

Entrepreneurial Ecosystems for Sustainable MSME Development: Aligning SDG 8 and SDG 9 in the Context of North Karnataka

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Abstract: Micro, Small, and Medium Enterprises (MSMEs) play a significant role in employment generation, innovation, regional development, and sustainable economic growth; however, their long-term performance depends not only on firm-level capabilities but also on the quality of the entrepreneurial ecosystem in which they operate. This study develops a conceptual model explaining how entrepreneurial ecosystem dimensions contribute to MSME performance and sustainability in the industrial clusters of North Karnataka, while positioning these relationships within the United Nations Sustainable Development Goals (SDGs). The framework integrates Entrepreneurial Ecosystem Theory, Cluster Theory, the Resource-Based View (RBV), and Social Capital Theory to explain how entrepreneurial capabilities and external ecosystem conditions jointly support sustainable enterprise development.

The model incorporates entrepreneurial antecedents—educational qualification, industry experience, family support, and social network support—and MSME cluster characteristics, including geographical proximity, supporting industries, labour availability, and competitive intensity. At the centre of the framework are ten entrepreneurial ecosystem dimensions: Formal Institutions, Entrepreneurial Culture, Social Networks, Physical Infrastructure, Demand, Leadership, Talent, Finance, Knowledge, and Intermediate Business Support Services. These dimensions facilitate access to resources, finance, markets, skills, knowledge, infrastructure, institutional support, and collaborative networks, thereby strengthening firm performance and long-term MSME sustainability.

The framework has particular relevance to SDG 8 (Decent Work and Economic Growth) through entrepreneurship, MSME growth, productivity, and employment; SDG 9 (Industry, Innovation and Infrastructure) through infrastructure, industrial development, innovation, finance, and technological capability; and SDG 17 (Partnerships for the Goals) through stakeholder networks and institutional collaboration. It also provides a supporting linkage to SDG 4 (Quality Education) through entrepreneurial skills, talent development, and knowledge creation. The model therefore extends entrepreneurial ecosystem research by connecting regional MSME development with the broader sustainable development agenda and provides a conceptual basis for policymakers, financial institutions, universities, industry associations, and development agencies seeking to build resilient and sustainable MSME ecosystems.

Keywords: Entrepreneurial Ecosystem; MSME Sustainability; Firm Performance; Industrial Clusters; Sustainable Development Goals; SDG 8; SDG 9; North Karnataka

INTRODUCTION

Micro, Small, and Medium Enterprises (MSMEs) constitute an important foundation of economic development by generating employment, promoting entrepreneurship, supporting innovation, strengthening industrial production, and contributing to regional competitiveness. Their importance extends beyond individual firm performance because the growth and sustainability of MSMEs can influence broader patterns of employment, productivity, industrial development, innovation, and regional economic resilience. Within the global sustainable development agenda, these contributions are particularly relevant to the United Nations Sustainable Development Goals (SDGs), especially SDG 8: Decent Work and Economic Growth and SDG 9: Industry, Innovation and Infrastructure. These two goals provide an important policy context for understanding how entrepreneurial ecosystems can support sustainable MSME development.

The relationship between MSME development and SDG 8 is particularly significant. SDG 8 seeks to promote sustained, inclusive and sustainable economic growth, productive employment, and decent work. More specifically, Target 8.2 emphasizes higher levels of economic productivity through diversification, technological upgrading and innovation, while Target 8.3 calls for development-oriented policies that support productive activities, entrepreneurship, creativity and innovation and encourage the formalization and growth of micro-, small- and medium-

sized enterprises, including through access to financial services (United Nations, 2015). These priorities closely correspond with the role of entrepreneurial ecosystems in creating conditions that enable enterprises to access resources, develop capabilities, identify opportunities, improve productivity, innovate and achieve sustainable growth.

Similarly, SDG 9 emphasizes resilient infrastructure, inclusive and sustainable industrialization, and innovation. Its relevance to MSMEs is especially evident in Target 9.3, which emphasizes increasing the access of small-scale industrial and other enterprises to financial services, including affordable credit, and their integration into value chains and markets. SDG 9 also recognizes the importance of infrastructure, technological capability, research, innovation and industrial development. Consequently, the sustainability of MSMEs cannot be examined solely from the perspective of individual entrepreneurial capabilities. It also requires consideration of the wider institutional, financial, infrastructural, technological, knowledge and market environment in which enterprises operate.

