The Impact of Credit Constraints on MSME Performance: Insights from the Financial Ecosystem of Delhi-NCR

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Abstract. The financial ecosystem for Micro, Small, and Medium Enterprises (MSMEs) in India continues to face barriers that restricts their productivity, sustainability and growth. Despite good banking infrastructure in Delhi–National Capital Region (NCR), credit inaccessibility persists. This study investigates the credit accessibility challenges confronting MSMEs in Delhi-NCR, examining their effects on business performance, employment generation and innovation. Study assesses the role of financial institutions and Information and Communication Technology (ICT) solutions in bridging the credit gap. A mixed-method approach was employed, drawing on secondary data from the Ministry of MSME, National Bank for Agriculture and Rural Development (NABARD) and the Reserve Bank of India, along with national surveys. Descriptive statistics and interpretive analysis were used to examine the structural patterns with contextual realities. Findings reveal that a small proportion of total banking advances in Delhi are directed to MSMEs, even though the sector contributes significantly to India's Gross Domestic Product (GDP) and employs millions. Further a large majority of non-agricultural enterprises in Delhi operate informally. Government schemes such as Micro Units Development and Refinance Agency (MUDRA) and Credit Guarantee Fund Trust for Micro and Small Enterprises (CGTMSE) exist to ease collateral barriers, yet their utilization is hampered by low awareness and procedural hurdles. ICT-driven innovations offer potential solutions but face challenges of uneven adoption, digital literacy gaps and cybersecurity risks. The study highlights the urgent need for simplified lending processes, financial and digital literacy interventions and integrated policy frameworks that align traditional banking with fintech innovations to strengthen MSME financial inclusion in Delhi-NCR.

Keywords: MSME, Credit accessibility, Financial institutions, ICT, Digital lending, Financial inclusion, Delhi-NCR

1 Introduction

Micro, Small, and Medium Enterprises (MSMEs) are considered to be an engine in India's economic growth, functioning as the engine of employment and as contributor to industrial output. Their significance has been formally recognized through the Micro, Small and Medium Enterprises Development (MSMED) Act, 2006, which standardized definitions for enterprises previously categorized as small-scale, tiny, or cottage industries [1]. The definition of MSMEs have been periodically revised to reflect the structural shifts and economic realities. In April 2025, the classification of MSMEs has been revised again. The micro-enterprises were defined as firms with an investment in plant and machinery up to ₹2.5 crore and an annual turnover not exceeding ₹10 crore, while small and medium enterprises were capped at ₹25 crore and ₹125 crore of investment respectively, with corresponding turnover limits of ₹100 crore and ₹500 crore [2] (Appendix Table 1a(i) & 1a(ii)). These revisions indicate the evolving role of MSMEs in the Indian economy, which has become more dynamic, competitive and integrated into global markets.

The economic importance of MSMEs is best understood through their contributions to the key macroeconomic indicators. In 2021–22, MSMEs accounted for 29.15% of India's Gross Domestic Product (GDP) and 40.83% of total manufacturing Gross Value Added [3]. These enterprises also play a role in India's external trade, with nearly 45% of total Indian exports in 2021–22, although this share dipped slightly to 43.6% in the following year [4]. On the employment front, these enterprises have absorbed over 110 million workers, both skilled and unskilled [5]. Despite these contributions, this sector remains fragmented, with 99% of units classified as micro and 87% operating informally without formal registration. India's informal economy remains substantial, accounting for approximately 90% of employment and 52.4% of GDP in purchasing power parity (PPP) terms [1] & [6]. This informality generates a dual challenge of restriction to formal credit accessibility and technology adoption. The productivity differential between formal and informal sectors is noticeable as organized sector demonstrate 4.4 times higher labour productivity than the unorganized sectors during the period 1994-2005 [6]. This disparity is much more noticed in the informal sector, where 97% of manufacturing businesses only employ a sixth of the labour productivity of the top 0.8% of formal sector enterprises [6].

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As of July 2024, 4.78 crore[1] MSMEs were registered on India's Udyam Registration Portal. Delhi-NCR demonstrate these contradictions with a high number of MSMEs. Over 9.3 lakh MSMEs were registered in Delhi alone by July, 2024 [7]. These enterprises operate in services, trade and light manufacturing sectors. These sectors are important to the urban economy but are often overlooked in policy frameworks that emphasizes large industries. The Sixth Economic Census (2013) had already indicated that 98.6% of Delhi's establishments were urban in nature [8] but the financial depth of the city has not converted into inclusive credit distribution. In 2022, MSME advances in Delhi accounted for only 8.7% of total banking advances, barely above the Reserve Bank of India's mandated 7.5% threshold for priority sector lending [9] & [10]. This reflects a mismatch between the availability of financial institutions and their willingness to lend to smaller, riskier firms which lack collateral or formal records.

The implications of this credit shortfall are significant. Enterprises unable to access formal credit are forced to rely on informal lenders charging interest rates between 24% and 36%, a burden that severely limits their productivity and growth [11]. Evidence suggests that credit-constrained firms operate at a lower level of their potential capacity and remain locked in cycles of low productivity and limited growth [12].

The government has attempted to address these issues through various schemes. In India, most significant initiatives are Pradhan Mantri MUDRA Yojana (PMMY), which provide collateral-free loans up to ₹20 lakh, and Credit Guarantee Fund Trust for Micro and Small Enterprises (CGTMSE) which offers partial credit guarantees for loans up to ₹10 crore. However, awareness and utilization of these schemes by small enterprises remain low. The reason behind low usage level is these enterprises lack the capacity to navigate procedural complexities [13]. Moreover, policy orientation has often prioritized manufacturing-heavy states, while Delhi's trade and service oriented MSMEs have received limited tailored support [9].

