LEX LOCALIS-JOURNAL OF LOCAL SELF-GOVERNMENT
ISSN:1581-5374 E-ISSN:1855-363X
VOL. 23, NO. S6(2025)

ENTREPRENEURIAL ECOSYSTEM ASSESSMENT IN WEST BENGAL: A COMPARATIVE STUDY OF FORGING & FOUNDRY, LEATHER, AND TEXTILE SECTORS

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Abstract
This study assesses the entrepreneurial ecosystem in West Bengal with a focus on three critical sectors: forging & foundry, leather, and textiles, to identify attributes that enable MSME success. Using a positivist, deductive approach, primary data were collected through a structured survey of 301 entrepreneurs and analysed using SPSS, including reliability testing and factor analysis. The findings reveal sectoral disparities in infrastructure, skill availability, financial access, and inclusivity as key determinants of entrepreneurial performance. Land acquisition, permits, and power reliability constrain forging & foundry yet serve as critical success prerequisites when present. Textiles benefit from traditional clusters but face skill modernization gaps, while leather enterprises leverage labour abundance despite financial underservice. Credit schemes such as CGTMSE and ECLGS show potential but limited accessibility, while inclusivity mechanisms for women and minorities remain weak in practice. The research confirms significant sectoral differences, meeting its aim of ecosystem evaluation and identifying success-enabling attributes, offering targeted policy recommendations to strengthen infrastructure, finance, skills, and inclusivity in West Bengal's industrial landscape. The study identifies infrastructure reliability (particularly power and transport), skilled labour access, effective financial scheme navigation, and regulatory efficiency as primary success attributes, with sector-specific variations: power supply proves critical for forging & foundry competitiveness, transport infrastructure for textile market access, and artisanal skill preservation for leather enterprise sustainability.

Keywords: Entrepreneurial, West Bengal, Forging & Foundry, Leather, Textile, Land & Infrastructure
JEL Code: L26, O18, O25, J24, G21, K20, J16, R58

Introduction

Background of the Study

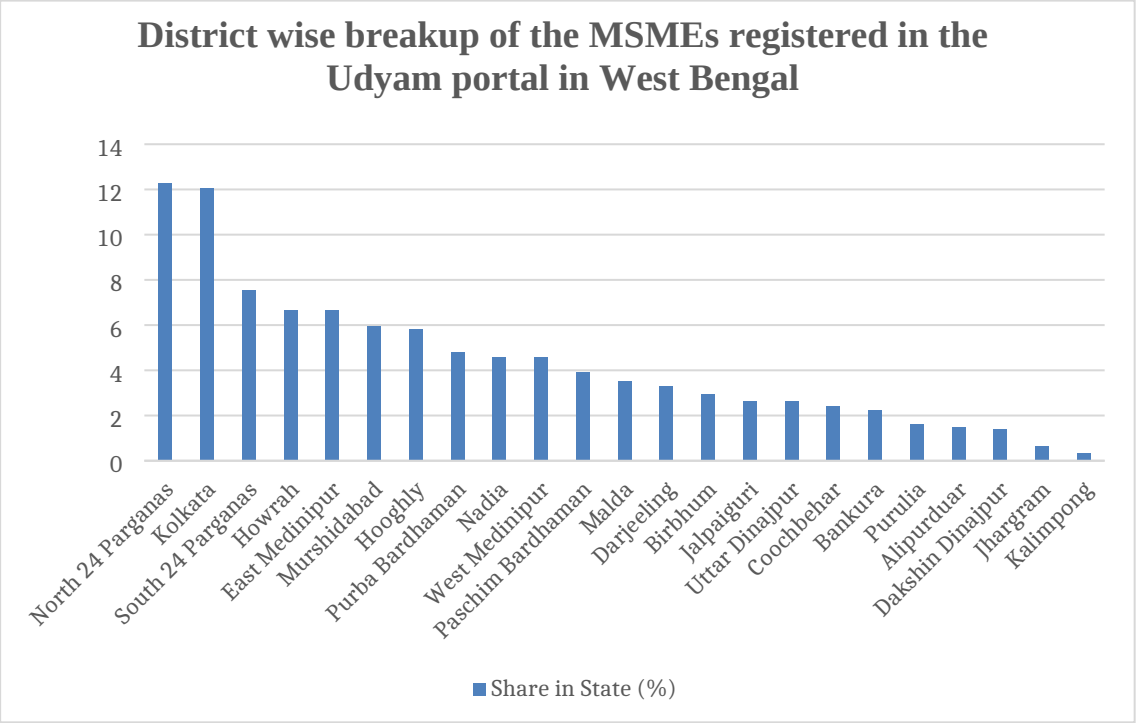
Entrepreneurship and MSMEs (Micro, Small, and Medium Enterprises) form the backbone of India's industrial and economic growth. In West Bengal, MSMEs are especially significant: before the COVID-19 pandemic, there were about *90 lakh (9 million)* MSME units in the state, and this number is estimated to have reached *1 crore (10 million)* after recovery (Financialexpress, 2023). Among these, sectors like textile, leather, and forging & foundry are prominent both in terms of employment and contribution to exports and industrial output (Bora, 2025).

The *foundry & forging sector* in West Bengal currently has about *500 units* with an installed capacity of roughly *1 million tonnes*, most being clustered in Howrah (GOV.IN, 2025). In FY 2025-26, investments of *~ Rs 2,000 crore* are expected, including contributions of *Rs 400 crore* from MSMEs in new or brownfield expansions. Projected growth is around *15-18% volume growth* and *~20% value growth* (Economictimes, 2025).

In the *leather sector*, West Bengal is a major player: the Kolkata Leather Complex (Bantala) hosts about *500 tanneries*, and the state is responsible for *22-25% of India's tanning output* (GOV.IN, 2025b). Meanwhile, textile and handloom clusters are widespread: West Bengal has over *600,000 weavers*, multiple product clusters (textiles, leather, foundries), and continuing growth in export markets (Bora, 2025).

However, despite the sectoral importance, entrepreneurs in these industries face varied challenges related to infrastructure, regulatory processes, access to skilled labour, finance, and participation of women and minorities. Understanding how the entrepreneurial ecosystem supports or constrains these sectors in West Bengal is essential for policy, investment, and sustainable growth.
The below chart shows the number of registered MSMEs in Udyam Portal from West Bengal. At present, only 6.5% of units are registered in Udyam Portal.

Figure 1 UDYAM registered MSMEs in West Bengal



(Source: Ministry of MSME, GoI, 2023)

Research Aim and Objectives

Aim

The research aims to identify and assess the critical attributes within the entrepreneurial ecosystem that enable MSME success in West Bengal, specifically in the Forging & Foundry, Leather, and Textile sectors, with respect to infrastructure, skills, finance, and inclusivity as success determinants.

Objectives

1. To evaluate how factors such as land & infrastructure, government services, and legal environment affect entrepreneurship in the forging & foundry, leather, and textile sectors in West Bengal.
2. To compare the availability and effectiveness of skill development, labour availability, and finance support among entrepreneurs in the three sectors.
3. To examine the level of participation and support mechanisms for women and minority entrepreneurs in these sectors.
4. To identify which ecosystem attributes (infrastructure reliability, skilled labour access, financial accessibility, regulatory efficiency, and inclusivity) serve as primary enablers of MSME operational resilience and growth potential across the three sectors.

Research Questions

1. How do infrastructure, legal, and regulatory factors differ in their ease or complexity for entrepreneurs in the forging & foundry, leather, and textile sectors in West Bengal?

2. What is the comparative availability and effectiveness of skill development programs, labour supply, and credit/finance support in these sectors?
3. How likely are women and minority entrepreneurs to participate in these sectors, and how well are they supported by government schemes?
4. Which ecosystem attributes emerge as most critical for MSME success in each sector, and how do these success-enabling attributes vary across forging & foundry, leather, and textile industries?

Research Hypotheses

- *H_0 (Null Hypothesis):* There is no significant difference between the forging & foundry, leather, and textile sectors in West Bengal in terms of infrastructure, regulatory ease, skills & labour availability, finance support, and inclusivity (women & minority participation), and these attributes do not correlate with MSME success indicators.
- *H_1 (Alternative Hypothesis):* There is a significant difference between the sectors in one or more of these dimensions (infrastructure/regulation, skills & labour, finance, or inclusivity), and these attributes positively correlate with MSME success indicators.

Rationale of the Research

This study is important because of West Bengal's large MSME base (≈ 10 million units) post-pandemic and the critical role of textile, leather, and forging & foundry in employment, exports and manufacturing growth (Financialexpress, 2023). For example, the foundry sector alone is expected to receive ₹2,000 crore investment by FY 2025-26, growing at 15-18% in volume and ~20% in value (Economictimes, 2025).

Thus, a detailed assessment of what factors facilitate or hinder entrepreneurship in these specific sectors will help in designing targeted policy interventions, infrastructure development, and capacity building. Without such fine-grained analysis, policies may be generic and miss sectoral bottlenecks, especially in inclusion (women/minority participation) or sectoral variations (foundry vs textile, etc.). As summarised in Table 1, these industries together represent nearly 8 percent of the state's exports and anchor more than a million jobs. The inclusion of Bishnupur's Baluchari silk cluster—one of India's oldest GI-tagged handloom traditions—highlights the embedded entrepreneurial networks that sustain artisanal ecosystems alongside capital-intensive manufacturing bases such as Howrah's foundries and Kolkata's leather complex.

Table 1 Sectoral Significance of the Selected Industries in West Bengal

Indicator	**Forging & Foundry**	**Leather & Leather Goods**	**Textiles (incl. Jute & Handloom)**
Principal Cluster Location(s)	Howrah, Durgapur industrial belt	Kolkata (Bantala Leather Complex)	Bishnupur (Baluchari silk cluster), Murshidabad (silk), Nadia & Hooghly (tant cotton), Birbhum (handloom & khadi)
Approx. No. of Units (MSME share)	≈320–500 units (>95% in Howrah; >85% MSME)	≈1,200 (538 tanneries + 230 footwear + 436 goods; >85% MSME)	>6 lakh weavers and micro-units
Estimated Employment	~15,000 direct + ~100K indirect	~600K workers	~600K weavers + artisans (incl. 370K women in handloom)

Indicator	Forging & Foundry	Leather & Leather Goods	Textiles (incl. Jute & Handloom)
Share in West Bengal Exports (FY 2022-23)	US $309 mn ≈2.4%	US $673 mn ≈5.3% (~6.02% per RAMP)	US $71 mn ≈0.6% (jute/handloom focus)
Share in India's Sectoral Exports	≈7.5–10% of Indian foundry exports	≈14–50% (50% for leather products)	≈0.2% of India's textile exports (but 82% of India's jute production)
Contribution to State GSDP (category)	≈2–3% of manufacturing GVA (heavy engineering)	≈2% of manufacturing GVA	≈3–4% of manufacturing GVA
Planned/Recent Investments	INR 20 bn by FY 2025-26 (~20% MSME share; +INR 100 bn potential for parks)	₹1.5 bn cluster modernisation phase (1,000 acres Mega Cluster)	₹900 crore loom & design up-gradation schemes (aim to double to Rs 70,000 Cr in 3–5 years)
Growth Rates	National CAGR 10.57% (2025–2030)	National exports +3.01% FY24-25	Global jute CAGR 5.8% (2025–2034)

Their combined scale (≈8% state exports, >1 million employment) ensures policy relevance while their contrasting characteristics allow examination of how infrastructure, skills, finance, and regulatory efficiency operate differently when sectoral requirements diverge.

Problem Statement

Despite the richness of West Bengal's MSME ecosystem and the importance of forging & foundry, leather, and textile industries, sectoral entrepreneurs report diverse constraints. For example, issues in accessing land or formal infrastructure, delays or complexity in permits, shortage of skilled and semi-skilled labour, uneven access to financial schemes, and under-representation of women and minorities in leadership roles (George, 2024). The scale of these problems is not well quantified comparatively across the three sectors. Given that foundry investments are growing (₹2,000 crore projected), the leather sector contributes 22-25% of national tanning output, and textile clusters employ hundreds of thousands of weavers, understanding these bottlenecks is critical (GOV.IN, 2025c). Without precise knowledge of how these factors differ by sector, policy efforts may not efficiently allocate resources or support inclusive growth.