This broader perspective is captured by the concept of the entrepreneurial ecosystem. Entrepreneurial ecosystems recognize entrepreneurship as the outcome of interactions among multiple interdependent actors and environmental conditions rather than as an activity determined exclusively by individual entrepreneurs. Isenberg (2010) conceptualized entrepreneurial ecosystems around interconnected domains such as policy, finance, culture, human capital, markets and institutional support. Stam (2015) subsequently emphasized entrepreneurial ecosystems as configurations of interdependent actors and factors that enable productive entrepreneurship and regional value creation. Spigel (2017) further highlighted the interaction of cultural, social and material attributes in creating environments supportive of entrepreneurial activity. Accordingly, entrepreneurial ecosystems provide an appropriate theoretical perspective for examining how institutional arrangements and regional resources can facilitate enterprise performance and long-term sustainability.

For MSMEs, the quality of the entrepreneurial ecosystem is particularly important because smaller enterprises frequently depend on external sources of finance, skilled human resources, infrastructure, knowledge, technology, suppliers, markets and institutional support. An effective ecosystem can reduce resource constraints by connecting enterprises with government agencies, financial institutions, universities, research organizations, industry associations, suppliers, customers, incubators, professional networks and other business-support organizations. Such interactions can facilitate resource mobilization, knowledge exchange, innovation, technological upgrading and market access. Entrepreneurial ecosystem development can therefore provide an important mechanism through which enterprise-level capabilities are transformed into improved organizational performance and sustainable business outcomes.

The Indian MSME context makes this relationship particularly relevant. MSMEs contribute substantially to industrial activity, entrepreneurship, employment and regional economic development. At the same time, enterprises continue to experience constraints associated with access to finance, skilled labour, technological capabilities, infrastructure, institutional support, innovation and market linkages. Government initiatives such as Make in India, Digital India, Startup India, Atmanirbhar Bharat and various MSME development programmes have sought to strengthen entrepreneurship and enterprise competitiveness. Nevertheless, sustainable MSME development ultimately depends on how effectively different components of the entrepreneurial ecosystem interact and whether enterprises are able to access and utilize the resources provided through these systems.

The issue becomes particularly significant in regional industrial economies such as North Karnataka. The region contains diverse MSMEs operating in manufacturing, engineering, foundry, automobile components, agro-processing, textiles, food processing and service industries. Industrial centres and clusters across Belagavi, Dharwad, Hubballi, Vijayapura, Gadag, Bagalkot and surrounding areas have developed distinctive entrepreneurial and industrial capabilities. However, variations in infrastructure, availability of skilled labour, financial accessibility, institutional support, knowledge networks, supporting industries and market opportunities can influence the capacity of enterprises to achieve sustained performance. Understanding these regional ecosystem conditions is therefore important not only from the perspective of enterprise competitiveness but also in relation to the broader objectives of sustainable and inclusive regional industrial development.

Against this background, the present study conceptualizes the entrepreneurial ecosystem through ten interrelated dimensions: Formal Institutions, Entrepreneurial Culture, Social Networks, Physical Infrastructure, Demand, Leadership, Talent, Finance, Knowledge, and Intermediate Business Support Services. These dimensions represent the institutional, social, financial, infrastructural, human-capital, knowledge and market conditions through which entrepreneurs obtain the resources and capabilities necessary for enterprise development. The framework further recognizes that entrepreneurs' ability to utilize ecosystem resources may depend on antecedent factors such as educational qualification, industry experience, family support and social network support. In addition, MSME cluster

characteristics, including geographical proximity, supporting industries, labour availability and competitive intensity, constitute an important regional context within which ecosystem interactions occur.

The framework proposes that these entrepreneurial antecedents and cluster characteristics strengthen entrepreneurs' ability to engage with the entrepreneurial ecosystem, while a supportive ecosystem subsequently contributes to firm performance, reflected in sales, revenue, efficiency, profitability, growth, achievement of personal goals, and reputation or brand image. Improved firm performance, in turn, supports MSME sustainability, conceptualized through continuous growth, resilience, adaptability, long-term survival and sustained competitiveness. The study therefore positions the entrepreneurial ecosystem as the connecting mechanism through which individual entrepreneurial capabilities and regional ecosystem conditions are translated into sustainable enterprise outcomes.