In addition to these institutional interventions, digital technologies have begun reshaping access to finance. The introduction of Aadhaar-enabled e-KYC, UPI based transaction histories and the Account Aggregator framework has lowered transaction costs and enabled new forms of credit assessment [14]. Several platforms like Trade Receivables Discounting System (TReDS) have allowed MSMEs to sell trade receivables at competitive rates. Fintech companies have played a pioneering role by using alternative data to assess the creditworthiness of "thin-file" borrowers. However, while these innovations create potential challenges such as low digital literacy, uneven internet penetration and cybersecurity risks which continue to hinder technology adoption [15].

In light of these complexities, this study asks four questions:

RQ1: What is the current status of credit accessibility for MSMEs in Delhi-NCR? **RQ2:** How does limited credit access affect firm performance and growth? **RQ3:** What role do financial institutions play in shaping credit distribution? **RQ4:** How can ICT solutions bridge the financing gap?

These questions frame the inquiry into the structural, institutional and technological dimensions of MSME finance in Delhi-NCR. By addressing them, this research contributes both to theory and practice which also highlights the need for multi-stakeholder strategies that combine financial reforms with digital innovation and capacity building.

2 Literature Review

The body of scholarly research on micro, small, and medium enterprises (MSMEs) highlights their role as the backbone of economies, particularly in emerging markets where they account for the majority of employment generation, industrial production and entrepreneurial activity. The World Bank has estimated that MSMEs represent over 90% of businesses and contribute more than 50% of employment globally [16]. In developed economies like United States and European Union, MSMEs are important part of the private sector, while in developing contexts they act as engines of inclusive growth and poverty reduction. Despite these universal contributions, studies consistently highlight a common barrier of limited access to finance. Beck and Demirgüç-Kunt (2006) highlighted that the inadequate financing is a primary constraint on firm expansion and survival. The

[1] However, 50,536 units deregistered due to shutdowns between the period 2020-2024, indicating vulnerability of the units in this sector.

small enterprises are negatively affected as compared to larger firms who benefit from the established relationships with banks and financial markets [17].

The studies on India reflects these global patterns while revealing distinctive regional variations. The MSME sector contributes 29% to India's GDP and nearly 45% to exports, placing it among the largest enterprise networks in the world [4]. The importance of MSME sector has resulted in a rich body of literature that focuses on its economic impact and the obstacles it faces. Early study by Bhavani (2002) emphasized the bottlenecks faced by MSMEs in the era of globalization [18] and dual nature of India's MSMEs as a reservoir of traditional skills and a site of modern entrepreneurial dynamism. Later studies shifted focus toward the financial ecosystem which identifies constant credit constraints despite of several policy reforms. The Sixth Economic Census revealed that there are several barriers to MSME lending which include high risk, high cost to serve and poor lender coverage [19].These findings demonstrate that while MSMEs are crucial to economic development, they remain structurally disadvantaged in accessing financial resources.

At the theoretical level, scholars have explained credit inaccessibility through the lens of information asymmetry and transaction costs. Stiglitz and Weiss (1981) argued that lenders often make use of credit rationing in the face of imperfect information as the inability to distinguish between high-risk and low-risk borrowers leads to conservative lending strategies [20]. This increased asymmetry is due to weak financial documentation, lack of collateral and fragmented credit histories. Empirical work by Banerjee and Duflo (2014) confirmed that banks under-lend to small firms, even when projects demonstrated a higher return due to monitoring difficulties [21]. Complementary to this, a research study examined Indian financial systems and observed that while banking outreach had expanded, the inclusion remained uneven and credit delivery skewed in favour of larger enterprises and urban borrowers [22]. Credit constraints not only limit the capacities of a unit to formalize its operations but also forces them to remain small and unregistered [6] and [23].

The Delhi-NCR region is a representative of these national trends with its combination of financial depth and persistent credit barriers. Despite the large number of banks and non-banking financial companies (NBFCs) in the capital region, MSME credit remains constrained to less than 9% of total banking advances [9]. This regional imbalance reiterate the international studies on urban financial exclusion where presence of financial institutions does not automatically guarantee access for smaller and risk-perceived borrowers [24].

The literature also examines the role of government initiatives in addressing credit inaccessibility. The Credit Guarantee Fund Trust for Micro and Small Enterprises (CGTMSE), established in 2000, was intended to mitigate collateral requirements by providing partial guarantees to banks. Studies evaluating its effectiveness reveal mixed outcomes. It was found that in India due to bureaucratic hurdles, limited awareness and risk-averse banking culture this schemes was underutilized [9]. Similarly, the Pradhan Mantri MUDRA Yojana (PMMY), launched in 2015, expanded access to collateral-free loans, but recent reports indicate that a substantial share of beneficiaries are repeat borrowers rather than new entrepreneurs [9] & [25]. The literature thus emphasizes the gap between policy intent and its implementation realities. In urban regions like Delhi-NCR, MSMEs require flexible credit products rather than rigid term loans.

Parallel to institutional finance, there is growing literature on the role of information and communication technologies (ICT) to address the problem of credit constraints. It was documented how digital credit assessment tools have reduced information asymmetries by using alternative data, like Goods and Services Tax (GST) records, Unified Payments Interface (UPI) transaction trails and e-commerce histories. The literature recommend that ICT solutions can act as both enablers of creditworthiness assessment and facilitators of efficient disbursement. Similarly it emphasized on the benefits of digital finance but cautioned against risks related to data privacy, regulatory arbitrage and cybersecurity [15]. In India, fintech platforms such as Lendingkart, Capital Float, and Kinara Capital have emerged as prominent players, offering small-ticket loans within days. Literature from the Reserve Bank of India (2021) has acknowledged these innovations and highlighting the need for regulatory frameworks to protect borrowers from predatory practices [26].