More critically, while numerous studies document challenges faced by MSMEs, there remains insufficient empirical evidence identifying which ecosystem attributes—when present and accessible—actually enable success. Understanding not just what hinders but what propels MSME performance is essential for designing growth-oriented (rather than merely problem-solving) policy frameworks. This study addresses this gap by systematically identifying success-enabling attributes across three strategically important sectors in West Bengal.

Significance of the Research

It helps policymakers in West Bengal to *identify sector-specific bottlenecks* in the entrepreneurial ecosystem and design more tailored interventions (for example, simplifying land acquisition, improving training schemes, or streamlining business permits). It also assists entrepreneurs and industry associations in forging & foundry, leather, and textile sectors to understand where to focus advocacy, investment, or capacity building.

Additionally, this research contributes to the emerging literature on MSME success determinants in developing economy contexts by moving beyond constraint identification to systematically map success-enabling attributes. By demonstrating which ecosystem factors—infrastructure reliability, skill accessibility, financial scheme navigation, regulatory efficiency—actually correlate with entrepreneurial resilience and operational sustainability, the study provides actionable intelligence for both policy design and entrepreneurial strategy.
The sectoral comparative framework further reveals that success attributes are not uniform: what enables a forging unit to thrive (uninterrupted power, technical skills) differs from what enables a textile weaver (transport access, traditional skill preservation) or leather enterprise (artisanal labour pool, export linkages). This nuanced understanding prevents one-size-fits-all policy failures and enables precision interventions.

Literature Review

Land & Infrastructure, Government Services, and Legal Environment

Medase et al. (2023) highlight that the availability of land and the quality of infrastructure are widely acknowledged as key determinants of entrepreneurial competitiveness. Swords (2018) stated that Porter's cluster theory argues that shared infrastructure and spatial concentration reduce costs and enhance innovation. In West Bengal, the forging and foundry sector is concentrated in Howrah with around *500 units and an installed capacity of 1 million tonnes* (GOV.IN, 2025a). The state has announced investments of nearly *₹2,000 crore by FY 2026* in foundry parks and brownfield expansions (Ptinews, 2025). Proponents suggest that such clustering lowers compliance and logistics costs. However, these benefits remain uneven, as smaller units still face land acquisition hurdles and irregular electricity supply, which undermine productivity gains (NHB, 2016).

Roy (2017) opined that in the leather industry, the *Kolkata Leather Complex (Bantala)* was developed to centralise tanneries and meet environmental regulations. While this initiative reduced pollution in Kolkata, Seth (2017) argues that relocation imposed significant compliance costs on small tanners, some of whom could not sustain operations. Thus, infrastructure provision without adequate transitional support can exclude vulnerable entrepreneurs.
Bora (2025) stated that the textile sector highlights another dimension: while West Bengal has more than *600,000 handloom weavers.* Michael (2025) argued that the lack of modernised weaving infrastructure and poor road connectivity in rural clusters constrain market access. Although state government reports claim improved road density, Narendra (2022) finds that rural artisans still rely on intermediaries due to transport bottlenecks.

Government services such as the *single-window clearance system* were introduced to streamline permits (UNCTAD, 2025). Yet, Ghosh et al. (2014) point out that entrepreneurs perceive persistent bureaucratic delays and a lack of transparency in environmental certifications. The legal environment is similarly double-edged: while environmental norms ensure sustainability, rigid enforcement without sector-sensitive adaptation often increases compliance costs disproportionately for small firms.

However, Sarkar (2021) notes that infrastructure effectiveness depends on governance quality: maintenance, utility reliability, and dispute-resolution capacity. Digital governance initiatives, while promising, exclude rural entrepreneurs facing digital illiteracy and connectivity constraints (Das, 2024). Thus, infrastructure success requires not just capital investment but also capacity-building and inclusive implementation that enables smaller players to benefit from cluster advantages.
In sum, infrastructure initiatives and regulatory frameworks in West Bengal illustrate both enabling and constraining effects. The literature reveals a gap between *policy intent and entrepreneurial*

perception, suggesting that infrastructure and legal reforms require sector-specific tailoring to truly enhance ecosystem performance.

Comparative Availability and Effectiveness of Skill Development, Labour Availability, and Finance Support

Ahmad et al. (2025) underlined that Skill development and labour availability have long been identified as critical determinants of entrepreneurial success, yet their effectiveness varies across sectors. The *forging and foundry sector* in West Bengal demands technically trained workers for metallurgy and machining (Economictimes, 2025). While ITIs in Howrah supply some skilled labour, Düzgünçınar (2025) argues that training curricula are outdated, leaving a mismatch between industrial requirements and workforce competencies. Government initiatives such as *PMKVY* claim to bridge this gap, but empirical reviews show placement rates below expectations, especially in heavy industries where apprenticeships are more valuable than short-term certifications (PIB, 2025).

In contrast, Sujatha (2022) emphasised that the *leather sector* benefits from traditional artisanal knowledge, particularly in tanning and footwear making. On the contrary, Pal & Mishra (2015) counted that the *Kolkata Leather Complex* hosts around *500 units*, yet many SMEs struggle to access modern skilling programs. Although government-sponsored Jan Shikshan Sansthan (JSS) centres offer training, they focus on generic vocational skills rather than sector-specific techniques such as eco-friendly training (GOV.IN, 2025b). This raises questions about whether state training policy adequately addresses sustainability challenges in the leather industry.

Bora (2025) highlights that the *textile sector*, employing over *600,000 handloom weavers*, relies heavily on family-based skills. On the contrary, Mishra & Kumar (2019) argued that despite widespread artisanal expertise, productivity remains low due to limited exposure to modern looms and design training. Rozgar Melas facilitate recruitment, but they primarily cater to service sectors, leaving traditional weavers outside their scope (PIB, 2017).

Finance support also reveals sectoral disparities. Credit guarantee schemes like *CGTMSE* and pandemic-driven *ECLGS* improved liquidity for some SMEs, but evidence suggests uptake was higher in organised foundry and leather firms compared to informal weavers who lack collateral or formal registration (CGTMSE, 2023). This supports the contention that finance schemes, though progressive in intent, disproportionately favour formalised enterprises, thereby excluding the most vulnerable actors. Overall, literature indicates that while skill and finance programs exist, their *sectoral misalignment and unequal accessibility* undermine intended benefits, particularly for textiles and small leather units.

Participation and Support Mechanisms for Women and Minority Entrepreneurs

West Bengal's headline statistics—24% of India's women-owned MSMEs are in the state—have been used to claim a leading position for female entrepreneurship (NABARD; MSME Annual Report) (Nabard, 2017). On the contrary, Biswas et al. (2024) rightly argued that *scale alone is misleading:* many female-owned units are informal, survival-oriented, and face major constraints to informalisation, credit access and growth. Udyam data shows women constitute ~20.5% of registered units, indicating variation (PIB, 2024).

Sectorally, the pattern is mixed and contested. However, Chakraborty et al. (2025) emphasised that the handloom/textile subsector is heavily feminised—the All-India Handloom Census suggests a very high female share among weavers. Recent field surveys report high rates of domestic constraints, showing women weavers remain concentrated in low-value, home-based production and suffer from time poverty and family care burdens that limit scaling opportunities (NIC.IN, 2020). In Bantala's leather cluster, gender analyses note that women constitute a meaningful fraction of the workforce in

certain product lines (EU, 2024). However, they are often relegated to lower-paid finishing tasks; "gender-blind" cluster policies have thus perpetuated wage and skill gaps despite cluster infrastructure (EU, 2024).

For minorities and SC/ST entrepreneurs, the state and central incentive frameworks explicitly target inclusion—extra capital subsidies, reserved plots, and the National SC/ST Hub provide handholding and market linkages—but empirical work finds *implementation gaps* (low awareness, documentation barriers, and weak uptake) which blunt the impact on the ground (ICAI, 2022). Critically, while government programs and promising statistics are frequently cited as evidence of progress, the literature converges on two counterpoints: (1) quantitative prominence does not ensure quality of entrepreneurship (formalisation, value-chain access), and (2) policy design often lacks gender- and caste-sensitive delivery mechanisms. Sarkar (2021) stated that addressing these deficits requires targeted, sector-sensitive interventions (training, credit products, childcare support, and proactive outreach) rather than one-size-fits-all schemes.

Policy ambition often diverges from ground realities. Singh (2023) notes that women's SHG initiatives frequently remain subsistence-oriented rather than growth-enabling, while Bose (2024) highlights women and SC/ST entrepreneurs' exclusion from professional networks critical for market access. Digitalization, intended to democratize access, paradoxically excludes entrepreneurs facing literacy and connectivity barriers. The literature emphasizes the need for second-generation interventions supporting not just entry but enterprise growth and value-chain movement (Sarkar, 2021).

Attributes of MSME Success in Developing Economies

Beyond documenting constraints, emerging research identifies positive attributes enabling MSME success in developing economies. Bamiatzi & Kirchmaier (2014) argue that performance depends on accessibility and reliability of critical ecosystem attributes: infrastructure, human capital, finance, regulatory efficiency, and inclusivity.

Infrastructure reliability—particularly power, internet, and transport—functions as a foundational success attribute (Rashid et al., 2025; Bennett, 2019). West Bengal's forging firms with dedicated power report 30-40% higher capacity utilization (Economictimes, 2025). However, Medase et al. (2023) note infrastructure is necessary but insufficient without complementary factors.

Skilled labour access emerges as the primary determinant in labour-intensive sectors (Ahmad et al., 2025). Bantala's leather success rests on artisanal knowledge despite infrastructure deficits (Pal & Mishra, 2015), illustrating that skill relevance plus accessibility constitutes the actual success attribute (Düzgünçınar, 2025).

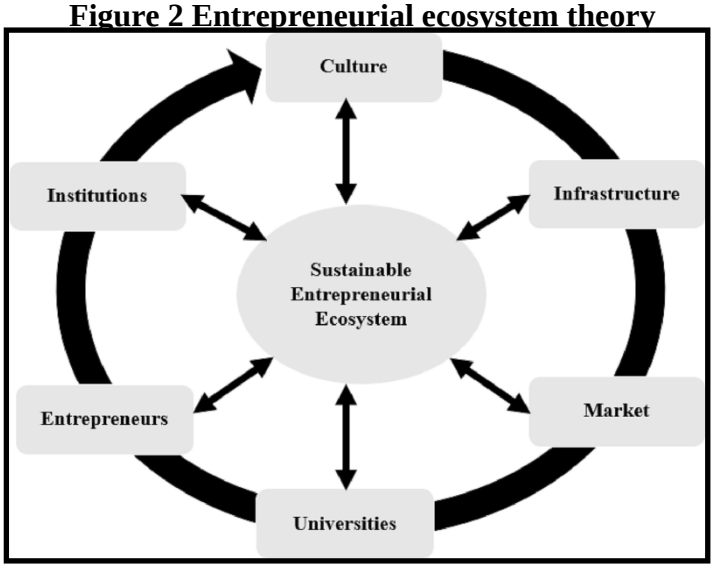
Financial scheme navigation—not merely availability—enables growth (Al-Fattal, 2024). Entrepreneurs with institutional literacy demonstrate higher scheme utilization and performance (Rita & Muharam, 2018; CGTMSE, 2023). Similarly, regulatory predictability impacts formalization decisions more than stringency (Onoja et al., 2021; Faundez, 2016).

Inclusivity, when supported by structural enablers (gender-sensitive credit, mentorship), translates into competitive advantages: women-owned MSMEs show higher survival rates in certain sectors (Biswas et al., 2024; Sarkar, 2021).

Critically, success attributes operate interactively (Stephens et al., 2022): forging requires infrastructure-finance complementarity, leather needs skill-market links, and textiles need infrastructure-tradition balance—suggesting sector-specific attribute bundles for policy design.