This conceptualization provides a direct theoretical interface with SDG 8 and SDG 9. From an SDG 8 perspective, Formal Institutions, Finance, Talent, Entrepreneurial Culture, Demand and Intermediate Business Support Services can create enabling conditions for productive entrepreneurship, enterprise growth, innovation and economic activity. From an SDG 9 perspective, Physical Infrastructure, Knowledge, Finance, Talent, supporting industries and cluster networks can facilitate industrial development, technological capability, innovation, access to markets and stronger integration of MSMEs within regional economic systems. The two SDGs are therefore interconnected within the entrepreneurial ecosystem: productive and sustainable MSME growth requires an enabling environment for entrepreneurship and economic activity under SDG 8, while simultaneously depending on infrastructure, industrial capability, finance and innovation emphasized under SDG 9.

Despite the growing literature on entrepreneurial ecosystems, an important research gap remains. Much of the existing literature has concentrated on entrepreneurial ecosystems in developed economies and high-growth or technology-oriented start-up environments. Comparatively limited attention has been given to established MSMEs operating within regional industrial clusters in emerging economies. Furthermore, ecosystem dimensions are frequently examined individually, with relatively limited integration of entrepreneurial antecedents, industrial cluster characteristics, multidimensional entrepreneurial ecosystems, firm performance and long-term MSME sustainability within a single conceptual framework. The explicit positioning of such an integrated entrepreneurial ecosystem framework within the SDG 8 and SDG 9 agenda also remains underdeveloped, particularly in the context of regional MSME ecosystems such as North Karnataka.

To address this gap, the present study develops an integrated conceptual model linking entrepreneurial antecedents, MSME cluster characteristics, entrepreneurial ecosystem dimensions, firm performance and MSME sustainability. The model is grounded in Entrepreneurial Ecosystem Theory, Cluster Theory, the Resource-Based View (RBV), and Social Capital Theory, thereby combining individual, organizational, relational and regional perspectives on sustainable enterprise development. By aligning the conceptual framework with SDG 8 and SDG 9, the study extends the discussion of MSME sustainability beyond long-term firm survival toward understanding how regional entrepreneurial ecosystems can potentially support sustainable economic growth, productive entrepreneurship, industrial development, innovation and resilient enterprise systems.

Accordingly, the study contributes at three levels. Theoretically, it integrates multiple theoretical perspectives and ecosystem dimensions into a unified framework explaining MSME performance and sustainability. Contextually, it extends entrepreneurial ecosystem research to MSMEs operating within the industrial clusters of North Karnataka. From a sustainable development perspective, it establishes a conceptual pathway through which strengthening entrepreneurial ecosystems may contribute to the localization of SDG 8 and SDG 9 by supporting productive entrepreneurship, sustainable MSME growth, industrial capability, infrastructure, innovation and regional economic resilience. Thus, the proposed framework positions entrepreneurial ecosystem development not only as a strategy for improving individual MSME performance but also as a potential mechanism for advancing sustainable regional economic and industrial development.

LITERATURE REVIEW

2.1 Entrepreneurial Ecosystem: Concept and Evolution

The entrepreneurial ecosystem (EE) perspective has emerged as an important approach for explaining how entrepreneurship develops within a particular geographical, institutional and socio-economic environment. Unlike traditional entrepreneurship research that primarily emphasizes the characteristics, capabilities and behaviour of

individual entrepreneurs, the ecosystem perspective considers entrepreneurship as an outcome of interactions among entrepreneurs, institutions, markets, financial organizations, knowledge providers, support agencies and other stakeholders. Isenberg (2010) conceptualized the entrepreneurial ecosystem through interconnected domains such as policy, finance, culture, human capital, markets and institutional support, emphasizing that successful entrepreneurship requires the simultaneous functioning of several mutually reinforcing conditions.

Stam (2015) advanced this perspective by describing entrepreneurial ecosystems as interdependent actors and factors coordinated in ways that enable productive entrepreneurship within a territory. Similarly, Spigel (2017) classified ecosystem attributes into cultural, social and material dimensions and argued that entrepreneurial outcomes emerge from interactions among these attributes rather than from the independent influence of individual factors. The regional character of entrepreneurial ecosystems is particularly important because access to finance, skilled labour, knowledge, infrastructure, networks and institutional support varies considerably across geographical locations.