In the Delhi-NCR context, ICT-driven credit models have found limited adoption. The low levels of digital literacy and understanding regarding data security continue to impede full-scale adoption, especially among microenterprises. This reflects findings in development finance literature where technological solutions alone cannot bridge structural inequities unless they are supported by capacity-building and trust-enhancing interventions . The collaborative intervention theory states that the efforts from various stakeholders are essential to integrate the excluded [27].

The literature further explores the consequences of credit inaccessibility on MSME performance. Numerous studies show that credit constraint impacts the investment decision, adoption of quality standards and scaling of operations. A study established a strong correlation between financial development and firm growth, highlighting that the impact is evident for smaller firms that lack internal financing [28] & [29]. In Delhi-NCR, case-based studies reveal that lack of timely credit leads to delayed supplier payments, erosion of trust in value chains leading to business closures. This is consistent with Ilahi's study, who demonstrated that informal credit reliance raises operational costs and limits growth trajectories [30].

Internationally, comparative literature provides valuable insights for India's policy debate. Studies in East Asia have highlighted the role of state-owned development banks in extending subsidized credit to SMEs, with South Korea's Industrial Bank and China's SME credit programs cited as successful models [31]. In contrast, African economies have experimented with microfinance-based approaches, though outcomes remain mixed in terms of scaling beyond microcredit. Latin America, particularly Brazil, has pursued blended finance models that integrate public guarantees with private bank lending which produce relatively better results [32]. This comparative literature indicates that India's reliance on collateral-free schemes and digital innovations may need to be complemented by stronger institutional mechanisms to ensure credit flow to high-potential but undercapitalized enterprises.

Theoretical contributions also extend to performance measurement frameworks that assess how credit access impacts business performance. The resource-based view (RBV) suggests that financial capital acts as a critical resource enabling firms to exploit other capabilities [33]. When credit is inaccessible, firms are unable to invest in technology, marketing or human resources which result in underperformance. Empirical models such as the Theory of Reasoned Action (TRA) [34], Technology Acceptance Model (TAM) [35], Theory of Planned Behaviour (TPB) [36], Technology-Organization-Environment (TOE) Framework [37], Unified theory of acceptance and use of technology (UTAUT) [38] and Diffusion of innovation (DOI) by Rogers, 2003, have also been employed to study ICT adoption by MSMEs. These theoretical perspectives enrich the literature by linking financial access, technology adoption and enterprise outcomes within integrated analytical frameworks.

The scholars have pointed out gaps that continue to limit effective policy design. One of the reason is overreliance on national-level surveys that obscure regional variations. India's overall MSME credit gap was estimated at Rs 20–25 trillion [39] & [40]. This shortfall is unevenly distributed, with microenterprises facing a 21% gap, small enterprises 25%, and medium enterprises close to 29%. Trading and service oriented firms are most constrained. Rural enterprises face a 32% shortfall compared to 20% for their urban counterparts, and women-led firms experience the highest deficit at 35% [11]. Such disparities are often concealed in aggregate figures, yet they are particularly relevant to metropolitan clusters like Delhi where informalization and service dominance complicate lending patterns. Another gap relates to gendered dimensions of credit, as female entrepreneurs continue to face discrimination despite policies promoting financial inclusion [41]. The emerging digital finance literature also lacks longitudinal studies that track sustainability of ICT-driven credit solutions over time.

The reviewed literature establishes a coherent understanding of the structural, institutional and technological challenges that affect MSME credit access. It demonstrates that credit constraints are not merely financial bottlenecks but fundamental obstacles that limit its productivity, employment and economic resilience. For Delhi-NCR, the synthesis of these scholarly insights suggests an urgent need for contextualized approaches that integrate formal institutional support with digital innovations. This provides the foundation for the present study, which situates the region as a focal case to explore the interplay between limited credit, institutional roles and ICT-based solutions in shaping MSME performance and sustainability.

3 Methodology

This study employ a mixed-method approach to examine the MSMEs current state of credit accessibility in Delhi-NCR. It combines secondary data analysis with the qualitative insights. The choice of methodology was guided by the complex and multidimensional nature of MSME financing that required quantitative evidence as well as the contextual understanding. This approach is consistent with established traditions in development finance research, which emphasize the complementarity of statistical analysis and contextual inquiry [42].

Secondary data formed the backbone of this study. The data was drawn from reliable institutional sources such as the Reserve Bank of India, Ministry of MSME, National Bank for Agriculture and Rural Development

(NABARD) and Small Industries Development Bank of India (SIDBI). Additionally, survey findings from the international agencies, World Bank and International Finance Corporation were used. According to the International Finance Corporation, the overall credit gap for Indian MSMEs remains substantial, estimated at approximately USD 240 billion [43]. These sources provided quantitative indicators on credit flow, lending patterns, and financial gaps. To complement this, sector-specific reports and databases were also examined to capture region-specific complexity, especially for Delhi-NCR, where service-oriented enterprises dominate. Academic literature was systematically reviewed to situate the findings within established theoretical frameworks, particularly those related to credit rationing, financial inclusion and ICT-driven finance.

The qualitative dimension of the study relied on analytical analysis of policy documents, government reports and case based evidences from industry associations. This enabled identification of challenges such as procedural bottlenecks, gender disparities and the uneven adoption of ICT tools which are not fully captured by statistical data alone. This study is based on Delhi-NCR region. The coexistence of urbanization, financial institutional presence along with informal enterprises in this region makes it a critical site for examining credit access dynamics (see Appendix Table 2).

This methodology ensured robustness by integrating macro-level patterns with micro-level realities. While limitations such as reliance on secondary data and absence of primary surveys are acknowledged, the approach provides a rigorous and balanced understanding of the systemic and evolving nature of MSME credit access in Delhi-NCR.