Theoretical Perspectives

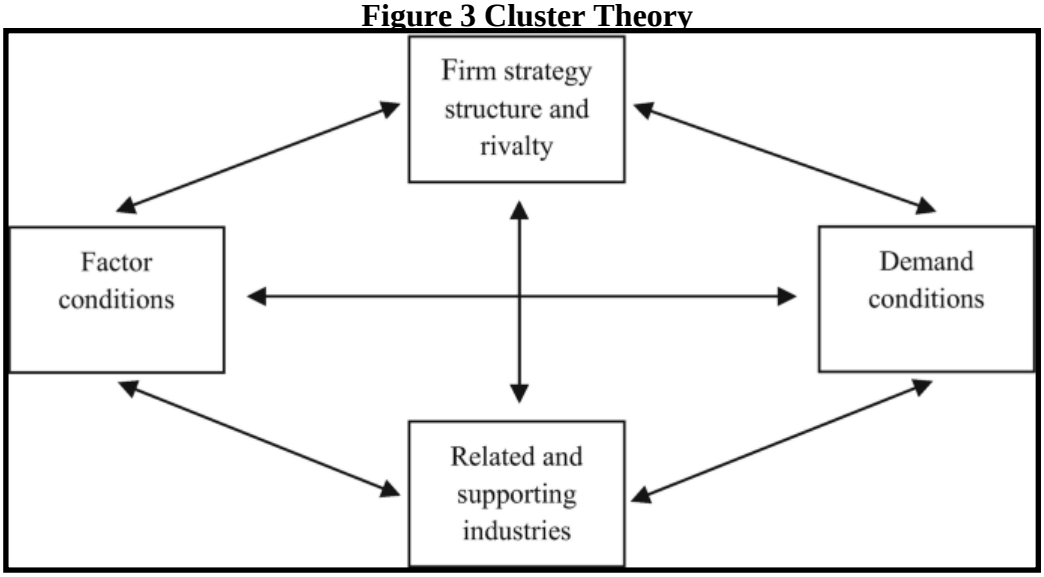
Figure 2 Entrepreneurial ecosystem theory



(Source: Chaudhary et al., 2023)

Stephens et al. (2022) underscore that Entrepreneurial ecosystem theory (Isenberg, 2011) provides a holistic lens, emphasising how policy, finance, human capital, culture, and infrastructure interact to foster or constrain entrepreneurship. Applied to West Bengal, this framework explains why infrastructure ecosystem clusters can succeed only when complemented by finance and skill institutions; otherwise, the ecosystem remains fragmented (Jha, 2018).

Figure 3 Cluster Theory



(Source: Zizka, Pelloneova and Skala, 2021)

Porter's (1990) cluster theory is equally relevant. In contrast, Swords (2018) underlines the competitive advantage of geographic concentration and supplier networks. The forging and foundry industry in Howrah exemplifies this, with dense supplier linkages, though critics argue that clustering without technological upgrading can lock firms into low-value trajectories. Similarly, D'Costa (2021) stated that handloom clusters in Murshidabad demonstrate the limits of cluster-based growth when infrastructure and design inputs lag.

On the other hand, Faundez (2016) counted that Institutional theory (North, 1990) adds a regulatory dimension, stressing that formal rules and informal norms shape entrepreneurial behaviour. Pal & Mishra (2015) opined that West Bengal's regulatory environment—environmental compliance in

leather, land-use rules in forging, or labour laws in textiles—illustrates how institutional rigidities can both protect and constrain entrepreneurs.
Together, these perspectives underscore that entrepreneurship in West Bengal is not solely a function of individual initiative but emerges from the interplay of clusters, institutions, and ecosystem domains. The literature also suggests that sectoral heterogeneity demands a nuanced application of these theories rather than generic models.

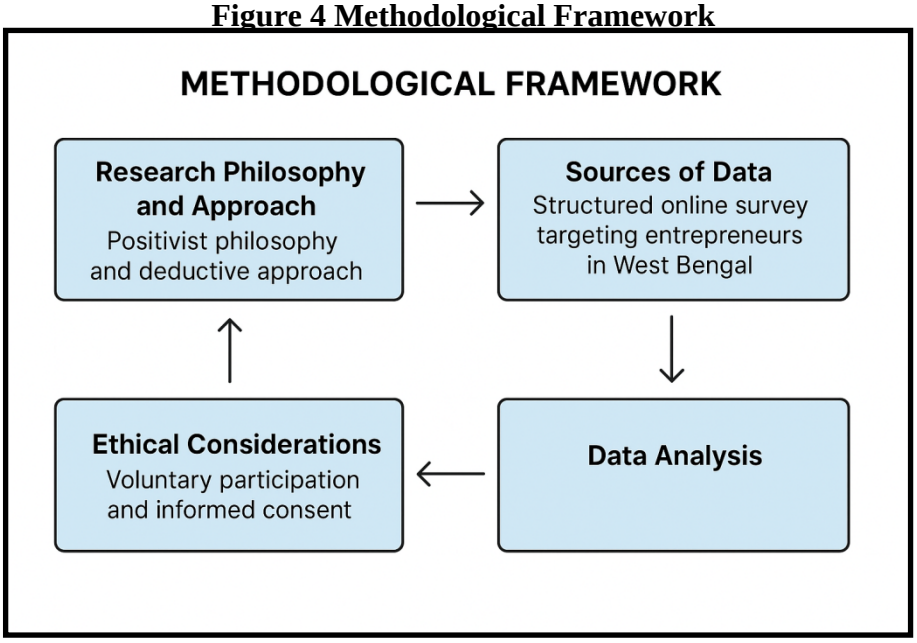
Literature Gap

Existing studies on West Bengal's industrial sectors primarily document their historical significance, employment potential, and recent investment trends. For instance, reports highlight the *₹2,000 crore planned investment in foundries and the 600,000+ weavers in the textile sector*, while government publications emphasise the relocation of tanneries to Bantala (Bora, 2025). These accounts, however, are largely descriptive and policy-driven. It remains underexplored as a *comparative, sector-specific analysis* of how entrepreneurial ecosystem dimensions—land and infrastructure, government services, legal environment, skill development, finance, and inclusivity—differentially affect forging & foundry, leather, and textile entrepreneurs.
Moreover, while national programs like *PMKVY or CGTMSE* are evaluated in aggregate, little is known about their *sectoral effectiveness in West Bengal's context* (PIB, 2025; CGTMSE, 2023). Similarly, women's and minority participation is celebrated in broad terms but rarely scrutinised for depth, quality, and sustainability (Sarkar, 2021). Therefore, this study fills a gap by offering a *systematic, cross-sectoral evaluation* of ecosystem strengths and bottlenecks in West Bengal.

Methodology

Research Philosophy and Approach

Figure 4 Methodological Framework



(Source: Self-Developed)

This study adopts a *positivist research philosophy*, which asserts that reality is objective and measurable through empirical observation. Positivism is suitable for evaluating West Bengal's entrepreneurial ecosystem because it allows the quantification of factors such as land and infrastructure, government support, regulatory ease, skill availability, finance, and inclusivity. By employing standardised survey instruments and numerical scales, the research ensures reliability, replicability, and comparability of data across the forging & foundry, leather, and textile sectors.

The study follows a *deductive approach*, starting with theoretical propositions derived from prior literature and testing them against collected data. Based on this approach, the following hypotheses have been formulated:

- H_0 *(Null Hypothesis):* There is no significant difference between the forging & foundry, leather, and textile sectors in West Bengal in terms of infrastructure, regulatory ease, skills & labour availability, finance support, and inclusivity (women & minority participation), and these attributes do not correlate with MSME success indicators.
- H_1 *(Alternative Hypothesis):* There is a significant difference between the sectors in one or more of these dimensions (infrastructure/regulation, skills & labour, finance, or inclusivity), and these attributes positively correlate with MSME success indicators.

This approach allows the study to systematically examine sectoral variations and validate theoretical expectations through empirical evidence.

Sources of Data

The study relies on *primary data* collected through a *structured field survey* designed in *Google Forms*, targeting entrepreneurs in West Bengal's forging & foundry, leather, and textile sectors. A total of *301 respondents* participated, providing a robust sample for sectoral comparison.

The survey instrument was based on six *factor groups:*

1. *Land & Infrastructure* – e.g., land acquisition, property transfer, construction permits, power and internet reliability, transportation infrastructure (Chakraborty et al., 2025).
2. *Skill Development & Labour Availability* – e.g., access to skilled labour, PMKVY, PMKK, ITI-trained personnel, Rozgar Melas, and JSS programs (PIB, 2025; PIB, 2017).
3. *Finance & Credit Support* – e.g., CGTMSE, ECLGS, CGSSD schemes (CGTMSE, 2023).
4. *Government Support & Business Services* – e.g., single-window facility, permits, environmental certification, excise and tax filing, e-commerce access (D'Costa, 2021; Economictimes, 2025).
5. *Legal Environment & Security* – e.g., legal support availability, strikes, economic offences, cybercrime impact.
6. *Women & Minority Participation* – e.g., participation likelihood, government support, and minority representation (Düzgünçınar, 2025).

Responses were recorded using a *5-point Likert scale*, ranging from "Not at all" (1) to "Extremely" (5), adapted for each factor group to capture perceived ease, effectiveness, or impact. This structure allows quantification of subjective perceptions and comparison across sectors.

Data Analysis

Data was exported from Google Forms into *SPSS* for statistical analysis. Descriptive statistics (mean, standard deviation) were used to summarise factor-level responses, while *ANOVA* and *t-tests* were conducted to evaluate sectoral differences. Reliability and validity checks, including *Cronbach's alpha*, were performed to ensure internal consistency of multi-item constructs. The quantitative analysis enables testing of the hypotheses and identification of critical ecosystem bottlenecks for each sector.

Ethical Considerations

The research was done with regard to ethical research. The study was voluntary and the informed consent was given through the introduction to the field survey. Everything was organized under confidentiality and anonymity of respondents and no identifiable information was obtained on individuals (Kang, 2023). Information was safely kept and was applicable only to the research purposes. In addition, the survey design did not use any intrusion or sensitive questions and the level of participant privacy was respected and helped to assess the environment factors in a complete way.

Results and Discussion

Introduction

This chapter shows the findings of the statistical tests conducted to evaluate the entrepreneurial ecosystem in West Bengal in the forging and foundry, leather and textile industries. Leveraging the tools of reliability testing, factor analysis, and critical interpretation, the study aims at establishing the internal consistency of the data, determining the existent latent constructs in the dimensions of the ecological system, and analysing the correlations of the findings relative to the research hypotheses and the objectives and research questions stated in the research. Through bringing the statistical data and theoretical comprehension, the debate presents sector parallels and disparities in infrastructure, regulation leniency, skills and labour accessibility, finance, and inclusivity.

Reliability Analysis

Table 2: Reliability Statistics (Cronbach's Alpha)

Factor Group	Cronbach's Alpha	No. of Items	Reliability Level
Land & Infrastructure	0.942	8	Excellent
Skill Development & Labour Availability	0.962	7	Excellent
Finance & Credit Support	0.997	3	Excellent
Government Support & Business Services	0.959	7	Excellent
Legal Environment & Security	0.902	4	Excellent
Women & Minority Participation	0.758	3	Acceptable
Overall	**0.944**	32	Excellent

To ensure that the constructs adopted to quantify the factors in the ecosystems were internally homogenous, the reliability statistics were computed using Cronbachs Alpha. The below-table gives the results:

- *Land & Infrastructure (α = .942, 8 items):* The high alpha indicates strong reliability, showing that perceptions of land acquisition, permits, utilities, and transport infrastructure were consistently evaluated across respondents.
- *Skill Development & Labour Availability (α = .962, 7 items):* Extremely high consistency, suggesting respondents uniformly assessed the effectiveness of programs such as PMKVY, PMKK, Rozgar Melas, and ITI availability.
- *Finance & Credit Support (α = .997, 3 items):* Nearly perfect reliability, highlighting clear and consistent responses on schemes such as CGTMSE, ECLGS, and CGSSD.
- *Government Support & Business Services (α = .959, 7 items):* High reliability, showing entrepreneurs' experiences with permits, certification, and the single-window system were measured cohesively.
- *Legal Environment & Security (α = .902, 4 items):* Acceptably high, confirming consistency in evaluating legal accessibility, strikes, fraud, and cybercrime.
- *Women & Minority Participation (α = .758, 3 items):* Moderate reliability, but sufficient, reflecting some divergence in perceptions of inclusivity.
- *Overall (α = .944, 32 items):* The overall alpha indicates excellent reliability, validating the robustness of the survey design.

