett Ranking Selection Factor Results for small enterprises.

SL. No.	Problems	1	2	3	4	5	Garrett Score	average	Garrett Rank
1	Limited access to reliable energy	4650	300	0	0	25	4975	73.16176	4
2	Dependency on backup power	0	60	900	960	625	2545	37.42647	5
3	Scarcity	4575	360	0	0	25	4960	72.94118	3
4	Low Voltage	5025	60	0	0	0	5085	74.77941	2
5	High Charge	5100	0	0	0	0	5100	75	1

4.12. Strategic Recommendations

Addressing power-related challenges is crucial for enhancing the operational efficiency and sustainability of MSMEs in Assam. To mitigate these issues, several strategies can be implemented:

- Subsidies and Tariff Reductions: Introducing subsidies or concessional tariff structures for MSMEs in industrial estates could alleviate the financial strain of high energy charges.
- Voltage Stabilization: Installation of transformers and upgrading electrical infrastructure within industrial parks could prevent voltage fluctuations, reducing equipment damage and maintenance costs.
- Increased Power Supply Capacity: Establishing additional power stations or expanding current infrastructure can address power scarcity and improve reliability for MSMEs, particularly during peak production times.
- Promoting Renewable Energy: Incentivizing MSMEs to adopt renewable energy solutions would reduce dependency on backup power and lower energy costs, enhancing resilience in the face of energy-related challenges.

In conclusion, power-related issues present significant barriers to the smooth functioning and expansion of MSMEs in Assam's industrial estates. Through strategic interventions in policy, infrastructure, and sustainable energy, MSMEs can overcome these obstacles, improving their competitiveness and operational sustainability.

4.13. Variance in Operational Problems Across Business Types

Micro, Small, and Medium Enterprises (MSMEs) play a pivotal role in industrial estates, driving economic activity and contributing to regional development. However, these enterprises encounter numerous challenges that vary in nature and intensity, particularly in the areas of finance, raw materials, power, market access, labour, and technical management. This section focuses on analysing how these challenges differ across three business types—sole proprietorships, partnerships, and private limited companies—using one-way ANOVA to assess variance in operational problems among these entities. The analysis offers valuable insights into how these enterprises experience financial issues, enabling policymakers and managers to create tailored interventions for each business structure.

Table 20: Descriptive Statistics for Financial Problems Across Business Types.

Business Type	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	Minimum	Maximum
Partnership	70	2.8371	0.36561	0.04370	2.7500 – 2.9243	1.80	3.60
Private Limited	63	2.9460	0.30524	0.03846	2.8692 – 3.0229	2.20	3.60
Sole Proprietorship	94	2.8362	0.34574	0.03566	2.7654 – 2.9070	2.20	3.80
Total	227	2.8670	0.34347	0.02280	2.8220 – 2.9119	1.80	3.80

The results indicate that Private Limited companies experience slightly higher financial challenges on average (mean = 2.9460) compared to Partnerships (mean = 2.8371) and Sole Proprietorships (mean = 2.8362). However, the close proximity of mean scores among the three types suggests that financial constraints are a shared challenge across all business entities. Notably, Private Limited companies have a lower standard deviation (0.30524), indicating more uniform financial difficulties compared to Partnerships and Sole Proprietorships. Sole Proprietorships show the greatest variability in financial challenges, as reflected in the range of scores from 2.20 to 3.80.

This finding implies that, while financial challenges are pervasive, Private Limited companies may encounter a slightly more consistent level of financial strain. However, this strain is not severe enough to distinguish them statistically from Partnerships or Sole Proprietorships.

Table 21: ANOVA Results for Financial Problems Across Business Types.

Source	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	0.545	2	0.273	2.338	0.099
Within Groups	26.117	224	0.117		
Total	26.662	226			

The ANOVA test yielded a p-value of 0.099, which is greater than the significance level of 0.05. This result indicates no statistically significant difference in the severity of financial issues across Partnerships, Private Limited companies, and Sole Proprietorships. While the mean scores hint at slight variations, these differences are not strong enough to conclude that any particular business type faces distinctly higher financial challenges within the industrial estate.