4 Findings and Analysis

The findings of this study highlight the multifaceted challenges of credit accessibility faced by MSMEs in Delhi-NCR, as well as the opportunities emerging from institutional reforms and digital innovations. The analysis reveals three things which are structural gaps in formal credit delivery, uneven impact of government schemes and uneven adoption of ICT driven solutions. Together it provide insights into both the persistence of the credit gap and the potential pathways for bridging it.

The first significant finding is that credit flows to MSMEs in Delhi remain low despite the fact that this region has large number of financial institutions. Reserve Bank of India reports indicate that only 8.7% of total banking advances in Delhi were directed to MSMEs in 2022, a marginal increase from 7.9% in 2020 and barely above 7.5% mandatory target under priority sector lending. This suggests that even in the capital region where financial resources are relatively abundant, institutional conservatism and structural barriers hinder credit penetration. Further disaggregation of the data shows that microenterprises, which account for nearly 99% of registered units, receive the smallest share of advances. Larger firms within the small and medium categories are more successful in accessing loans because they possess collateral, audited financial statements and longer business histories. The skewed distribution confirms the continuing relevance of information asymmetry and collateral constraints, theories that have long explained MSME credit rationing [20].

Table 1 below illustrates the growth of registered MSMEs in India between 2020 and 2024, reflecting sector's expansion and increasing credit demand that financial institutions have been unable to meet.

Table 1: Growth of Registered MSMEs in India (2020–24)

Financial Year	Registered MSMEs (in crore)	Investment (Rs. Crore)	Employment (crore people)
2020-21	2.72	394,779.47	2.7
2021-22	3.49	637,251.54	6.2
2022-23	4.60	777,583.00	10.8
2023-24	7.44	959,189.50	18.2

Source: Based on Ministry of Micro, Small & Medium Enterprises (2024) and Government of India (2024)

The steady increase in registrations and employment clearly indicates growing entrepreneurial activity, yet the moderate rise in institutional credit delivery highlights the widening credit gap. This gap is even more noticeable in urban centers such as Delhi, where most enterprises are engaged in services and trade sector which are traditionally perceived by banks as less creditworthy compared to manufacturing.

The second finding concerns the limited effectiveness of government credit schemes. Programs like MUDRA and CGTMSE were launched to improve credit accessibility, but their impact in Delhi-NCR has been uneven. MUDRA loans were intended to reach microenterprises through collateral-free loans of up to ₹20 lakh, categorized as Shishu, Kishor, Tarun and Tarun Plus depending on the amount. However, data from NABARD shows that in Delhi, repeat borrowers dominate loan portfolios with relatively fewer new entrepreneurs taking the benefit [9]. Similarly, CGTMSE guarantees have not been widely adopted, with banks often reluctant to process applications due to procedural complexities and the limited coverage of guarantee amounts. The research bodies reveal that many entrepreneurs are not even aware of the schemes, showing a communication gap between policymakers and the intended beneficiaries. These findings resonate with earlier studies that emphasized the distance between policy design and implementation realities [13].

Another striking observation is the dependency of MSMEs on informal credit channels. Despite the presence of large number of formal financial institutions, a large proportion of enterprises continue to borrow from local moneylenders, trade creditors and community networks, often at annualized interest rates of 24–36% [11]. This reliance reflects not only the reluctance of banks to lend but also the preference of small entrepreneurs for quick loans without paperwork. The long-term cost of this reliance is notable as enterprises operating under high-interest informal loans often find themselves unable to reinvest profits into productivity enhancing activities. This creates a vicious cycle where lack of credit constrains growth and slow growth maintain credit inaccessibility. Such patterns are consistent with studies that link informal finance to suboptimal business performance [30].

The COVID-19 pandemic further exacerbated these structural vulnerabilities. Between 2020 and 2022, thousands of enterprises in Delhi-NCR faced closures or severe contractions due to supply chain disruptions and liquidity shortages. The Emergency Credit Line Guarantee Scheme (ECLGS) introduced during this period provided some relief, with disbursements amounting to nearly ₹3 lakh crore nationally. However, MSME associations in Delhi reported that only a fraction of their members were able to access these funds, again due to limited awareness, cumbersome procedures and risk-averse banking behaviour. The pandemic highlighted the fragility of the MSME financing ecosystem and highlighted the need for more strong and responsive credit systems.

Positive finding emerges from the growing role of ICT driven credit models. Digital technologies are gradually reshaping how financial institutions assess and deliver credit. Platforms such as the Trade Receivables Discounting System (TReDS) allow MSMEs to auction their receivables and secure working capital quickly. Similarly, the Account Aggregator framework enables enterprises to consolidate their financial information, facilitating data-driven credit assessments. Fintech companies have also entered the space aggressively, using GST filings, digital payment histories and e-commerce sales data to evaluate borrowers who otherwise lack traditional credit histories. Evidence from Delhi-NCR indicates that digitally savvy MSMEs in retail, logistics, and education services are increasingly turning to such platforms, finding them faster and more accessible than banks.

Table 2 presents selected credit flow and risk indicators for MSMEs in Delhi during 2021–2022.

Table 2: Credit Flow and Risk Metrics for Delhi MSMEs (2021–2022)

Parameter	Value
Share of MSME Advances in Total Advances	8.7%
Growth in MSME Lending	23% (YoY)
NPA in MSME Sector	17.23%

Source: Based on NABARD (2022)

The data highlight that although MSME lending recorded a healthy year-on-year growth of 23%, the sector's share in overall banking advances remains at just 8.7% which signal a limited structural improvement in financial inclusion. The high level of non-performing assets (17.23%) signals persistent risk concerns for lenders, which in turn reinforce risk aversion and restrict broader credit expansion. This comparison of growth and risk determine the fragile nature of MSME financing in Delhi where incremental increases in credit access are overshadowed by systemic vulnerabilities.