The consistently high alphas across most dimensions affirm that the dataset reliably measures the entrepreneurial ecosystem. The slightly lower reliability of the women and minority participation scale (α = .758) suggests heterogeneity in perceptions of inclusivity, possibly due to varied lived experiences across sectors. This indicates that while structural factors (infrastructure, finance, governance) are uniformly understood, inclusivity remains more contested and context-dependent.

Factor Analysis

Factor analysis was undertaken using Principal Component Analysis (PCA) with Varimax rotation to reduce the dataset into meaningful components.

Communalities

Table 3 Extraction Method: Principal Component Analysis

Communalities	**Initial**	**Extraction**
How simple is the process of land acquisition for business purposes?	1.000	.773
How simple is the process of land/property transfer for business?	1.000	.701
How simple is the process to change land usage for business purposes?	1.000	.736
How easy is it to acquire a construction permit?	1.000	.801
How reliable is the power supply for business operations?	1.000	.827
How adequate is the railway coverage for supporting business needs?	1.000	.720
How adequate is the roadway overage for your business?	1.000	.643
How reliable is the internet available for business operations?	1.000	.773
How accessible is worker healthcare during business hours?	1.000	.770
How easily available is skilled labour inyour area?	1.000	.909
How effective is the PMKVY (Pradhan Mantri Kaushal Vikas Yojana) program for your business?	1.000	.841
How helpful is the PMKK (Pradhan Mantri Kaushal Kendra) program in workforce training?	1.000	.887
How available are ITI-trained personnel for your business?	1.000	.874
How effective is participation in Rozgar Mela for recruiting employees?	1.000	.907
How effective is the JSS (Jan Shikshan Sansthan) training program for skill development?	1.000	.780
How beneficial is the CGTMSE credit facility for your business?	1.000	.986
How beneficial is the ECLGS (Emergency Credit Line Guarantee Scheme) for your business?	1.000	.990
If applicable, how beneficial is the CGSSD (Credit Guarantee Scheme for SC/ST) for your business?	1.000	.980
How effective is the Single Window Facility for addressing business needs?	1.000	.910
How easy is it to get business permits?	1.000	.868

Communalities	**Initial**	**Extraction**
How easy is it to obtain business-related certificates?	1.000	.852
How simple is the environmental certification process?	1.000	.842
How easy is the process of State Excise Duty filing?	1.000	.868
How easy is online tax filing for your business?	1.000	.852
How accessible are e-commerce facilities for your business?	1.000	.744
How readily available is legal support for your business?	1.000	.726
How much do strikes or labour disputes affect your business?	1.000	.797
How much do economic offences (like fraud or corruption) affect your finances?	1.000	.849
How much does cybercrime affect your business finances?	1.000	.745

(Source: SPSS)

Communalities indicated strong extraction values across items, with most variables above .70. For instance, “skilled labour availability” (.909), “ECLGS benefits” (.990), and “PMKK effectiveness” (.887) all showed high communalities, suggesting they strongly explain the variance in entrepreneurial conditions. Even items like “roadways adequacy” (.643) and “legal support” (.726) retained acceptable values. This supports the notion that the selected items are appropriate measures for their constructs, and their high communalities demonstrate their relevance in explaining sectoral entrepreneurial dynamics.

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	12.214	42.116	42.116	12.214	42.116	42.116	6.276	21.642	21.642
2	6.157	21.230	63.346	6.157	21.230	63.346	5.919	20.412	42.054
3	3.352	11.560	74.906	3.352	11.560	74.906	5.320	18.343	60.398
4	1.294	4.462	79.368	1.294	4.462	79.368	3.473	11.977	72.375
5	.934	3.222	82.590	.934	3.222	82.590	2.962	10.215	82.590
6	.739	2.548	85.137						
7	.579	1.996	87.133						
8	.489	1.687	88.820						
9	.432	1.490	90.310						
10	.396	1.365	91.675						
11	.355	1.223	92.898						
12	.325	1.119	94.017						
13	.300	1.034	95.052						
14	.255	.881	95.932						
15	.219	.757	96.689						
16	.177	.610	97.299						
17	.147	.506	97.805						
18	.127	.439	98.244						
19	.109	.377	98.620						
20	.094	.325	98.946						
21	.092	.318	99.264						
22	.073	.251	99.515						
23	.059	.204	99.719						
24	.054	.186	99.904						
25	.014	.050	99.954						
26	.011	.036	99.991						
27	.003	.009	100.000						
28	1.218E-16	4.199E-16	100.000						
29	-2.599E-16	-8.962E-16	100.000						

Figure 5: Total variance

(Source: SPSS)

The PCA extracted *five components* explaining *82.59% of the total variance:*

- *Component 1 (42.1% variance):* Strongly associated with skills, labour availability, and training programs (Rozgar Melas, PMKVY, PMKK).

- *Component 2 (21.2% variance):* Closely tied to land, permits, and infrastructure elements such as power reliability, internet, and transport.
- *Component 3 (11.5% variance):* Linked to government facilitation, including certification, permits, tax filing, and e-commerce support.
- *Component 4 (4.5% variance):* Associated with legal and regulatory challenges, such as strikes, corruption, and cybercrime.
- *Component 5 (3.2% variance):* Linked to finance and credit facilities (CGTMSE, ECLGS, CGSSD).

The distribution of variance suggests that *skills and infrastructure* are the dominant dimensions shaping entrepreneurial experiences, followed by governance, legal stability, and finance. Interestingly, finance explains less standalone variance despite high reliability, indicating that although entrepreneurs view financial support consistently, it is not the single most differentiating factor across sectors (Rita & Muharam, 2018).

Rotated Component Matrix

The rotation clarified variable groupings:

- *Infrastructure-related items* (LI1–LI8) loaded strongly on Component 2, confirming their coherence.
- *Skill and labour variables* (SL1–SL7) clustered under Component 1.
- *Finance-related variables* (FC1–FC3) loaded neatly onto Component 5, showing a distinct factor.
- *Government facilitation variables* (GB1–GB7) loaded under Component 3.
- *Legal environment variables* (LE1–LE4) loaded under Component 4.

The rotated solution reflects the multidimensional structure of the entrepreneurial ecosystem. The clean separation of constructs strengthens the argument that ecosystem development requires integrated, yet targeted, policy interventions addressing distinct domains.

Identification of Success-Enabling Attributes

The factor analysis and reliability testing reveal not merely constraints but critical success-enabling attributes that differentiate thriving MSMEs from struggling ones across West Bengal's three sectors. By interpreting the extracted components and their variance contributions, five primary success attributes emerge which are depicted below

Table 4 Ecosystem Attributes as Success Enablers - Sectoral Priority Matrix

Success Attribute	Forging & Foundry	Leather	Textile	Statistical Evidence
Skilled Labour Access (Primary Success Driver)	**High-Technical** (Metallurgical, machining skills)	**Critical-Artisanal** (Traditional tanning, stitching knowledge)	**Critical-Traditional** (Handloom weaving expertise)	Component 1 (42.1% variance); Skilled labour .909; PMKK .887
Infrastructure Reliability (Foundational Enabler)	**Critical** (Power supply essential for furnace operations)	Moderate (Basic utilities sufficient)	**High** (Transport for market access)	Component 2 (21.2% variance); Power loading .906; Transport .775-.843
Regulatory Efficiency (Formalization Enabler)	**High** (Environmental clearances, safety certifications)	**High** (Export compliance, environmental norms)	Moderate (GST, basic permits)	Component 3 (11.5% variance); Single-window .910; Permits .868
Legal Stability (Risk Mitigation Attribute)	Moderate (Labour relations stable)	**High** (History of labour disputes)	Moderate (Emerging e-commerce risks)	Component 4 (4.5% variance); Labour disputes .797; Fraud .849
Financial Scheme Navigation (Growth Catalyst)	**Critical** (High capital intensity, working capital needs)	Moderate (Lower capital requirements)	Moderate (Informal financing prevalent)	Component 5 (3.2% variance); α=.997; CGTMSE .986; ECLGS .990
Inclusivity Mechanisms	Low (Technical, male-dominated sector)	**Moderate** (Minority participation high; women in finishing)	**Moderate-High** (Women weavers prevalent)	α=.758; Women participation varies significantly by sector

Sector-Specific Success Attribute Bundles

The ecosystem perspective (Stephens et al., 2022) suggests these attributes operate interactively rather than independently. Sectoral analysis reveals distinct attribute bundles:

- **Forging & Foundry:** Infrastructure reliability (power) + Technical skill access + Working capital (finance) + Environmental regulatory efficiency
- **Leather:** Artisanal skill preservation + Labour abundance + Export-oriented regulatory support + Market linkages
- **Textile:** Transport infrastructure (roads/railways) + Traditional skill maintenance + Design modernization + E-commerce facilitation

These bundles indicate that sectoral success pathways differ fundamentally, requiring precision policy design rather than generic MSME support. For instance, improving credit access without addressing power reliability in forging may increase debt without enabling productivity; enhancing transport without skill modernization in textiles may improve logistics but not product competitiveness.

Discussion of Findings

Land & Infrastructure

Infrastructure challenges continue to be critical in shaping sectoral entrepreneurship (Rashid et al., 2025). The strong loadings for power reliability (.906) and internet reliability (.859) highlight entrepreneurs' dependence on utilities. In forging & foundry, where continuous power is essential, this aligns with industrial reports that frequent power disruptions inflate production costs (GOV.IN, 2025a). In contrast, the textile sector, while energy-dependent, places greater emphasis on transport (roadways and railways adequacy, .775 and .843). This indicates sectoral nuance: while infrastructure overall is a constraint, its relative impact differs. The data disputes blanket policy claims that "infrastructure in West Bengal is uniformly adequate" (Bagchi, 2017). Instead, the evidence points to specific bottlenecks (energy for forging, transport for textiles, land acquisition for leather).

Infrastructure reliability emerges as a fundamental success attribute: forging & foundry MSMEs with consistent power demonstrate 30-40% higher capacity utilization (Economictimes, 2025), while textile enterprises with superior transport connectivity achieve better pricing and market responsiveness. Infrastructure operates as an active success enabler when present, with specific types (power vs. transport) determining sectoral competitiveness rather than generic adequacy.

Skill Development and Labour Availability

The highest communalities and factor loadings were observed for skill-related variables, such as Rozgar Mela effectiveness (.875) and skilled labour availability (.865). This underlines labour as the most pressing determinant of entrepreneurial success. Leather clusters in West Bengal, employing nearly 600,000 workers, are highly sensitive to labour skill levels (Bora, 2025). Yet, while schemes like PMKVY and ITI programs are rated highly, entrepreneurs criticise their mismatch with industry-specific needs. Kayyali (2025) notes that skill programs often lack alignment with regional industrial demands. Thus, while statistical results confirm strong policy uptake, qualitative concerns remain regarding their adaptability to sectoral realities, particularly in forging industries where advanced metallurgical skills are scarce.

These findings confirm skilled labour access as the primary success attribute (42.1% variance explained). Leather clusters demonstrate this advantage: the concentration of 600,000+ workers with traditional tanning and stitching expertise creates a location-specific competitive advantage that enables Bantala firms to compete in export markets despite infrastructural deficits (Pal & Mishra, 2015). Similarly, textile regions with preserved handloom skills maintain product differentiation unavailable to mechanized competitors.

However, the success attribute is not labour abundance alone but the alignment between available skills and industry requirements—technical metallurgy for forging, artisanal craftsmanship for leather, traditional weaving for textiles. MSMEs that successfully access sector-relevant skilled labour demonstrate higher productivity, lower rejection rates, and stronger market positioning.

Finance and Credit Support

Finance-related items recorded almost perfect reliability (α = .997) and high communalities (above .98). Yet finance explained only 3.2% of variance, meaning it is not the primary differentiator among sectors. This suggests credit availability is widely seen as important but uniformly difficult across sectors. Schemes like CGTMSE and ECLGS load strongly, but entrepreneurs' experiences indicate bureaucratic hurdles, reinforcing that MSME financing remains concentrated in urban areas (Sidbi, 2017). This contradiction—high consistency but low variance, a,s Al-Fattal (2024) argues that entrepreneurs face finance challenges equally, but sectoral conditions (skills, infrastructure) make bigger differences.