In summary, this analysis highlights that MSMEs of all business types within the industrial estate are similarly impacted by financial constraints, suggesting that generalized financial support measures could be equally beneficial across these entities. However, Private Limited companies, with a marginally higher and more consistent mean score, may need particular attention regarding financial management and credit access to enhance their operational resilience.

4.14. Marketing Challenges Across Different Business Entities

Marketing challenges are a crucial aspect affecting the operational performance of MSMEs within industrial areas. Effective marketing is essential for reaching target customers, managing competition, and securing market access, especially in competitive industrial environments. This section analyses the marketing challenges faced by MSMEs structured as partnerships, private limited companies, and sole proprietorships, providing insights into the variations, if any, in these challenges across business types.

Table 22: Descriptive Statistics for Marketing Problems Across Business Types.

Business Type	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	Minimum	Maximum
Partnership	70	1.8714	0.51644	0.06173	1.7483 – 1.9946	1.00	2.60
Private Limited	63	1.7968	0.48392	0.06097	1.6750 – 1.9187	1.40	2.60
Sole Proprietorship	94	1.8532	0.49005	0.05055	1.7528 – 1.9536	1.00	2.60
Total	227	1.8432	0.49536	0.03288	1.7784 – 1.9080	1.00	2.60

According to the results, Partnerships show a slightly higher average score (mean = 1.8714) for marketing challenges, suggesting they encounter these issues more often compared to Private Limited companies (mean = 1.7968) and Sole Proprietorships (mean = 1.8532). However, the differences in mean scores are minimal, indicating that marketing challenges are generally consistent across all three types of business entities.

- **Standard Deviation**: Partnerships exhibit the highest standard deviation (0.51644), implying a wider variability in the severity of marketing challenges within this group. In contrast, Private Limited companies show a lower standard deviation (0.48392), indicating that their marketing challenges are relatively more consistent across entities.
- **Minimum and Maximum Scores**: Both Partnerships and Sole Proprietorships have a minimum score of 1.00, suggesting that certain entities in these categories experience minimal marketing issues. All three business types reach a maximum score of 2.60, indicating a similar peak level of marketing challenges.

This analysis suggests that, while there may be slight differences, no business type faces overwhelmingly more marketing problems than the others. Thus, marketing challenges are distributed relatively evenly across Partnerships, Private Limited companies, and Sole Proprietorships within the industrial area.

Table 23: ANOVA Results for Marketing Problems Across Business Types.

Source	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	0.201	2	0.100	0.407	0.666
Within Groups	55.256	224	0.247		
Total	55.457	226			

The ANOVA analysis yields a p-value of 0.666, which exceeds the threshold of 0.05. This high p-value confirms that there is no statistically significant difference in the level of marketing challenges faced by the different types of MSMEs. Therefore, Partnerships, Private Limited companies, and Sole Proprietorships within industrial areas are affected by marketing issues in a similar manner, suggesting that any targeted interventions aimed at addressing marketing challenges could be uniformly applied across these entities.

In conclusion, the findings reveal that marketing challenges, such as market access and competitive positioning, impact MSMEs across all business types comparably. This insight reinforces the need for generalized marketing support strategies and resources within industrial estates, as these will benefit all MSMEs, regardless of their structural form.

4.15. Raw Material Challenges Across Different Business Entities

Access to raw materials is fundamental for the uninterrupted production process of MSMEs, impacting their operational stability and cost structure. The raw material challenges that MSMEs face can vary based on their business structure due to factors such as capital, procurement resources, and supply chain reliability. This section analyses the raw material-related issues for Partnerships, Private Limited companies, and Sole Proprietorships within industrial areas, providing insights into the extent and variation of these issues across business types.

Table 24: Descriptive Statistics for Raw Material Problems Across Business Types.