The adoption of ICT also come with challenges. Microenterprises often lack digital literacy and express mistrust toward online financial platforms. Concerns regarding data security, hidden charges and complexity of digital documentation deter many potential users. Additionally, smaller enterprises in traditional sectors such as garments or local manufacturing often operate largely in cash, limiting the availability of digital transaction histories that

fintech lenders rely upon. These limitations indicate that while ICT can complement formal finance but it cannot fully substitute for inclusive institutional reforms and financial literacy programs.

The analysis also reveals important differences within the MSME sector. Medium enterprises are able to access both formal bank loans and digital credit due to stronger documentation and established market presence. Small enterprises face moderate barriers whereas microenterprises remain the most excluded. The enterprises owned by women face additional hurdles. As research indicates that female entrepreneurs are less likely to be approved for loans, reflecting both gender biases and smaller asset bases [41]. Such intra-sectoral differences highlight the need for differentiated policies rather than one-size-fits-all approaches.

Another emerging trend is the role of alternative financing models. Peer-to-peer (P2P) lending platforms, angel networks and crowdfunding initiatives are gradually expanding in India, though their penetration remains limited compared to traditional or fintech lending. In Delhi-NCR, P2P platforms have seen some uptake in the technology and services sectors offering quicker access to small loans. However, regulatory uncertainties and limited investor confidence restrict their scalability. Despite these limitations, the very emergence of such models suggests that the credit ecosystem is diversifying, even if traditional banking institutions remain dominant.

The findings highlight the persistence of credit inaccessibility for MSMEs in Delhi-NCR, driven by a combination of structural constraints, policy implementation gaps and uneven digital adoption. They also point to available opportunities. The expansion of fintech platforms, the digitization of credit assessment processes and the gradual mainstreaming of schemes like TReDS and Account Aggregators provide a foundation for building a more inclusive financial ecosystem.

5 Discussion

The findings presented in the previous section highlights both the persistence of credit constraints for MSMEs in Delhi-NCR and the gradual emergence of new avenues of financial access. When analysed in relation to the broader literature and theoretical frameworks, the patterns reveal structural continuities as well as evolving dynamics that shape the sector's financial ecosystem. The discussion highlights three interrelated idea, the enduring nature of credit rationing within formal banking, the partial effectiveness of government and policy interventions and transformative potential of ICT-driven solutions.

The limited share of MSME credit in overall banking advances, consistently under 9% in Delhi during 2020–23, echoes the arguments of Stiglitz and Weiss [20] that information asymmetry remains the central reason behind credit rationing. Banks are unwilling to fully distinguish between risky and viable MSME borrowers. This finding is consistent with Banerjee and Duflo [21], who observed that small firms face under-lending even when projects are demonstrably profitable.

Policy interventions such as MUDRA, CGTMSE and the Emergency Credit Line Guarantee Scheme were designed precisely to mitigate these barriers, yet their impact has mixed response. On one hand, they have created new avenues for enterprises to seek collateral-free or guaranteed credit. On the other, their low utilization reveals the persistent disconnect between policy design and ground realities. Riding and Haines [13] observed that credit guarantee schemes are only effective when supported by efficient implementation and lender willingness. These conditions remain only partially met in Delhi. The limited awareness of schemes among entrepreneurs highlights a communication gap that prevents policies from reaching intended beneficiaries. The repeat borrowers in MUDRA loans reflects a skewed pattern where the same enterprises are served repeatedly while new borrowers remain excluded. These observations resonate with the critique that India's policy frameworks often achieve breadth rather than depth of inclusion [9].

The analysis also highlights the structural costs of reliance on informal credit, where interest rates between 24% and 36% severely constrain business sustainability. This reliance reflects not only the exclusion from formal systems but also a preference for flexible and quick access, a concern observed in other developing economies as well [24]. Thus results in high borrowing cost borrowing that limit reinvestment. This aligns with Ilahi's [30] conclusion that informal credit reduces profitability and restricts productivity improvements. The Delhi-NCR case confirms that without affordable and timely formal credit, MSMEs are pushed into a suboptimal equilibrium of survival rather than growth.

The findings reveal that ICT innovations are beginning to reshape credit dynamics, though unevenly. The adoption of TReDS, Account Aggregator frameworks, and fintech platforms demonstrates that digital solutions can reduce transaction costs, enhance credit assessments and provide speedier disbursements. This supports that digital finance can significantly reduce information asymmetries by drawing on alternative data sources such as GST filings and digital payment histories. Still the uneven adoption illustrates the limitations of a purely technological solution. As Ozili [15] cautioned, digital finance is constrained by digital literacy gaps, infrastructure deficits and regulatory risks. The findings in Delhi confirm these concerns that medium and small enterprises benefit from digital credit but microenterprises struggle to participate in digital ecosystems.

This divergence within the MSME sector also highlights the inadequacy of homogeneous policy approaches. Medium enterprises with better documentation and market visibility have a relatively easier time accessing both bank loans and digital credit, whereas microenterprises remain structurally excluded. Women-led enterprises face additional constraints, reflecting broader gendered inequities in financial systems [41]. These intra-sectoral variations reinforce the need for differentiated interventions that consider firm size, sector and social context. The literature on resource-based views provides a useful insight that financial capital is a strategic resource that enables the utilization of other capabilities [33]. Without access to finance, microenterprises cannot invest in upgrading technologies, marketing strategies, or skilled labour, perpetuating cycles of low productivity.