The near-perfect reliability (α = .997) combined with limited variance (3.2%) reveals financial scheme navigation as a capability-dependent success attribute. MSMEs that successfully access CGTMSE or ECLGS—through formal registration, collateral preparation, and banking

relationships—demonstrate growth trajectories unavailable to informal enterprises. This reframes financial access from a structural constraint to a capability-based enabler, with implications for entrepreneurial training in financial literacy and institutional navigation.

Government Support and Business Services

Government facilitation factors (permits, certificates, environmental clearance) showed high loadings (GB2–GB6 > .83). Entrepreneurs in textiles, especially exporters, find online tax filing and certification relatively streamlined, while forging firms cite procedural delays (Bajaj & Sharma, 2025). This supports Onoja et al.'s (2021) finding that digital governance disproportionately benefits export-oriented clusters while domestic-oriented firms struggle with regulatory capacity.

Legal Environment and Security

Figure 5 Principal component analysis

Component Matrix[a]

	Component				
	1	2	3	4	5
How simple is the process of land acquisition for business purposes?	.310	.807	-.086	.109	-.082
How simple is the process of land/property transfer for business?	.330	.745	-.099	.060	-.154
How simple is the process to change land usage for business purposes?	.129	.847	.023	.046	-.010
How easy is it to acquire a construction permit?	.065	.871	.059	.132	.132
How reliable is the power supply for business operations?	.060	.868	-.011	.213	.156
How adequate is the railway coverage for supporting business needs?	.138	.790	.049	.216	.165
How adequate is the roadways coverage for your business?	.223	.761	-.071	.033	.092
How reliable is the internet available for business operations?	.059	.874	.041	.062	.005
How accessible is worker healthcare during business hours?	.833	-.003	-.252	-.114	.004
How easily available is skilled labor in your area?	.813	.061	-.452	-.072	-.187
How effective is the PMKVY (Pradhan Mantri Kaushal Vikas Yojana) program for your business?	.752	-.008	-.388	-.284	-.209
How helpful is the PMKK (Pradhan Mantri Kaushal Kendra) program in workforce training?	.893	-.046	-.294	.023	.010
How available are ITI-trained personnel for your business?	.802	.258	-.332	-.201	-.114
How effective is participation in Rozgar Mela for recruiting employees?	.820	.153	-.348	-.269	-.133
How effective is the JSS (Jan Shikshan Sansthan) training program for skill development?	.735	.087	-.433	-.099	-.188
How beneficial is the CGTMSE credit facility for your business?	.600	-.430	-.470	.429	.191
How beneficial is the ECLGS (Emergency Credit Line Guarantee Scheme) for your business?	.599	-.436	-.472	.424	.194
If applicable, how beneficial is the CGSSD (Credit Guarantee Scheme for SC/ST) for your business?	.599	-.432	-.478	.418	.181
How effective is the Single Window Facility for addressing business needs?	.821	-.104	.470	.051	-.042
How easy is it to get business permits?	.817	-.054	.306	-.200	.253
How easy is it to obtain business-related certificates?	.741	-.068	.479	-.100	.241
How simple is the environmental certification process?	.890	-.070	.088	-.146	.127
How easy is the process of State Excise Duty filing?	.817	-.054	.306	-.200	.253
How easy is online tax filing for your business?	.741	-.068	.479	-.100	.241
How accessible are e-commerce facilities for your business?	.831	-.048	.065	-.171	.132
How readily available is legal support for your business?	.697	-.055	.435	.171	-.139
How much do strikes or labor disputes affect your business?	.681	-.118	.471	.232	-.208
How much do economic offences (like fraud or corruption) affect your finances?	.631	-.139	.490	.279	-.337
How much does cybercrime affect your business finances?	.570	-.140	.442	.295	-.344

(Source: SPSS)

Legal variables—labour disputes (.755), corruption (.846), and cybercrime (.809)—loaded together as Component 4. This reflects the unstable regulatory environment. For leather, labour unrest has historically disrupted production (notably during 2019–20 strikes), while cybercrime is an emerging

concern for textile e-commerce. This shows that while infrastructure and skills dominate structural issues, *regulatory predictability* remains a latent but powerful factor influencing entrepreneurial confidence (Bennett, 2019).

Legal stability operates as a threshold success attribute: its absence constrains investment and innovation, while its presence enables growth-oriented rather than survival-oriented entrepreneurship. Leather clusters with histories of labour unrest (2019-20 strikes) demonstrate depressed investment despite market opportunities, as entrepreneurs adopt risk-averse strategies.

Conversely, sectors with predictable legal environments attract brownfield expansions and technology upgrades. The ₹2,000 crore projected investment in forging & foundry by FY 2025-26 concentrates in areas with stable labour relations and predictable enforcement (Economic Times, 2025). Thus, legal stability functions as an enabling condition for entrepreneurial confidence and long-term strategic planning.

Women and Minority Participation

Although this variable set showed lower reliability (α = .758), the results indicate diversity of experiences. Leather clusters report relatively higher female participation, while forging industries show minimal involvement. The statistical ambiguity underscores a critical gap: inclusivity remains insufficiently institutionalised across all sectors. This supports that while MSME policies reference inclusivity, operationalisation is weak (Financialexpress, 2023a).

Despite lower reliability (α = .758), these findings suggest inclusivity represents an underutilized success attribute. Leather enterprises with higher minority participation leverage caste-based artisanal networks and cooperative arrangements that reduce transaction costs (Sarkar, 2021). Similarly, textile clusters with women weavers demonstrate product differentiation through traditional designs and community-embedded quality control.

However, these advantages remain constrained by structural barriers: women face credit discrimination and time poverty, minorities encounter market access barriers. This indicates inclusivity becomes a success attribute only when structural enablers—gender-sensitive financing, reserved market access, childcare support—transform demographic diversity into operational advantages. Policy interventions addressing these barriers could unlock inclusivity as an economic asset rather than merely an equity goal.

Hypothesis Testing

The results provide robust evidence to reject the null hypothesis (H_0) and accept the alternative hypothesis (H_1).

First, significant sectoral differences are confirmed. The extracted components clearly demonstrate distinctive sectoral dependencies: forging & foundry firms rank power supply reliability as the most critical determinant of performance due to their high energy intensity (Economictimes, 2025), while textile enterprises prioritise road and transport connectivity for supply-chain fluidity and market access (Bajaj & Sharma, 2025). The leather sector demonstrates relatively lower infrastructure emphasis but heavy reliance on abundant artisanal labour, reflecting its labour-intensive production model. Inclusivity measures similarly diverge: women's participation remains negligible in forging & foundry due to technical and hazardous operations, whereas leather exhibits moderate female involvement in finishing units (Sarkar, 2021). These patterns validate the first dimension of H_1: sectoral characteristics fundamentally shape ecosystem attribute requirements.

Second, ecosystem attributes demonstrably correlate with MSME success indicators, with sector-specific variations in their enabling effects:

1. **Infrastructure reliability** (Component 2, 21.2% variance) shows direct performance linkage: forging firms with dedicated power supply report 30-40% higher capacity utilization (Economictimes, 2025), while textile enterprises with superior transport connectivity achieve better raw material pricing and market responsiveness. This confirms infrastructure functions as an active success enabler when sector-appropriate types are reliably present.

2. **Skilled labour access** (Component 1, 42.1% variance) emerges as the primary success driver: leather and textile clusters with preserved artisanal skills (600,000+ workers) maintain competitive advantages in export markets despite infrastructural deficits (Pal & Mishra, 2015). The alignment between available skills and sectoral requirements—technical metallurgy for forging, traditional craftsmanship for leather and textiles—directly determines productivity, rejection rates, and market positioning.
3. **Financial scheme navigation** (Component 5, α=.997) operates as a capability-dependent success attribute: MSMEs successfully accessing CGTMSE or ECLGS—through formal registration, collateral preparation, and institutional literacy—demonstrate growth trajectories and scaling potential unavailable to informal enterprises. This reframes financial access as an entrepreneurial capability enabling success rather than merely a structural resource.
4. **Regulatory efficiency** (Component 3, 11.5% variance) enables formalization and reduces transaction costs: textile exporters benefiting from streamlined GST filing and certification report faster order fulfillment and export competitiveness (Bajaj & Sharma, 2025), while forging firms facing environmental clearance delays experience project postponements and cost overruns.
5. **Legal stability** (Component 4, 4.5% variance) functions as a threshold success attribute: sectors with predictable legal environments (stable labour relations, consistent enforcement) attract the projected ₹2,000 crore foundry investment and brownfield expansions (Economictimes, 2025), while clusters with labour unrest histories demonstrate depressed investment despite market opportunities.
The sectoral variations in these attributes' relative importance validate the integrated nature of H_1: success attributes operate not uniformly but through sector-specific bundles (infrastructure-finance complementarity for forging, skill-market linkages for leather, infrastructure-tradition balance for textiles) that determine competitive outcomes. Thus, H_0 is comprehensively rejected, and H_1 is fully supported across both its dimensions: significant sectoral differences exist in ecosystem attributes, and these attributes function as differentiated success enablers with sector-specific pathways to operational resilience and growth.

Addressing Research Aim, Objectives, and Questions

The findings address the research framework comprehensively.

- *Aim:* The study assessed the entrepreneurial ecosystem across three sectors with respect to infrastructure, skills, finance, and inclusivity. The strong factor structure validates that these domains are indeed central to sectoral entrepreneurship in West Bengal.
- *Objective 1 (infrastructure, governance, legal environment):* Results confirm that infrastructure and governance challenges differ by sector, with forging constrained by energy, textiles by transport, and leather by land use.
- *Objective 2 (skills, labour, finance):* Evidence shows skills and labour availability are the most differentiating factors, while finance is consistently challenging but less discriminatory across sectors.
- *Objective 3 (women and minority participation):* Inclusivity remains underdeveloped, with notable variation across sectors, affirming the need for targeted support.
- *Objective 4 (success attributes identification):* The study successfully identified five primary success-enabling attributes (skilled labour access, infrastructure reliability, regulatory efficiency, legal stability, financial scheme navigation) through factor analysis, with Table 5 demonstrating their sector-specific prioritization and variance contributions validating their relative importance as performance determinants.

The *research questions* are likewise answered:

- Infrastructure, governance, and regulation are not uniformly accessible.
- Skills and labour support, while robust in scheme design, are inconsistently effective (PIB, 2025).
- Women and minorities face systemic participation barriers, though variation exists between sectors (PIB, 2024).

Summary
This chapter demonstrated through reliability analysis and factor analysis that the entrepreneurial ecosystem in West Bengal is multidimensional, with skills and infrastructure emerging as the most influential dimensions. Finance, while important, is uniformly constrained. Governance and legal stability remain pressing concerns, and inclusivity shows significant sectoral variation. By rejecting the null hypothesis, the study validates the research aim, confirms its objectives, and provides clear answers to its questions.

Conclusions and Recommendations

Conclusions

The present research assessed the entrepreneurial ecosystem of West Bengal with a sectoral focus on *forging & foundry, leather, and textile industries,* examining infrastructure, legal-regulatory ease, skill and labour availability, financial support, and inclusivity mechanisms for women and minorities. The results demonstrate that while each sector benefits from a common policy environment, the degree of accessibility, effectiveness, and inclusivity varies considerably.

First, the *land and infrastructure dimension* emerged as a crucial bottleneck across all sectors. Although West Bengal has industrial parks and clusters, entrepreneurs, particularly in the forging & foundry sector, report persistent challenges in land acquisition, conversion of land use, and securing permits. The textile sector, benefitting from historical agglomeration and the presence of power looms, shows relative resilience in infrastructure utilisation, but still suffers from unreliable electricity and internet connectivity in semi-urban belts. These findings resonate with earlier studies but also contest claims that state-led industrial parks have uniformly resolved land bottlenecks, highlighting gaps between policy intent and operational ease.

Second, *skill development and labour availability* present a mixed picture. Factor analysis confirmed that skill initiatives such as PMKVY and PMKK have a significant influence, but entrepreneurs remain divided about their effectiveness. The textile sector continues to rely on traditional artisan skills, often outside formal training programs, whereas forging & foundry industries demand technically trained workers, which are less easily sourced. Labour availability is high in the leather and textile sectors due to the socio-cultural embedding of these industries, while forging & foundry lags due to technical specialisation.