Despite the increasing academic attention given to entrepreneurial ecosystems, the literature remains theoretically fragmented. Earlier systematic evidence indicated that EE research was relatively under-theorized and disproportionately concentrated on technology-oriented industries and Western economies. This creates a need to examine entrepreneurial ecosystems in emerging economies and in the context of established MSMEs rather than focusing predominantly on start-ups and high-growth technology ventures.

2.2 Theoretical Foundations of Entrepreneurial Ecosystems

The entrepreneurial ecosystem concept can be strengthened by integrating complementary theoretical perspectives. The present study draws primarily on Entrepreneurial Ecosystem Theory, Cluster Theory, the Resource-Based View (RBV), and Social Capital Theory to explain how entrepreneurial and regional resources influence MSME performance and sustainability.

Entrepreneurial Ecosystem Theory provides the overarching framework by explaining how interconnected institutional, financial, cultural, infrastructural, knowledge and market conditions facilitate productive entrepreneurial activity. Rather than viewing entrepreneurship as an isolated firm-level phenomenon, this perspective emphasizes the systemic interactions between entrepreneurs and their surrounding environment.

Cluster Theory, particularly the work of Porter (1998), explains the geographical concentration of interconnected enterprises, suppliers, supporting industries and institutions. Geographic proximity can facilitate knowledge exchange, specialized labour markets, supplier relationships, competition and collaboration. For MSMEs operating in industrial clusters, therefore, location is not merely a geographical characteristic but an important source of external resources and competitive advantages.

The Resource-Based View (RBV) proposed by Barney (1991) explains competitive advantage through the possession and effective utilization of valuable, rare, difficult-to-imitate and organizationally embedded resources. MSMEs frequently experience resource limitations and may therefore rely on the entrepreneurial ecosystem to complement internal resources. Finance, knowledge, human capital, infrastructure and institutional support available through the ecosystem can strengthen firm capabilities and contribute to performance and long-term sustainability.

Social Capital Theory further explains how relationships and networks enable entrepreneurs to access information, knowledge, finance, market opportunities and other resources. Social networks can reduce information asymmetry, facilitate trust and support knowledge exchange among ecosystem participants. The integration of these theoretical perspectives consequently provides a multidimensional explanation of how individual capabilities, firm resources, networks, clusters and regional ecosystem conditions jointly shape MSME outcomes.

2.3 Entrepreneurial Antecedents and Ecosystem Participation

Entrepreneurs differ in their capacity to recognize, access and utilize resources available within an entrepreneurial ecosystem. Consequently, entrepreneurial antecedents can influence the extent to which MSMEs benefit from their surrounding ecosystem. In the proposed framework, educational qualification, industry experience, family support and social network support are considered important entrepreneurial antecedents.

Education contributes to the development of managerial, analytical and entrepreneurial capabilities and can improve an entrepreneur's ability to identify opportunities and access external knowledge. Industry experience provides

accumulated knowledge concerning markets, technologies, customers, suppliers and competitive conditions. Family support can provide financial, emotional and operational resources, particularly in MSMEs and family-oriented entrepreneurial environments. Social network support extends these resources by connecting entrepreneurs to customers, suppliers, financial institutions, professional associations, government agencies and other business stakeholders.

These antecedents are particularly relevant in emerging regional ecosystems where formal support mechanisms may be unevenly developed. Entrepreneurs with stronger human and social capital may be better positioned to navigate institutional environments and mobilize ecosystem resources. Therefore, entrepreneurial antecedents represent an important micro-level foundation of engagement with the wider entrepreneurial ecosystem.

2.4 MSME Clusters and Regional Entrepreneurial Ecosystems

Entrepreneurial ecosystems are spatially embedded, making regional and cluster characteristics important for understanding enterprise development. Industrial clusters create concentrations of enterprises and supporting organizations that may generate advantages through shared infrastructure, skilled labour availability, specialized suppliers, knowledge spillovers and competitive pressures.

The present conceptual framework emphasizes four cluster characteristics: geographical proximity, supporting and related industries, labour availability and competitive intensity. Geographic proximity can reduce transaction and coordination costs while facilitating interactions among enterprises and institutions. Supporting industries provide specialized inputs and complementary services, while labour availability determines firms' access to the human resources necessary for production, innovation and expansion. Competitive intensity can motivate firms to improve efficiency, quality and innovation.