Business Type	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	Minimum	Maximum
Partnership	70	1.3229	0.23906	0.02857	1.2659 – 1.3799	1.00	2.20
Private Limited	63	1.3270	0.37036	0.04666	1.2337 – 1.4203	1.00	2.20
Sole Proprietorship	94	1.3596	0.32340	0.03336	1.2933 – 1.4258	1.00	2.20
Total	227	1.3392	0.31371	0.02082	1.2982 – 1.3802	1.00	2.20

Among the three business types, Sole Proprietorships have the highest average score (mean = 1.3596) for raw material problems, indicating they face slightly more challenges in accessing raw materials than Partnerships (mean = 1.3229) and Private Limited companies (mean = 1.3270). However, these differences in mean scores are minimal, suggesting that all business types experience a relatively similar degree of raw material-related issues.

- **Standard Deviation**: Private Limited companies have the highest standard deviation (0.37036), implying more variation in the severity of raw material challenges among entities within this category. Partnerships, with the lowest standard deviation (0.23906), show the least variability, indicating that raw material challenges are more uniformly experienced within this group.
- **Minimum and Maximum Scores**: All groups share a minimum score of 1.00, showing that some entities report minimal raw material challenges. Each group also has a maximum score of 2.20, reflecting a similar peak level of raw material problems across different business types.

The findings suggest that while Sole Proprietorships might face slightly more raw material issues on average, the differences are minor. This suggests that challenges related to raw material procurement, cost, and quality are prevalent across all types of business structures within the industrial setting.

Table 25: ANOVA Results for Raw Material Problems Across Business Types.

Source	Sum of Squares	df	Mean Square	F	Sig.	Source
Between Groups	0.067	2	0.034	0.339	0.713	Between Groups
Within Groups	22.174	224	0.099			Within Groups
Total	22.241	226				Total

With a p-value of 0.713, the ANOVA analysis confirms that there is no statistically significant difference in raw material challenges faced by Partnerships, Private Limited companies, and Sole Proprietorships. Since the p-value is much higher than the threshold of 0.05, the analysis indicates that raw material-related issues are similarly experienced by all three types of MSMEs in industrial areas.

In conclusion, the results demonstrate that raw material challenges—including availability, cost, and quality—are consistently encountered by Partnerships, Private Limited companies, and Sole Proprietorships. This consistency suggests that interventions aimed at mitigating raw material issues could be applied broadly across all business types, as these issues do not disproportionately affect any specific business structure.

4.16. Labour-Related Challenges Across Different Business Entities

Labour-related challenges, including high turnover, absenteeism, lack of skilled workers, and inadequate training, are critical issues affecting MSMEs' operational efficiency and growth in industrial areas. Given the variation in workforce requirements and management practices, these issues can impact different types of business entities in distinct ways. To assess the extent of labour problems experienced by different types of MSMEs, this study compares the labour-related issues among Partnerships, Private Limited companies, and Sole Proprietorships.

Table 26: Descriptive Statistics for Labour Problems Across Business Types.

Business Type	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	Minimum	Maximum
Partnership	70	1.4829	0.45619	0.05452	1.3741 – 1.5916	1.00	2.60
Private Limited	63	1.3810	0.42459	0.05349	1.2740 – 1.4879	1.00	2.60
Sole Proprietorship	94	1.5021	0.48791	0.05032	1.4022 – 1.6021	1.00	2.60
Total	227	1.4626	0.46216	0.03067	1.4021 – 1.5230	1.00	2.60

Sole Proprietorships exhibit the highest average score (mean = 1.5021) in labour-related issues, suggesting

they experience slightly more significant challenges in this area. Private Limited companies report the lowest average score (mean = 1.3810), indicating a relatively lower level of labour problems, while Partnerships fall in between with a mean score of 1.4829.

- **Standard Deviation**: Sole Proprietorships have the highest standard deviation (0.48791), showing a greater variability in labour-related issues among them. This suggests that some Sole Proprietorships experience more severe labour challenges, while others face fewer issues. Private Limited companies, with the lowest standard deviation (0.42459), demonstrate more consistency in their labour-related issues.
- **Range**: All groups share a similar range, with minimum scores of 1.00, showing that some entities in each business type experience minimal labour problems. The maximum score of 2.60 across groups indicates that the most severe labour-related challenges are similarly experienced by all three types of businesses.