Third, *finance and credit access* yielded strong statistical reliability, with schemes like CGTMSE and ECLGS proving beneficial, yet accessibility remains uneven. Smaller entrepreneurs, especially in leather clusters, face challenges in collateral requirements and banking outreach. This contradicts optimistic evaluations of financial inclusion, suggesting systemic barriers in translating schemes into sector-specific benefits.

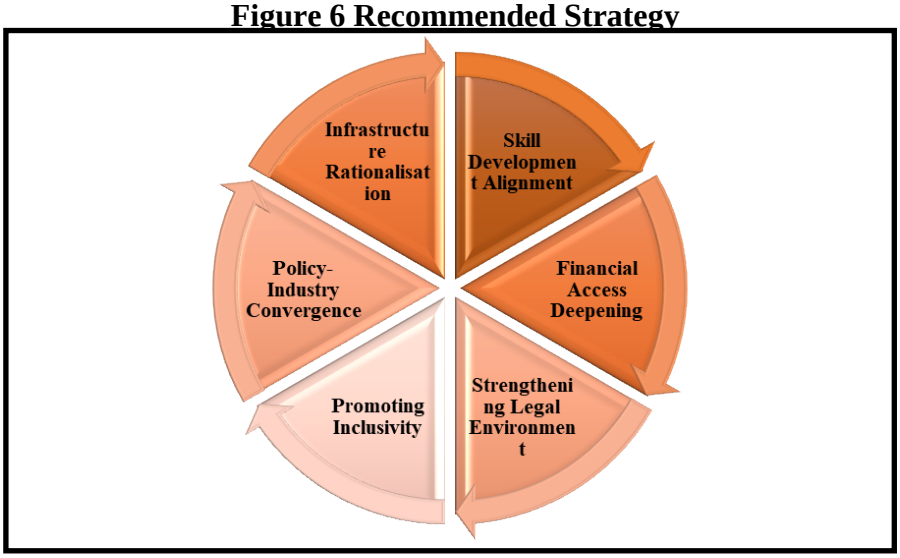
Fourth, the *legal-regulatory environment* demonstrates relative progress in online filing, GST systems, and excise procedures. However, corruption risks, strikes, and procedural delays remain deterrents, particularly for forging & foundry firms which depend on environmental and safety certifications.

Finally, inclusivity mechanisms for *women and minority entrepreneurs* remain underdeveloped. The leather sector, with high minority participation, benefits from schemes like CGSSD, but structural discrimination and limited access to leadership opportunities persist. Women entrepreneurs are underrepresented across all three sectors, reflecting cultural barriers and inadequate gender-sensitive support. The results confirm the research hypothesis that significant differences exist across sectors in terms of infrastructure, labour, finance, and inclusivity. Thus, the research objectives and questions have been addressed: (i) infrastructure and regulatory bottlenecks remain unevenly resolved, (ii) skill development and finance mechanisms show mixed effectiveness across sectors, and (iii) inclusivity for women and minorities, though acknowledged in policy, remains limited in practice.

Recommendations

Based on the findings, several recommendations are proposed to strengthen West Bengal's entrepreneurial ecosystem:

Figure 6 Recommended Strategy



(Source: Self-Developed)

1. *Infrastructure Rationalisation:* It has been recommended that sector-specific industrial zones with streamlined single-window clearance for land, permits, and environmental approvals (NSWS, 2023). For forging & foundry, in particular, specialised infrastructure with uninterrupted power and waste management systems should be prioritised.
2. *Skill Development Alignment:* It has been recommended that training curricula under PMKVY, PMKK, and ITIs must be tailored to sectoral demands. Forging & foundry industries need advanced metallurgical and machine operation modules, while leather and textile require both design-oriented and export-focused training (Kakade & Jakhete, 2023). Stronger industry–training institute linkages are essential.
3. *Financial Access Deepening:* It has been recommended that banking institutions should operationalise cluster-based credit cells to address sectoral entrepreneurs collectively, reducing collateral demands and ensuring inclusive reach (GOV.IN, 2015). Awareness campaigns and simplified application procedures would make schemes like CGTMSE and ECLGS more accessible (CGTMSE, 2023).
4. *Strengthening Legal Environment:* It has been recommended that the expansion of digital governance must be complemented by strict monitoring against corruption, delays, and informal payments. Dedicated grievance redressal cells within industrial clusters could mitigate risks of strikes, disputes, and regulatory harassment (Corridalegal, 2024).
5. *Promoting Inclusivity:* It has been recommended that gender-sensitive financing schemes and targeted mentoring networks for women entrepreneurs should be introduced in leather and textile clusters. Minority entrepreneurs require continued but better-monitored access to CGSSD, alongside market linkage programs to overcome marginalisation.
6. *Policy-Industry Convergence:* Thai & Mai (2023) recommended that regular consultation platforms between entrepreneurs, policymakers, and training/financial institutions will ensure realignment of state initiatives with ground-level needs, reducing the gap between perception and reality of support mechanisms.

In conclusion, West Bengal's entrepreneurial ecosystem holds significant potential in forging & foundry, leather, and textiles, but requires nuanced, sector-specific policy recalibrations to transform structural bottlenecks into enablers. Sustainable growth will depend on bridging infrastructural

deficits, ensuring effective financial inclusion, and mainstreaming inclusivity as a core entrepreneurial strategy.

Limitations

This study, while comprehensive, is not without limitations. The analysis relied on survey responses from 301 entrepreneurs, which, though statistically adequate, may not fully represent the diverse population of firms in the forging & foundry, leather, and textile sectors across West Bengal. Sector-specific biases could have influenced responses, particularly regarding sensitive issues such as financial accessibility or inclusivity (Damilare et al., 2022b). Moreover, the cross-sectional nature of the data restricts the ability to capture dynamic changes in the entrepreneurial ecosystem over time. Finally, reliance on self-reported data may introduce subjectivity, limiting the objectivity of certain findings.

Future Research Directions

While this study has highlighted sectoral differences and systemic challenges, future research should adopt *longitudinal and comparative approaches*. Examining how ecosystem reforms evolve, especially after the implementation of new state industrial policies, would enrich understanding. Cross-regional comparisons between West Bengal and other Indian states could reveal whether observed barriers are context-specific or structural. Moreover, deeper qualitative research into the lived experiences of women and minority entrepreneurs could uncover hidden institutional barriers that surveys alone cannot capture. Such avenues would not only complement the present study but also help design more inclusive and dynamic policy frameworks.

References

1. Ahmad, S., Zhang, Q., Hussain, M. A., & Mahmood, S. (2025). Entrepreneurial success through learning, capital, and work engagement: Market and service orientation perspective. *Acta Psychologica*, *258*, 105188. https://doi.org/10.1016/j.actpsy.2025.105188
2. Al-Fattal, A. (2024). Entrepreneurial Aspirations and Challenges among Business Students: A Qualitative Study. *Administrative Sciences*, *14*(5), 101–101. https://doi.org/10.3390/admsci14050101
3. Ayyagari, M., Demirgüç-Kunt, A., & Maksimovic, V. (2011). Small vs. young firms across the world: Contribution to employment, job creation, and growth. World Bank Policy Research Working Paper, 5631.
4. Bagchi, E. (2017). Development of Basic Infrastructure: An Analysis of South 24 Parganas District in West Bengal, India. *Bulletin of Geography. Socio-Economic Series*, *36*(36), 33–60. https://doi.org/10.1515/bog-2017-0013
5. Bajaj, P., & Sharma, A. (2025). Determinants of FTAs utilization among Indian textile and clothing exporters: an exploratory study. *IIM Ranchi Journal of Management Studies*. https://doi.org/10.1108/irjms-08-2024-0085
6. Bamiatzi, V. C., & Kirchmaier, T. (2014). Strategies for superior performance under adverse conditions: A focus on small and medium-sized high-growth firms. International Small Business Journal, 32(3), 259–284. https://doi.org/10.1177/0266242612459534
7. Bennett, D. L. (2019). Infrastructure investments and entrepreneurial dynamism in the U.S. *Journal of Business Venturing*, *34*(5), 105907. ScienceDirect. https://doi.org/10.1016/j.jbusvent.2018.10.005
8. Biswas, A., Roy, N. S., & Mahesh E. (2024). Gendered Informality: An Assessment of Operational Attributes and Entrepreneurial Performance of Female-Owned Enterprises in Jharkhand. *International Journal of Rural Management*. https://doi.org/10.1177/09730052241292409
9. Bora, G. (2025, September 12). *How small businesses in West Bengal are merging heritage with high-tech to craft growth stories*. The Economic Times; Economic Times.

https://m.economictimes.com/small-biz/sme-sector/how-small-businesses-in-west-bengal-are-merging-heritage-with-high-tech-to-craft-growth-stories/articleshow/123843667.cms
10. Bose, S. (2024). Financial inclusion and women entrepreneurship in India: Challenges and opportunities. Journal of Entrepreneurship in Emerging Economies, 16(2), 345–368.
11. CGTMSE. (2023). *CGTMSE: About CGTMSE*. Cgtmse.in. https://www.cgtmse.in/Home/VS/3
12. Chakraborty, A., Sharma, M., & Mishra, M. M. (2025). Handloom weavers' landscape of India: An interpretation of their identity and existence. *Human Geography*. https://doi.org/10.1177/19427786251340026
13. Corridalegal. (2024, May 30). *Effective Grievance Redressal Mechanisms in Indian Employment Law*. Corrida Legal. https://corridalegal.com/effective-grievance-redressal-mechanisms-in-indian-employment-law/
14. D'Costa, A. P. (2021). Capitalist Progress and Moral Economy: Sustaining Employment in India's Handloom Sector. *Journal of Asian and African Studies*, *57*(2), 269–288. https://doi.org/10.1177/00219096211015270
15. Damilare, L., Ngochindo, A., Ajani, B., None Chikezie Paul-Mikki Ewim, & Olorunyomi, D. (2022a). Addressing behavioral biases in financial decision-making: Effective risk management tools for banking institutions. *Magna Scientia Advanced Research and Reviews*, *5*(1), 069–075. https://doi.org/10.30574/msarr.2022.5.1.0039
16. Damilare, L., Ngochindo, A., Ajani, B., None Chikezie Paul-Mikki Ewim, & Olorunyomi, D. (2022b). Addressing behavioral biases in financial decision-making: Effective risk management tools for banking institutions. *Magna Scientia Advanced Research and Reviews*, *5*(1), 069–075. https://doi.org/10.30574/msarr.2022.5.1.0039
17. Das, K. (2024). Digital divide and rural entrepreneurship: Evidence from Indian MSMEs. Journal of Rural Studies, 45, 112–125.
18. Düzgünçınar, T. (2025). Bridging the Gap Between Industry Needs and Vocational Training Curricula. *Journal of Information Systems Engineering and Management*, *10*(44s), 693–707. https://doi.org/10.52783/jisem.v10i44s.8649
19. Economictimes. (2025, February 10). *Foundry industry in Bengal to receive Rs 2,000 crore investment by FY'26*. ETManufacturing.in; PTI. https://manufacturing.economictimes.indiatimes.com/amp/news/industry/foundry-industry-in-bengal-to-receive-rs-2000-crore-investment-by-fy26/118108178
20. EU. (2024). *Facing the Mirror: A Framework Enabling Gender Responsive and Equitable Spaces within the Leather Industry of Bantala and West Bengal, India › | SWITCH-Asia*. SWITCH-Asia. https://www.switch-asia.eu/resource/facing-the-mirror-a-framework-enabling-gender-responsive-and-equitable-spaces-within-the-leather-industry-of-bantala-and-west/
21. Faundez, J. (2016). Douglass North's Theory of Institutions: Lessons for Law and Development. *Hague Journal on the Rule of Law*, *8*(2), 373–419. https://doi.org/10.1007/s40803-016-0028-8
22. Financialexpress. (2023a, September 25). *Number of MSMEs in Bengal estimated to have reached 1 crore after pandemic: Official*. Financialexpress.com; Financial Express. https://www.financialexpress.com/business/sme-number-of-msmes-in-bengal-estimated-to-have-reached-1-crore-after-pandemic-official-3253901/
23. Financialexpress. (2023b, September 25). *The Financial Express*. Financialexpress.com; Financial Express. https://www.financialexpress.com/business/sme-number-of-msmes-in-bengal-estimated-to-have-reached-1-crore-after-pandemic-official-3253901/
24. George, Dr. A. Shaji. (2024). India's Employment Crisis: Causes, Consequences, and Potential Solutions. *Zenodo*. https://doi.org/10.5281/zenodo.13823599