For North Karnataka, this cluster-based perspective is particularly relevant because MSMEs operate across industrial and commercial centres with distinct sectoral specializations. Examining the entrepreneurial ecosystem at the regional level can therefore reveal conditions that may be obscured by national-level analysis. Recent Indian evidence from regional entrepreneurship research similarly highlights the importance of locally embedded institutions and ecosystem actors for enterprise growth and sustainability.

2.5 Dimensions of the Entrepreneurial Ecosystem

The literature identifies several interconnected components that collectively determine entrepreneurial ecosystem quality. Drawing on established entrepreneurial ecosystem frameworks and adapting them to the MSME context, the present study conceptualizes the ecosystem through ten dimensions: Formal Institutions, Entrepreneurial Culture, Social Networks, Physical Infrastructure, Demand, Leadership, Talent, Finance, Knowledge, and Intermediate Business Support Services.

Formal Institutions include government policies, regulatory systems, legal frameworks and administrative mechanisms that influence the ease with which MSMEs can establish, operate and expand their businesses. Supportive institutions can reduce regulatory uncertainty, facilitate formalization and improve access to public support programmes.

Entrepreneurial Culture refers to societal attitudes toward entrepreneurship, innovation, risk-taking and entrepreneurial success. A supportive entrepreneurial culture can encourage individuals to pursue business opportunities, experiment with new approaches and view entrepreneurship as a legitimate and desirable career pathway.

Social Networks provide entrepreneurs with relational resources through interactions with peers, suppliers, customers, investors, mentors, associations and other stakeholders. Such networks facilitate knowledge exchange, opportunity identification, trust and resource mobilization.

Physical Infrastructure includes transportation, electricity, telecommunications, digital connectivity, industrial facilities and logistics. Infrastructure quality directly influences production efficiency, connectivity, market access and the ability of enterprises to adopt and utilize new technologies.

Demand represents the availability and sophistication of customers and markets. Strong market demand creates opportunities for enterprise growth, while sophisticated customers may encourage firms to improve quality and introduce innovative products and services.

Leadership reflects the presence of individuals and institutions capable of coordinating ecosystem stakeholders, developing shared objectives and mobilizing resources for regional entrepreneurial development.

Talent represents the availability of individuals possessing the managerial, technical, entrepreneurial and specialized skills required by enterprises. Access to appropriate talent is particularly important for MSMEs seeking to innovate, digitalize and expand their operations.

Finance includes access to bank credit, equity investment, government financing programmes and other financial resources. Financial constraints remain a major challenge for smaller enterprises and can limit their ability to invest in technology, innovation, infrastructure and expansion.

Knowledge represents access to technological, managerial and market-related information through universities, research institutions, industry associations, consultants and knowledge networks. Knowledge flows strengthen innovation capabilities and enable firms to respond more effectively to technological and market changes.

Finally, Intermediate Business Support Services include incubators, accelerators, professional consultants, training organizations, industry associations, technology centres and other intermediary organizations that connect entrepreneurs with specialized resources.

The effectiveness of an entrepreneurial ecosystem depends not simply on the presence of these dimensions but also on their accessibility, quality and interconnectedness. Weakness in one component may constrain the benefits generated by other ecosystem elements.

2.6 Entrepreneurial Ecosystems and MSME Performance

Firm performance constitutes an important outcome of entrepreneurial ecosystem development. A supportive ecosystem enables enterprises to obtain financial resources, skilled employees, infrastructure, knowledge, technology, customers and institutional support that may otherwise be difficult to develop internally.

From the RBV perspective, ecosystem resources complement internal organizational resources and strengthen firm capabilities. Financial accessibility can support capital investment and expansion; talent contributes to productivity and innovation; knowledge improves managerial and technological capability; infrastructure reduces operational constraints; and networks facilitate market and resource access. The cumulative effect of these resources can subsequently be reflected in stronger organizational outcomes.

The present framework conceptualizes MSME performance through indicators including sales, revenue, operational efficiency, growth, profitability, achievement of personal goals, and reputation or brand image. Rather than treating performance purely as a financial construct, this multidimensional approach recognizes that smaller enterprises may evaluate success through both economic and non-economic outcomes.

2.7 Entrepreneurial Ecosystems and MSME Sustainability

The relationship between entrepreneurial ecosystems and sustainability has received growing research attention. Theodoraki, Dana and Caputo (2022) argue that entrepreneurial ecosystem research needs to move beyond a narrow emphasis on venture creation and economic growth toward a holistic understanding that incorporates sustainability considerations. More recent research has further developed the concept of entrepreneurial ecosystems for sustainability by examining how ecosystem values, institutional conditions and stakeholder interactions can facilitate broader sustainability transitions.