The findings imply that while Sole Proprietorships may encounter slightly more labour-related issues on average, this is not markedly different from the levels faced by Partnerships and Private Limited companies.

Table 27: ANOVA Results for Labour Problems Across Business Types.

Source	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	0.596	2	0.298	1.399	0.249
Within Groups	47.676	224	0.213		
Total	48.272	226			

The ANOVA results reveal a p-value of 0.249, which exceeds the typical significance level of 0.05. This suggests no statistically significant difference in labour-related challenges among Partnerships, Private Limited companies, and Sole Proprietorships. Although Sole Proprietorships show a marginally higher average in labour issues, these variations are not significant enough to indicate a true disparity in labour challenges across different business structures.

In summary, the results indicate that labour-related challenges, such as high turnover, absenteeism, and skill shortages, are similarly prevalent across Partnerships, Private Limited companies, and Sole Proprietorships within the industrial setting. This consistency suggests that any interventions or policies aimed at alleviating labour issues would likely benefit all types of MSMEs, as these challenges do not appear to disproportionately impact any particular business structure.

4.17. Technical and Management-Related Challenges Across Business Entities

Technical and management-related challenges, encompassing issues such as proficient management, regulatory compliance, warehousing, and waste management, are essential factors that can significantly influence MSMEs' performance within industrial areas. This analysis explores how these challenges vary across different business entities, including Partnerships, Private Limited companies, and Sole Proprietorships.

Table 28: Descriptive Statistics for Technical and Management Problems Across Business Types.

Business Type	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	Minimum	Maximum
Partnership	70	2.0086	0.73302	0.08761	1.8338 – 2.1834	1.00	2.60
Private Limited	63	1.7714	0.76188	0.09599	1.5796 – 1.9633	1.00	2.60
Sole Proprietorship	94	1.9702	0.66102	0.06818	1.8348 – 2.1056	1.00	2.80
Total	227	1.9269	0.71602	0.04752	1.8332 – 2.0205	1.00	2.80

The descriptive data reveals that Partnerships experience the highest average score (mean = 2.0086) for technical and management problems, indicating they face the most considerable challenges in this area. Private Limited companies have the lowest average score (mean = 1.7714), suggesting they encounter fewer issues compared to the other business types. Sole Proprietorships fall between these two, with an average score of 1.9702.

- **Confidence Intervals**: The confidence intervals for Partnerships and Sole Proprietorships overlap, suggesting that they may encounter similar levels of technical and management-related issues. In contrast, Private Limited companies have a lower confidence interval range, indicating comparatively fewer problems in this area.
- **Range**: The maximum score across all groups remains consistent, showing that all types of business entities can face severe technical and management-related issues. However, the mean scores suggest that Partnerships tend to face these challenges more frequently, while Private Limited companies encounter them less often.

Table 29: ANOVA Results for Technical and Management Problems Across Business Types.

Source	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2.166	2	1.083	2.134	0.121
Within Groups	113.700	224	0.508		
Total	115.866	226			

The ANOVA results indicate a p-value of 0.121, which is above the standard significance threshold of 0.05. Consequently, there is no statistically significant difference in technical and management-related challenges among Partnerships, Private Limited companies, and Sole Proprietorships.

While Partnerships exhibit the highest average score for technical and management issues, and Private Limited companies the lowest, these differences are not statistically significant. This finding implies that all three types of business entities encounter similar levels of technical and management-related challenges within the industrial area.

In conclusion, technical and management challenges, though slightly more prevalent in Partnerships, do not significantly vary among business types in industrial areas. This indicates that initiatives aimed at addressing these issues could benefit all types of MSMEs, enhancing their technical capacities and management practices for improved operational effectiveness and sustainability.

4.18. Power-Related Challenges Across Business Entities

Power-related issues, such as high costs, low voltage, scarcity, limited access to reliable energy, and dependency on backup power, are critical challenges that can disrupt MSMEs' operations. This section examines how these power-related challenges affect different business entities, including Partnerships, Private Limited companies, and Sole Proprietorships, operating within industrial areas.

Table 30: Descriptive Statistics for Power Problems Across Business Types.