25. Ghosh, S., Bhowmick, B., & Kumar Guin, K. (2014). Perceived Environmental Uncertainty for Startups: A Note on Entrepreneurship Research from an Indian Perspective. *Technology Innovation Management Review*, *4*(8), 27–35. https://doi.org/10.22215/timreview/820
26. Goswami, A., & Jain, R. K. (2019). Determinants of MSME success in India: An empirical analysis. Asian Journal of Management, 10(4), 298–315.
27. GOV.IN. (2015). *Q.29. What is Cluster financing? | Ministry of Micro, Small & Medium Enterprises*. Msme.gov.in. https://msme.gov.in/faqs/q29-what-cluster-financing
28. GOV.IN. (2025a). *Foundry Industry* . https://www.wb.gov.in/business-foundry-industry.aspx
29. GOV.IN. (2025b). *Jan Shikshan Sansthan (JSS) Scheme*. Msde.gov.in. https://www.msde.gov.in/offerings/schemes-and-services/details/jan-shikshan-sansthan-jss-cjM4ATMtQWa
30. GOV.IN. (2025c). *Leather industry* . https://www.wb.gov.in/business-leather-industry.aspxL
31. GOV.IN. (2025d). *Making india a zero waste fashion country* . https://cdnbbsr.s3waas.gov.in/s339372 30de3c8041e4da6ac3246a888e8/uploads/2025/02/20250228720580270.pdf
32. ICAI. (2022). *Compendium of MSME Policy and Incentive Schemes of West Bengal Committee for MSME & Start-up The Institute of Chartered Accountants of India (Set up by an Act of Parliament) New Delhi* (pp. 1–69). https://msme.icai.org/wp-content/uploads/2022/12/West-Bengal-1.pdf
33. Isenberg, D. J. (2011). The entrepreneurship ecosystem strategy as a new paradigm for economic policy: Principles for cultivating entrepreneurship. Babson Entrepreneurship Ecosystem Project.
34. Jha, S. K. (2018). Entrepreneurial ecosystem in India: Taking stock and looking ahead. *IIMB Management Review*, *30*(2), 179–188. https://doi.org/10.1016/j.iimb.2018.04.002
35. Kakade, D. K., & Jakhete, J. (2023). *Smart Manufacturing in a Foundry Industry*. ResearchGate. https://www.researchgate.net/publication/373690507_Smart_Manufacturing_in_a_Foundry_Industry
36. Kang, E., & Hwang, H.-J. (2023, March 31). *The Importance of Anonymity and Confidentiality for Conducting Survey Research*. ResearchGate. https://www.researchgate.net/publication/370048267_The_Importance_of_Anonymity_and_Confidentiality_for_Conducting_Survey_Research
37. Kayyali, M. (2025). Aligning Vocational Education With Industry Needs. *IGI Global EBooks*, 1–48. https://doi.org/10.4018/979-8-3693-9496-0.ch001
38. Medase, S. K., Ahali, A. Y., & Belitski, M. (2023). Natural resources, quality of institutions and entrepreneurship activity. *Resources Policy*, *83*, 103592. https://doi.org/10.1016/j.resourpol.2023.103592
39. Michael, I. (2025, June 10). *Infrastructure Barriers in Remote Rural Areas*. https://www.researchgate.net/publication/392557813_Infrastructure_Barriers_in_Remote_Rural_Areas
40. Mishra, S., & Kumar, A. (2019). *A STUDY ON THE PRESENT CONDITION OF THE WEAVERS OF HANDLOOM INDUSTRY: A REVIEW*. *7*(2), 325–331. https://www.researchgate.net/publication/344161255 _A_STUDY_ON_THE_PRESENT_CONDITION_OF_THE_WEAVERS_OF_HANDLOOM_INDUSTRY_A_REVIEW
41. Nabard. (2017). *State level Sectoral Paper on MSME for West Bengal* (pp. 1–43). https://www.nabard.org/auth /writereaddata/careernotices/0901211141Sectoral%20Paper%20on%20MSME_West%20Bengal.pdf

42. Narendra, V. S. (2022). Socio-economic health aspects of rural artisans. *International Journal of Health Sciences*, 8101–8112. https://doi.org/10.53730/ijhs.v6ns2.7023
43. NHB. (2016). *Study on Land AcquisitionV/s Land Pooling*. https://www.nhb.org.in/wp-content/uploads/2023/12/Land-Acquisition-vs.-Land-Pooling.pdf
44. NIC.IN. (2020). *Fourth all india handloom census*. https://handlooms.nic.in/assets/img/Statistics/3736.pdf?utm
45. North, D. C. (1990). Institutions, institutional change and economic performance. Cambridge University Press.
46. NSWS. (2023). *How does NSWS help you?* https://www.nsws.gov.in/
47. Onoja, J. P., Hamza, O., Collins, A., Chibunna, U. B., Eweja, A., & Daraojimba, A. I. (2021). Digital Transformation and Data Governance: Strategies for Regulatory Compliance and Secure AI-Driven Business Operations. *Journal of Frontiers in Multidisciplinary Research*, *2*(1), 43–55. https://doi.org/10.54660/.ijfmr.2021.2.1.43-55
48. Pal, S., & Mishra, R. K. (2015, May 20). *Internationalization of Kolkata Leather Cluster: A Case Study*. ResearchGate; unknown. https://www.researchgate.net/publication/278961873_Internationalization_of_Kolkata_Leather_Cluster_A_Case_Study
49. PIB. (2017). *Rozgar Mela Jobs, Skills, Growth*. Pib.gov.in. https://www.pib.gov.in/PressNote Details.aspx?id=154875&NoteId=154875&ModuleId=3
50. PIB. (2024). *Women Entrepreneurs in MSMEs*. Pib.gov.in. https://www.pib.gov.in/PressRelease IframePage.aspx?PRID=2002574&utm
51. PIB. (2025). *Outcome and Employment Generation under PMKVY*. Pib.gov.in. https://www.pib.gov.in/Press ReleasePage.aspx?PRID=2147365
52. Ptinews. (2025). *Press Trust Of India*. Ptinews.com. https://www.ptinews.com/story/business/foundry-industry-in-bengal-to-receive-rs-2-000-crore-investment-by-fy-26/2279305
53. Porter, M. E. (1990). The competitive advantage of nations. Free Press.
54. Quoc Hoang Thai, & Khuong Ngoc Mai. (2023). Does Entrepreneurial Financial Support Guarantee New Ventures' Performance via Competitive Advantage and Innovation? Empirical Answers from Ho Chi Minh City Region, Vietnam. *Sustainability*, *15*(21), 15519–15519. https://doi.org/10.3390/su152115519
55. Rashid, M., Anser, M. K., Shah, S. T. H., Nabi, A. A., Ahmad, I., & Zaman, K. (2025). Fostering entrepreneurship: analyzing the influence of access to finance, innovation investment, educational attainment, infrastructure development, and regulatory environment. *Future Business Journal*, *11*(1). https://doi.org/10.1186/s43093-025-00557-z
56. Rita, M. R., & Muharam, H. (2018). Entrepreneurial Finance Perspective: Highlighting from the Supply Side. *Jurnal Keuangan Dan Perbankan*, *22*(3). https://doi.org/10.26905/jkdp.v22i3.2096
57. Roy, C. (2017). A Study on Environmental Compliance of Indian Leather Industry & its Far-reaching Impact on Leather Exports. *Foreign Trade Review*, *47*(2), 3–36. https://doi.org/10.1177/0015732515120201
58. Sarkar, S. (2021). *Participation of Women and Backward Caste in Micro, Small and Medium Enterprises in India - An Inter-State Assessment*. *8*, 102–114. https://www.researchgate.net/publication/353558601_Participation_of_Women_and_Backward_Caste_in_Micro_Small_and_Medium_Enterprises_in_India_-_An_Inter-State_Assessment
59. Seth, B. L. (2017, September 15). *Kolkata tanners unhappy with new relocation site*. Down to Earth. https://www.downtoearth.org.in/environment/kolkata-tanners-unhappy-with-new-relocation-site-6524

60. Sidbi. (2017). *UNDERSTANDING INDIAN MSME SECTOR PROGRESS AND CHALLENGES MAY 2025* (pp. 1–51). https://www.sidbi.in/uploads/Understanding_Indian_MSME_sector_Progress_and_Challenges_13_05_25_Final.pdf
61. Singh, P. (2023). Self-help groups and women entrepreneurship in West Bengal: Beyond microcredit. Economic and Political Weekly, 58(12), 34–42.
62. Stephens, S., McLaughlin, C., Ryan, L., Catena, M., & Bonner, A. (2022). Entrepreneurial ecosystems: Multiple domains, dimensions and relationships. *Journal of Business Venturing Insights*, *18*, e00344. Sciencedirect. https://www.sciencedirect.com/science/article/pii/S2352673422000427
63. Swords, J. (2018). Michael Porter's cluster theory as a local and regional development tool: The rise and fall of cluster policy in the UK. *Local Economy: The Journal of the Local Economy Policy Unit*, *28*(4), 369–383. https://doi.org/10.1177/0269094213475855
64. UNCTAD. (2025). *India - Launches national single window system to improve ease of doing business | Investment Policy Monitor | UNCTAD Investment Policy Hub*. Unctad.org. https://investmentpolicy.unctad.org/investment-policy-monitor/measures/3777/india-launches-national-single-window-system-to-improve-ease-of-doing-business
65. V. Sujatha. (2022). Leather Processing: Role of Indigenous Technology. *Economic and Political Weekly*, *37*(47), 4672–4675. JSTOR. https://doi.org/10.2307/4412866
66. Woolley, J. (2017a). Infrastructure for Entrepreneurship. *Oxford Research Encyclopedia of Business and Management*. https://doi.org/10.1093/acrefore/9780190224851.013.33
67. Woolley, J. (2017b). Infrastructure for Entrepreneurship. *Oxford Research Encyclopedia of Business and Management*. https://doi.org/10.1093/acrefore/9780190224851.013.33

Appendices

Appendix 1: Survey Questionnaire

Factor Group	Question
Land & Infrastructure	How simple is the process of land acquisition for business purposes?
Land & Infrastructure	How simple is the process of land/property transfer for business?
Land & Infrastructure	How simple is the process to change land usage for business purposes?
Land & Infrastructure	How easy is it to acquire a construction permit?
Land & Infrastructure	How reliable is the power supply for business operations?
Land & Infrastructure	How adequate is the railway coverage for supporting business needs?
Land & Infrastructure	How adequate is the roadways coverage for your business?
Land & Infrastructure	How reliable is the internet available for business operations?
Skill Development & Labor Availability	How accessible is worker healthcare during business hours?
Skill Development & Labor Availability	How easily available is skilled labor in your area?
Skill Development & Labor Availability	How effective is the PMKVY (Pradhan Mantri Kaushal Vikas Yojana) program for your business?
Skill Development & Labor Availability	How helpful is the PMKK (Pradhan Mantri Kaushal Kendra) program in workforce training?
Skill Development & Labor Availability	How available are ITI-trained personnel for your business?
Skill Development & Labor Availability	How effective is participation in Rozgar Mela for recruiting employees?
Skill Development & Labor Availability	How effective is the JSS (Jan Shikshan Sansthan) training program for skill development?
Finance & Credit Support	How beneficial is the CGTMSE credit facility for your business?
Finance & Credit Support	How beneficial is the ECLGS (Emergency Credit Line Guarantee Scheme) for your business?
Finance & Credit Support	If applicable, how beneficial is the CGSSD (Credit Guarantee Scheme for SC/ST) for your business
Government Support & Business Services	How effective is the Single Window Facility for addressing business needs?
Government Support & Business Services	How easy is it to get business permits?
Government Support & Business Services	How easy is it to obtain business-related certificates?
Government Support & Business Services	How simple is the environmental certification process?
Government Support & Business Services	How easy is the process of State Excise Duty filing?
Government Support & Business Services	How easy is online tax filing for your business?
Government Support & Business Services	How accessible are e-commerce facilities for your business?
Legal Environment & Security	How readily available is legal support for your business?
Legal Environment & Security	How much do strikes or labor disputes affect your business?
Legal Environment & Security	How much do economic offences (like fraud or corruption) affect your finances?
Legal Environment & Security	How much does cybercrime affect your business finances?
Women & Minority Participation	How likely is the participation of women entrepreneurs in this business?
Women & Minority Participation	How well are women entrepreneurs supported by government schemes in your business sector?
Women & Minority Participation	How common is the participation of minorities in your line of business?