The COVID-19 pandemic provides a critical context for interpreting these patterns. The findings demonstrate how systemic shocks exacerbate existing vulnerabilities, with MSMEs in Delhi facing closures due to liquidity shortages. The partial success of ECLGS reveals the importance of emergency credit mechanisms but also the limitations of schemes that fail to reach the most constrained firms. This resonates with Gabor and Brooks [27], who argued that financial resilience requires not just liquidity support but also structural reforms to ensure sustainable access beyond crisis periods. In Delhi-NCR, the uneven recovery of MSMEs determines the fragility of enterprises that lack robust credit linkages, confirming that resilience cannot be built on informal financing structures alone.

The broader international literature provides useful comparative insights. The reliance on digital innovations in India reflect developments in countries like Kenya where mobile money platforms have expanded financial inclusion, but sustainability remains uncertain without parallel institutional reforms. East Asian experiences, particularly South Korea and China, demonstrate that development banks and targeted SME credit programs can effectively channel funds to small firms [31]. The contrast suggests that while India's focus on fintech and digital infrastructure is important, it must be complemented by stronger institutional mechanisms such as dedicated SME banks or regional development funds. The Delhi case highlights this gap, as the presence of banks has not translated into meaningful inclusion and fintech penetration remains limited to digitally visible enterprises.

The findings also support the critique that MSME policies often prioritize manufacturing heavy states, leaving service dominated urban economies like Delhi relatively underserved. Literature has noted that while national programs aim for inclusivity, their design often reflects industrial policy biases that do not align with the realities of metropolitan clusters [22]. This explains why trade and service oriented enterprises in NCR remain less prioritized in credit allocation despite their economic importance. To address this imbalance, it requires policy revision to ensure that schemes account for the specific needs of urban service MSMEs, including working capital loans, invoice financing and digital literacy support.

The analysis confirms that bridging the credit gap requires an integrated approach rather than isolated interventions. Institutional reforms to simplify lending procedures, financial literacy programs to empower entrepreneurs and digital infrastructure development must work together. As the literature on financial inclusion suggests, systemic transformation emerges not from individual solutions but from the alignment of incentives, capacities and technologies [29]. For Delhi-NCR, this means that banks must move beyond risk-averse practices, policymakers must focus on targeted support for urban service enterprises and fintech innovations must be made accessible to the smallest and most vulnerable firms.

The discussion build the findings within established theoretical frameworks and comparative evidence, highlighting the enduring relevance of credit rationing theories, the mixed outcomes of policy interventions, and the uneven promise of digital finance. The Delhi-NCR case demonstrates that while progress has been made, particularly through ICT innovations, the structural credit gap persists. The challenge moving forward lies in creating an inclusive ecosystem where formal institutions, digital platforms and supportive policies coincide to provide timely, affordable and equitable credit access to all segments of the MSME sector.

6 Conclusion

The study demonstrates that despite Delhi-NCR's status as one of India's most financially developed regions still MSMEs continue to face significant barriers to accessing adequate and affordable credit. The findings of this study reaffirm that information asymmetry, lack of collateral, and risk-averse banking practices continue to be the dominant factors [44]. Although government schemes like MUDRA, CGTMSE, and the Emergency Credit Line Guarantee Scheme were introduced to address these issues, their reach in the region has been uneven due to limited awareness, bureaucratic processes, and selective lender participation.

The persistence dependence on informal finance at higher interest rates reflect the inability of formal institutions to meet the liquidity needs of smaller enterprises. This cycle not only restricts reinvestment and growth but also reinforces structural vulnerabilities, particularly for microenterprises and women-led businesses. ICT-driven financial solutions, including digital lending platforms, TReDS, and Account Aggregator frameworks, show promise in reducing transaction costs and improving credit assessment. However, their benefits are not yet inclusive, as digital literacy gaps and infrastructural challenges continue to exclude the most vulnerable segments.

This study suggest that bridging the credit gap for MSMEs in Delhi-NCR requires more than isolated interventions. It calls for an integrated approach where policy reforms, institutional incentives, and digital innovations converge to create an enabling financial ecosystem. Only by ensuring equitable, timely and sustainable access to credit can the region unlock the full potential of its MSMEs and strengthen inclusive economic development. This progress of MSMEs in Delhi-NCR can also offer a replicable model for other regions in India.

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References

1. Joshi, S. (2025). Informality, productivity, and financial inaccessibility: a study of selected APO members. https://doi.org/10.61145/KLIS1569
2. Ministry of Micro, Small and Medium Enterprises, Government of India. (2025, March 21). Notification S.O. 1364 (E): Gazette of India Extraordinary, Part II, Section 3(ii). Retrieved from https://www.dcmsme.gov.in/Notification-S.O-no-1364-E-dated-21.03.2025-Revised-Definition.pdf
3. Government of India. (2023). Contribution of MSMEs to the country's GDP. Ministry of Micro, Small & Medium Enterprises. https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1985020
4. Press Information Bureau. (2023). Role of MSME sector in the country. Ministry of Micro, Small & Medium Enterprises, Government of India. Retrieved from https://www.pib.gov.in/PressReleaseIframePage.aspx?PRID=1946375
5. Ministry of Micro, Small & Medium Enterprises. (2023). MSME Annual Report 2022-23. Government of India. Retrieved from https://msme.gov.in/sites/default/files/MSMEANNUALREPORT2022-23ENGLISH.pdf
6. Joshi, S. (2023). Chapter 4: India. In: Mitra, A. (ed). Issues and challenges on the productivity performance of the informal sector in selected APO members. Asian Productivity Organization. https://doi.org/10.61145/EKCF4946
7. Ministry of Micro, Small & Medium Enterprises. (2024). Rajya Sabha Unstarred Question No. 1544. Condition of MSMEs. Government of India. Retrieved from https://sansad.in/getFile/annex/265/AU1544_jzlZ3E.pdf?source=pqars
8. Department of Economics and Statistics, Government of NCT of Delhi. (2016). Report on Sixth Economic Census in Delhi. Retrieved from https://des.delhi.gov.in/sites/default/files/DES/generic_multiple_files/final_book12.pdf
9. NABARD. (2022). MSME and its credit potential in Delhi. National Bank for Agriculture and Rural Development.
10. Reserve Bank of India. (2019). Master direction – regional rural banks – priority sector lending – targets and classification. Retrieved from https://rbi.org.in/commonman/english/scripts/Notification.aspx?Id=2321
11. SkillLabs (2025). Bridging the credit gap: A lifeline for India's MSMEs. Retrieved from https://skilllabs.net/bridging-the-credit-gap-a-lifeline-for-indias-msmes/
12. Dvara Research. (2020). Household finance in India: approaches and challenges. Working Paper Series No. WP-2020-02. Retrieved from https://dvararesearch.com/wp-content/uploads/2023/12/Household-Finance-in-India-Approaches-and-Challenges.pdf
13. Riding, A. L., & Haines Jr, G. (2001). Loan guarantees: Costs of default and benefits to small firms. Journal of business venturing, 16(6), 595-612.