Sustainable entrepreneurial ecosystems recognize that entrepreneurship is embedded within wider economic, social and environmental systems. Accordingly, ecosystem success cannot be evaluated exclusively in terms of the number of new ventures created or their financial growth. Attention must also be given to resilience, continuity, responsible resource utilization and the ability of enterprises and ecosystems to adapt to changing economic, technological and institutional conditions.

For MSMEs, sustainability is particularly important because smaller firms are often more vulnerable to financial constraints, market uncertainty, technological disruptions and resource limitations. Recent systematic research on SME engagement with the Sustainable Development Goals identifies resource constraints, weak governance and limited

SDG awareness as important barriers to sustainability transitions. At the same time, innovation and technology adoption, stakeholder engagement and cross-sector collaboration have emerged as important mechanisms through which SMEs can engage with sustainable development.

In the context of the present framework, MSME sustainability primarily refers to continuous growth, long-term survival, resilience, adaptability and the ability to maintain competitive performance over time. Firm performance is consequently treated as an important pathway through which entrepreneurial ecosystem quality contributes to sustainable enterprise development.

2.8 MSMEs and Sustainable Development Goals

The United Nations Sustainable Development Goals provide a broader framework for connecting enterprise development with economic, social and environmental priorities. MSMEs are particularly relevant because their collective activities influence employment, entrepreneurship, innovation, industrial development and regional economic activity. Research increasingly recognizes that SMEs have an important role in translating the global SDG agenda into enterprise- and regional-level activities.

However, the integration of SDGs into SMEs remains challenging. A recent systematic review of 95 SME-focused studies found that the literature remains fragmented in relation to implementation approaches, barriers and sustainability assessment. Innovation and technology adoption, stakeholder collaboration and engagement have emerged as prominent approaches, whereas resource constraints, institutional limitations and inadequate awareness continue to impede SDG integration.

For the present study, the most direct relationship between entrepreneurial ecosystems, MSME development and sustainable development occurs through SDG 8 and SDG 9.

2.9 Entrepreneurial Ecosystems and SDG 8: Decent Work and Economic Growth

SDG 8 – Decent Work and Economic Growth seeks to promote sustained, inclusive and sustainable economic growth, productive employment and decent work. This objective is directly relevant to entrepreneurial ecosystems because entrepreneurship and MSME development contribute to productive economic activity, employment creation, innovation and regional economic growth.

Target 8.2 emphasizes achieving higher levels of economic productivity through diversification, technological upgrading and innovation. Entrepreneurial ecosystem components such as Knowledge, Talent, Finance, Physical Infrastructure and Intermediate Business Support Services can support these processes by strengthening enterprise capabilities and facilitating technological and managerial upgrading.

Target 8.3 is even more directly connected to the proposed framework because it emphasizes policies that support productive activities, entrepreneurship, creativity and innovation and encourages the formalization and growth of micro-, small- and medium-sized enterprises, including through access to financial services. Formal Institutions, Entrepreneurial Culture, Finance, Leadership, Talent and business support organizations within the proposed ecosystem correspond closely with these enabling conditions.

Recent empirical research examining entrepreneurship as a pathway toward SDG 8 similarly identifies financial accessibility, human resource capability, networking, entrepreneurship education and incubation, market development and technological innovation as important leverage points. These findings reinforce the argument that entrepreneurship's contribution to SDG 8 depends not only on individual entrepreneurs but also on the quality of the surrounding ecosystem.

The proposed relationship can therefore be represented as:

Entrepreneurial Ecosystem → Stronger MSME Performance → Sustainable MSME Development → Contribution toward SDG 8

2.10 Entrepreneurial Ecosystems and SDG 9: Industry, Innovation and Infrastructure

SDG 9 – Industry, Innovation and Infrastructure seeks to build resilient infrastructure, promote inclusive and

sustainable industrialization and foster innovation. The goal has particularly strong conceptual relevance to MSMEs operating within industrial clusters.

Target 9.1 emphasizes the development of reliable, sustainable and resilient infrastructure supporting economic development. This aligns with the Physical Infrastructure dimension of the entrepreneurial ecosystem. Transport connectivity, industrial facilities, electricity, telecommunications and digital infrastructure can significantly influence MSME productivity and market accessibility.