Business Type	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	Minimum	Maximum
Partnership	70	1.6286	0.27722	0.03313	1.5625 – 1.6947	1.00	2.20
Private Limited	63	1.6127	0.30453	0.03837	1.5360 – 1.6894	1.00	2.40
Sole Proprietorship	94	1.7149	0.31107	0.03208	1.6512 – 1.7786	1.00	2.80
Total	227	1.6599	0.30151	0.02001	1.6205 – 1.6993	1.00	2.80

The descriptive data indicates that Sole Proprietorships encounter the highest average level of power-related problems (mean = 1.7149), suggesting that they are most affected by power issues among the three business types. Partnerships have the lowest average score (mean = 1.6286), indicating that they experience the least power-related challenges. Private Limited companies lie in between with an average score of 1.6127.

- **Confidence Intervals**: Sole Proprietorships have a higher confidence interval than Partnerships and Private Limited companies, with little overlap, suggesting that Sole Proprietorships face relatively higher and more consistent levels of power-related issues.
- **Range**: The maximum score for Sole Proprietorships is 2.80, higher than the other business types, which indicates that some Sole Proprietorships experience very high levels of power-related problems. The consistent lower scores among Partnerships indicate that they face these challenges less intensely and more uniformly.

Table 31: ANOVA Results for Power Problems Across Business Types.

Source	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	0.493	2	0.247	2.756	0.066
Within Groups	20.052	224	0.090		
Total	20.545	226			

The ANOVA results show a p-value of 0.066, which is above the conventional significance level of 0.05. This suggests that there is no statistically significant difference in the power-related challenges faced by Partnerships, Private Limited companies, and Sole Proprietorships.

While Sole Proprietorships exhibit a slightly higher level of power-related issues compared to the other types, these differences are not statistically significant. This indicates that all three business types experience similar levels of power-related challenges within the industrial area, suggesting a shared set of power-related constraints across the sector.The analysis reveals that power issues, along with other operational challenges related to finance, marketing, raw materials, labour, and technical management, are consistently experienced across various business structures, including Sole Proprietorships, Partnerships, and Private Limited companies. This uniformity in challenges indicates that these issues stem more from the industrial environment rather than the specific type of business entity.

For MSMEs operating in industrial areas, this insight highlights the importance of creating adaptive strategies that address these common challenges universally. Managers and policymakers should focus on optimizing resource allocation, enhancing supply chain resilience, and developing a skilled workforce to mitigate these issues. Collaboration with industry peers, government bodies, and financial institutions is essential for building a supportive ecosystem that benefits all types of MSMEs within the industrial area.

5. CONCLUSION

The study examined the operational challenges faced by Micro, Small, and Medium Enterprises (MSMEs) within Assam's industrial estates, aiming to uncover and analyse issues related to finance, marketing, raw materials, labour, technical and managerial capabilities, and power supply. Through a detailed analysis, the research highlighted that while MSMEs play a critical role in the economic growth of industrial areas, their sustainability is often threatened by these persistent challenges.

The findings indicate that financial issues such as high interest rates and delayed credit access uniformly impact different types of MSMEs, irrespective of their ownership structure. Similarly, challenges related to market access and competition, inconsistent quality and accessibility of raw materials, labour turnover, and technical management issues were prevalent across MSMEs, pointing to broader systemic hurdles within the industrial environment. Notably, power-related concerns, especially high costs and voltage inconsistency, emerged as significant barriers to production continuity, underscoring the need for improved infrastructure and policy support.

Based on these findings, the study proposed a series of strategic and policy recommendations. Financial support schemes, market linkage programs, raw material banks, skill development initiatives, and energy subsidies emerged as crucial interventions that could support MSME resilience. Implementing these targeted policies could lead to a more robust industrial ecosystem, fostering growth, competitiveness, and sustainability for MSMEs in Assam.

This research underscores the importance of tailored support mechanisms for MSMEs, highlighting their potential to contribute significantly to regional economic development if their unique challenges are adequately addressed. Future research could further explore the long-term impacts of policy interventions on MSME performance, providing ongoing insights into how these enterprises can thrive in an evolving industrial landscape.

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