14. Press Information Bureau (2025). UIDAI unveils Aadhaar-based authentication framework for Cooperative Banks to benefit across India. Ministry of Electronics & IT, Government of India. Retrieved from https://www.pib.gov.in/PressReleasePage.aspx?PRID=2159300
15. Ozili, P. K. (2018). Impact of digital finance on financial inclusion and stability. Borsa istanbul review, 18(4), 329-340.
16. World Bank. (2019). Small and Medium Enterprises (SMEs) finance: Improving SMEs' access to finance and finding innovative solutions to unlock sources of capital. Retrieved from https://www.worldbank.org/en/topic/smefinance
17. Beck, T., & Demirguc-Kunt, A. (2006). Small and medium-size enterprises: Access to finance as a growth constraint. Journal of Banking & finance, 30(11), 2931-2943.
18. Bhavani, T. A. (2002). Small-scale units in the era of globalisation: Problems and prospects. Economic and Political Weekly, 3041-3052.
19. Government of India. (2019). Report of the Expert Committee on Micro, Small and Medium Enterprises. Ministry of Statistics and Programme Implementation. Retrieved from https://dcmsme.gov.in/Report%20of%20Expert%20Committee%20on%20MSMEs%20-%20The%20U%20K%20Sinha%20Committee%20constitutes%20by%20RBI.pdf
20. Stiglitz, J. E., & Weiss, A. (1981). Credit rationing in markets with imperfect information. The American economic review, 71(3), 393-410.
21. Banerjee, A. V., & Duflo, E. (2014). Do firms want to borrow more? Testing credit constraints using a directed lending program. Review of Economic Studies, 81(2), 572-607.
22. Allen, F., Chakrabarti, R., De, S., & Qian, M. (2012). Financing firms in India. Journal of financial intermediation, 21(3), 409-445.
23. Joshi, S. (2023). What Impacts Informality? Evidence from Selected Asia-Pacific Economies. Manpower Journal, 57.
24. Beck, T., Demirgüç-Kunt, A., & Maksimovic, V. (2008). Financing patterns around the world: Are small firms different?. Journal of financial economics, 89(3), 467-487.
25. Government of India. (2023). PM MUDRA Yojana Annual Report. Ministry of Finance.
26. Reserve Bank of India (2021). Report of the Working Group on Digital Lending including Lending through Online Platforms and Mobile Apps. RBI. Retrieved from https://rbidocs.rbi.org.in/rdocs/PublicationReport/Pdfs/DIGITALLENDINGF6A90CA76A9B4B3E84AA0EBD24B307F1.PDF
27. Gabor, D., & Brooks, S. (2020). The digital revolution in financial inclusion: international development in the fintech era. In Material cultures of financialization (pp. 69-82). Routledge.
28. Joshi, S., & Gupta, S. (2025) Does financing from financial institutions affect productivity of small enterprises? An examination using spline regression. In N. Apergis (Ed.), Encyclopedia of monetary policy, financial markets and banking (Vol. 4, pp. 28–36). Academic Press, Elsevier.
29. Beck, T., Demirguc-Kunt, A., & Levine, R. (2005). SMEs, growth, and poverty: Cross-country evidence. Journal of economic growth, 10(3), 199-229.
30. Ilahi, S. (2015). Micro, small, and medium enterprises (MSMEs) in Delhi: Problems and prospects. International Journal of Research and Development, 4(4), 31-41.
31. Yoshino, N., & Taghizadeh-Hesary, F. (2018). The role of SMEs in Asia and their difficulties in accessing finance (ADB Working Paper 911). Asian Development Bank Institute. https://www.adb.org/sites/default/files/publication/474576/adbi-wp911.pdf
32. Ioannou, S., & Wójcik, D. (2022). The limits to FinTech unveiled by the financial geography of Latin America. Geoforum, 128, 57-67.
33. Barney, J. (1991). Firm resources and sustained competitive advantage. Journal of management, 17(1), 99-120.
34. Fishbein, M., & Ajzen, I. (1975). Belief, attitude, intention and behaviour: An introduction to theory and research. Addison-Wesley.
35. Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. MIS quarterly, 319-340.
36. Dantschke, C., Mansour, A., Müller, J., & Serbest, Y. Ajzen, I. (1991). The theory of planned behaviour. In: Organizational behaviour and human decision processes, 50 (2), 179-211.
37. Tornatzky, L. G., Fleischer, M., & Chakrabarti, A. K. (1990). Processes of technological innovation. Lexington books.
38. Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. MIS quarterly, 425-478.
39. Joshi, S., & Gupta, S. (2025) Does financing from financial institutions affect productivity of small enterprises? An examination using spline regression. In N. Apergis (Ed.), Encyclopedia of monetary policy, financial markets and banking (Vol. 4, pp. 28–36). Academic Press, Elsevier.
40. Press Information Bureau. (2024). CREATION OF DIGITAL PUBLIC INFRASTRUCTURE. Ministry of Micro, Small & Medium Enterprises, Government of India. Retrieved from https://www.pib.gov.in/PressReleasePage.aspx?PRID=2038541
41. Datta, P. B., & Gailey, R. (2012). Empowering women through social entrepreneurship: Case study of a women's cooperative in India. Entrepreneurship theory and Practice, 36(3), 569-587.