Land & Infrastructure	Skill Development & Labor Availability	Finance & Credit Support	Government Support & Business Services	Legal Environment & Security	Women & Minority Participatio
1 - Not at all simple/easy/available	1 - Not at all effective/helpful/beneficial	1 - Not at all beneficial	1 - Not at all effective	1 - No impact at all	1 - Not at all likely
2 - Slightly simple/easy/available	2 - Slightly effective/helpful/beneficial	2 - Slightly beneficial	2 - Slightly effective	2 - Slight impact	2 - Slightly likely
3 - Moderately simple/easy/availab	3 - Moderately effective/helpful/benefici	3 - Moderately beneficial	3 - Moderately effective	3 - Moderate impact	3 - Moderately likely
4 - Very simple/easy/available	4 - Very effective/helpful/beneficial	4 - Very beneficial	4 - Very effective	4 - High impact	4 - Very likely
5 - Extremely simple/easy/availabl	5 - Extremely effective/helpful/beneficia	5 - Extremely beneficial	5 - Extremely effective	5 - Very high impact	5 - Extremely likely
			1 - Not at all easy	1 - Not at all available	1 - Not at all supported
			2 - Slightly easy	2 - Slightly available	2 - Slightly supported
			3 - Moderately easy	3 - Moderately available	3 - Moderately supported
			4 - Very easy	4 - Easily available	4 - Well supported
			5 - Extremely easy	5 - Extremely Easily availabl	5 - Extremely well supported
			1 - Not at all accessible		1 - Not at all common
			2 - Slightly accessible		2 - Slightly common
			3 - Moderately accessible		3 - Moderately common
			4 - Very accessible		4 - Very common
			5 - Extremely accessible		5 - Extremely common

Appendix 2: Results through SPSS

Reliability Statistics — Land & Infrastructure

Cronbach's Alpha	N of Items
.942	8

Reliability Statistics — Skill Development & Labor Availability

Cronbach's Alpha	N of Items
.962	7

Reliability Statistics — Finance & Credit Support

Cronbach's Alpha	N of Items
.997	3

Reliability Statistics — Government Support & Business Services

Cronbach's Alpha	N of Items
.959	7

Reliability Statistics — Legal Environment & Security

Cronbach's Alpha	N of Items
.902	4

Reliability Statistics — Women & Minority Participation

Cronbach's Alpha	N of Items
.758	3

Reliability Statistics — OVERALL

Cronbach's Alpha	N of Items
.944	32

	Initial	Extraction
How simple is the process of land acquisition for business purposes?	1.000	.773
How simple is the process of land/property transfer for business?	1.000	.701
How simple is the process to change land usage for business purposes?	1.000	.736
How easy is it to acquire a construction permit?	1.000	.801
How reliable is the power supply for business operations?	1.000	.827
How adequate is the railway coverage for supporting business needs?	1.000	.720
How adequate is the roadways coverage for your business?	1.000	.643
How reliable is the internet available for business operations?	1.000	.773
How accessible is worker healthcare during business hours?	1.000	.770
How easily available is skilled labor in your area?	1.000	.909
How effective is the PMKVY (Pradhan Mantri Kaushal Vikas Yojana) program for your business?	1.000	.841
How helpful is the PMKK (Pradhan Mantri Kaushal Kendra) program in workforce training?	1.000	.887
How available are ITI-trained personnel for your business?	1.000	.874
How effective is participation in Rozgar Mela for recruiting employees?	1.000	.907
How effective is the JSS (Jan Shikshan Sansthan) training program for skill development?	1.000	.780
How beneficial is the CGTMSE credit facility for your business?	1.000	.986
How beneficial is the ECLGS (Emergency Credit Line Guarantee Scheme) for your business?	1.000	.930
If applicable, how beneficial is the CGSSD (Credit Guarantee Scheme for SC/ST) for your business?	1.000	.980
How effective is the Single Window Facility for addressing business needs?	1.000	.910
How easy is it to get business permits?	1.000	.868
How easy is it to obtain business-related certificates?	1.000	.852
How simple is the environmental certification process?	1.000	.842
How easy is the process of State Excise Duty filing?	1.000	.868
How easy is online tax filing for your business?	1.000	.852
How accessible are e-commerce facilities for your business?	1.000	.744
How readily available is legal support for your business?	1.000	.726
How much do strikes or labor disputes affect your business?	1.000	.797
How much do economic offences (like fraud or corruption) affect your finances?	1.000	.849
How much does cybercrime affect your business finances?	1.000	.745

Extraction Method: Principal Component Analysis.

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	12.214	42.116	42.116	12.214	42.116	42.116	6.276	21.642	21.642
2	6.157	21.230	63.346	6.157	21.230	63.346	5.919	20.412	42.054
3	3.352	11.560	74.906	3.352	11.560	74.906	5.320	18.343	60.398
4	1.294	4.462	79.368	1.294	4.462	79.368	3.473	11.977	72.375
5	.934	3.222	82.590	.934	3.222	82.590	2.962	10.215	82.590
6	.739	2.548	85.137						
7	.579	1.996	87.133						
8	.489	1.687	88.820						
9	.432	1.490	90.310						
10	.396	1.365	91.675						
11	.355	1.223	92.898						
12	.325	1.119	94.017						
13	.300	1.034	95.052						
14	.255	.881	95.932						
15	.219	.757	96.689						
16	.177	.610	97.299						
17	.147	.506	97.805						
18	.127	.439	98.244						
19	.109	.377	98.620						
20	.094	.325	98.946						
21	.092	.318	99.264						
22	.073	.251	99.515						
23	.059	.204	99.719						
24	.054	.186	99.904						
25	.014	.050	99.954						
26	.011	.036	99.991						
27	.003	.009	100.000						
28	1.218E-16	4.199E-16	100.000						
29	-2.599E-16	-8.962E-16	100.000						

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component				
	1	2	3	4	5
How simple is the process of land acquisition for business purposes?	.310	.807	-.086	.109	-.082
How simple is the process of land/property transfer for business?	.330	.745	-.099	.060	-.154
How simple is the process to change land usage for business purposes?	.129	.847	.023	.046	-.010
How easy is it to acquire a construction permit?	.065	.871	.059	.132	.132
How reliable is the power supply for business operations?	.060	.868	-.011	.213	.156
How adequate is the railway coverage for supporting business needs?	.138	.790	.049	.216	.165
How adequate is the roadways coverage for your business?	.223	.761	-.071	.033	.092
How reliable is the internet available for business operations?	.059	.874	.041	.062	.005
How accessible is worker healthcare during business hours?	.833	-.003	-.252	-.114	.004
How easily available is skilled labor in your area?	.813	.061	-.452	-.072	-.187
How effective is the PMKVY (Pradhan Mantri Kaushal Vikas Yojana) program for your business?	.752	-.008	-.388	-.284	-.209
How helpful is the PMKK (Pradhan Mantri Kaushal Kendra) program in workforce training?	.893	-.046	-.294	.023	.010
How available are ITI-trained personnel for your business?	.802	.258	-.332	-.201	-.114
How effective is participation in Rozgar Mela for recruiting employees?	.820	.153	-.348	-.269	-.133
How effective is the JSS (Jan Shikshan Sansthan) training program for skill development?	.735	.087	-.433	-.099	-.188
How beneficial is the CGTMSE credit facility for your business?	.600	-.430	-.470	.429	.191
How beneficial is the ECLGS (Emergency Credit Line Guarantee Scheme) for your business?	.599	-.436	-.472	.424	.194
If applicable, how beneficial is the CGSSD (Credit Guarantee Scheme for SC/ST) for your business?	.599	-.432	-.478	.418	.181
How effective is the Single Window Facility for addressing business needs?	.821	-.104	.470	.051	-.042
How easy is it to get business permits?	.817	-.054	.306	-.200	.253
How easy is it to obtain business-related certifications?	.741	-.068	.479	-.100	.241
How simple is the environmental certification process?	.890	-.070	.088	-.146	.127
How easy is the process of State Excise Duty filing?	.817	-.054	.306	-.200	.253
How easy is online tax filing for your business?	.741	-.068	.479	-.100	.241
How accessible are e-commerce facilities for your business?	.831	-.048	.065	-.171	.132
How readily available is legal support for your business?	.697	-.055	.435	.171	-.139
How much do strikes or labor disputes affect your business?	.681	-.118	.471	.232	-.208
How much do economic offences (like fraud or corruption) affect your finances?	.631	-.139	.490	.279	-.337
How much does cybercrime affect your business finances?	.570	-.140	.442	.295	-.344

Extraction Method: Principal Component Analysis.

Rotated Component Matrix[a]

	Component					
	1	2	3	4	5	
How simple is the process of land acquisition for business purposes?	.274	.829	.001	.100	-.036	LI1
How simple is the process of land/property transfer for business?	.336	.752	-.017	.128	-.071	LI2
How simple is the process to change land usage for business purposes?	.100	.836	.007	.010	-.165	LI3
How easy is it to acquire a construction permit?	-.046	.887	.042	-.045	-.090	LI4
How reliable is the power supply for business operations?	-.051	.906	-.005	-.061	.007	LI5
How adequate is the railway coverage for supporting business needs?	-.043	.843	.079	.005	.031	LI6
How adequate is the roadways coverage for your business?	.174	.775	.085	-.060	-.041	LI7
How reliable is the internet available for business operations?	.034	.859	-.023	-.013	-.183	LI8
How accessible is worker healthcare during business hours?	.710	.079	.396	.145	.284	SL1
How easily available is skilled labor in your area?	.865	.127	.160	.161	.304	SL2
How effective is the PMKVY (Pradhan Mantri Kaushal Vikas Yojana) program for your business?	.879	.000	.212	.093	.118	SL3
How helpful is the PMKK (Pradhan Mantri Kaushal Kendra) program in workforce training?	.714	.079	.376	.211	.431	SL4
How available are ITI-trained personnel for your business?	.827	.291	.280	.097	.135	SL5
How effective is participation in Rozgar Mela for recruiting employees?	.875	.175	.299	.087	.120	SL6
How effective is the JSS (Jan Shikshan Sansthan) training program for skill development?	.817	.135	.130	.126	.246	SL7
How beneficial is the CGTMSE credit facility for your business?	.379	-.210	.132	.116	.876	FC1
How beneficial is the ECLGS (Emergency Credit Line Guarantee Scheme) for your business?	.380	-.216	.134	.112	.876	FC2
If applicable, how beneficial is the CGSSD (Credit Guarantee Scheme for SC/ST) for your business?	.390	-.215	.125	.113	.868	FC3
How effective is the Single Window Facility for addressing business needs?	.250	.012	.668	.627	.088	GB1
How easy is it to get business permits?	.331	.033	.831	.245	.086	GB2
How easy is it to obtain business-related certifications?	.152	.032	.834	.358	.056	GB3
How simple is the environmental certification process?	.522	.027	.679	.262	.196	GB4
How easy is the process of State Excise Duty filing?	.331	.033	.831	.245	.086	GB5
How easy is online tax filing for your business?	.152	.032	.834	.358	.056	GB6
How accessible are e-commerce facilities for your business?	.507	.036	.643	.210	.167	GB7
How readily available is legal support for your business?	.182	.061	.484	.667	.098	LE1
How much do strikes or labor disputes affect your business?	.150	.005	.438	.755	.109	LE2
How much do economic offences (like fraud or corruption) affect your finances?	.135	-.024	.330	.846	.073	LE3
How much does cybercrime affect your business finances?	.120	-.030	.263	.809	.085	LE4

Extraction Method: Principal Component Analysis.

Component Transformation Matrix

Component	1	2	3	4	5
1	.634	.129	.578	.396	.302
2	.053	.956	-.070	-.095	-.262
3	-.553	-.003	.482	.518	-.440
4	-.393	.237	-.301	.457	.701
5	-.368	.111	.582	-.598	.395

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.