42. Creswell, J.W., & Clark, V.L.P. (2011) Designing and Conducting Mixed Methods Research. 2nd Edition, Sage Publications, Los Angeles.
43. Goel, S., Biswas, D. A., Banerjee, S., & Kedia, S. (2022). Financing low-carbon transition for India's MSME sector(Report No. 2019GW07). The Energy and Resources Institute. https://www.teriin.org/sites/default/files/files/Financing-Low-Carbon-Tranistion-for-India-MSME-Sector.pdf.
44. Mushtaq, R., Rizwan, M., & Iqbal, A. (2022). Role of fintech in improving MSME credit accessibility. Journal of Business Research, 146, 325–336.
45. National Capital Region Planning Board. Functional plan for micro & household enterprises in NCR. Retrieved from https://ncrpb.nic.in/pdf_files/03%20Report_Funation%20Plan%20on%20Micro%20&%20Household%20Ent.%20in%20NCR.pdf
46. DCMSME. (2012). Brief industrial profile of Delhi. Ministry of Micro, Small and Medium Enterprises, Government of India.
47. Ministry of Micro, Small & Medium Enterprises(2024). Employment generation in MSMES sector. Retrieved from https://www.pib.gov.in/PressReleasePage.aspx?PRID=2036986

Annexures

Annexure Table 1a(i): Classification of Micro, Small and Medium Enterprise (MSME) in Manufacturing and Service Sector Enterprises

*Revised classification applicable w.e.f 1st July 2020			
Composite Criteria Investment in Plant and Machinery/equipment and Annual Turnover			
Classification	Micro	Small	Medium
Manufacturing and Service Sector Enterprises	Investment in Plant and Machinery or Equipment up to Rs. 1 crore and Annual Turnover does not exceed Rs. 5 crore	Investment in Plant and Machinery or Equipment up to Rs. 10 crore and Annual Turnover does not exceed Rs. 50 crore	Investment in Plant and Machinery or Equipment up to Rs. 50 crore and Annual Turnover does not exceed Rs. 250 crore

Source: Ministry of MSME, Government of India. https://www.dcmsme.gov.in/Notification-S.O-no-1364-E-dated-21.03.2025-Revised-Definition.pdf

Annexure Table 1a(ii): Classification of Micro, Small and Medium Enterprise (MSME) in Manufacturing and Service Sector Enterprises

*Revised classification of MSMEs applicable w.e.f 1st April 2025			
Composite Criteria for Classifying MSMEs			
Classification	Micro	Small	Medium
Manufacturing and Service Sector Enterprises	Investment in Plant and Machinery or Equipment: Not more than Rs. 2.5 crore and Annual Turnover not more than Rs. 10 crore	Investment in Plant and Machinery or Equipment: Not more than Rs. 25 crore and Annual Turnover not more than Rs. 100 crore	Investment in Plant and Machinery or Equipment: Not more than Rs. 125 crore and Annual Turnover not more than Rs. 500 crore

Note: The composite criterion too is based on investment in plant and machinery/equipment and annual turnover. But the limit has been revised and the difference between manufacturing-based MSMEs and Service-based MSMEs has been done away with.
Source: Ministry of MSME, Government of India. https://msme.gov.in/know-about-msme

Appendix Table 2: Major Industrial Areas in Delhi

S.No.	Name of Industrial Area
1	G.T. Karnal Road Industrial Area
2	Rajasthani Udyog Nagar Industrial Area
3	S.M.A Industrial Area
4	S.S. Industrial Area
5	S.S.I. Industrial Area
6	Wazirpur Industrial Area
7	Udyog Nagar Industrial Area
8	Mangol Puri Industrial Area(Both DDA & DSIDC)
9	Mangol Puri Industrial Area
10	Narela Industrial Area
11	Bawana Industrial Area
12	Okhla Industrial Area, Phase –I & II
13	Okhla Industrial Estate, Phase-III
14	Functional Industrial Estate for Electronics S-Block, Okhla Industrial Area Phase-II
15	Functional Industrial Estate for Electronics A-Block, Okhla Industrial Area Phase-II
16	Mohan Cooperative Industrial Estate
17	Rani Jhansi Road
18	Shahzeda Bagh Industrial Area
19	Jhilmil Industrial Area
20	Friends Colony Industrial Area, Shahdara
21	Patpar Ganj Industrial Area

22	Shahdara Industrial Area
23	Naraina Industrial Area Phase –I & phase –II
24	Mayapuri Industrial Area Phase-I & Phase-II
25	Tilak Nagar Industrial Area
26	Kirti Nagar Industrial Area
27	D.L.F Industrial Area, Moti Nagar
28	Najafgarh Road Industrial Area
29	Flatted Factories Complex at Rani Jhansi Road
30	Flatted Factories Complex, Okhla
31	Flatted Factories for Leather Goods, Wazirpur Industrial Area
32	Flatted Factories Complex at Jhilmil Industrial Area

Source: Adapted from NABARD (2022) and DCMSME (2012)