Target 9.2 promotes inclusive and sustainable industrialization. MSME clusters can contribute to this objective by strengthening regional production networks, creating employment and supporting industrial diversification.

Target 9.3 explicitly emphasizes increasing small-scale industrial and other enterprises' access to financial services, including affordable credit, and their integration into value chains and markets. This target closely corresponds with the Finance, Demand, Social Networks and Intermediate Business Support Services dimensions of the proposed model.

Target 9.5, which emphasizes scientific research and technological capabilities, can be associated with the Knowledge and Talent dimensions. Universities, research organizations, technology centres, skilled employees and knowledge networks can facilitate innovation and technological upgrading among MSMEs.

Consequently, SDG 9 provides a strong sustainable-development foundation for understanding why physical infrastructure, financial access, industrial networks, knowledge and innovation capabilities are essential components of regional entrepreneurial ecosystems.

The relationship can be represented as:

Infrastructure + Finance + Knowledge + Talent + Industrial Networks → MSME Innovation and Industrial Capability
→ Sustainable MSME Development → Contribution toward SDG 9

2.11 Integrating SDG 8 and SDG 9 through the Entrepreneurial Ecosystem

Although SDG 8 and SDG 9 represent separate Sustainable Development Goals, their implementation in the MSME context is closely interconnected. Sustainable economic growth and productive entrepreneurship under SDG 8 depend partly on infrastructure, finance, technology, knowledge and industrial capabilities emphasized under SDG 9. Similarly, investment in infrastructure and innovation under SDG 9 produces broader development outcomes when enterprises can translate these resources into productive activity, employment, competitiveness and sustained growth.

The entrepreneurial ecosystem provides a conceptual mechanism connecting these two goals. Formal Institutions, Entrepreneurial Culture, Social Networks, Leadership and Finance create an enabling environment for entrepreneurship and MSME growth, thereby supporting the objectives of SDG 8. Physical Infrastructure, Knowledge, Talent, Finance, supporting industries and business-support organizations strengthen industrial and innovation capabilities associated with SDG 9.

Recent scholarship on sustainable entrepreneurial ecosystems reinforces the need for this broader perspective. Entrepreneurial ecosystems have traditionally been evaluated according to innovation, venture creation, job creation and economic growth, but contemporary research increasingly argues that ecosystems should be assessed according to their capacity to generate sustainable economic and societal outcomes. Sustainable development therefore requires an ecosystem that not only creates enterprises but also enables them to survive, adapt, innovate and contribute to long-term regional development.

Accordingly, the conceptual pathway proposed in the present study is:

Entrepreneurial Antecedents + MSME Cluster Characteristics → Entrepreneurial Ecosystem → Firm Performance → MSME Sustainability → Contribution toward SDG 8 and SDG 9

2.12 Research Gap

The review of literature reveals several gaps that justify the present conceptual study. First, despite substantial growth

in entrepreneurial ecosystem research, earlier reviews demonstrate that the field has been characterized by theoretical fragmentation and a disproportionate concentration on technology-oriented entrepreneurial ecosystems and Western economies. Comparatively less attention has been devoted to traditional and established MSMEs operating within regional industrial clusters in emerging economies.

Second, entrepreneurial ecosystem studies frequently examine individual ecosystem elements such as finance, infrastructure, human capital, networks or institutions independently. There remains scope for integrated frameworks explaining how multiple ecosystem dimensions interact with entrepreneurial antecedents and cluster characteristics to influence firm-level outcomes.

Third, the growing literature on sustainable entrepreneurial ecosystems calls for entrepreneurship research to move beyond venture creation and short-term economic performance toward sustainability, resilience and wider societal outcomes. Nevertheless, the mechanisms through which ecosystem resources translate into MSME performance and subsequently into long-term enterprise sustainability require further conceptual development.

Fourth, recent SME sustainability literature demonstrates increasing interest in SDG integration, but the relationship between specific entrepreneurial ecosystem dimensions and particular SDG targets remains insufficiently articulated. There is especially strong theoretical potential for integrating SDG 8, which emphasizes entrepreneurship, MSME development, productivity and economic growth, with SDG 9, which emphasizes infrastructure, industrialization, financial accessibility, technological capability and innovation.

Finally, there is limited research integrating entrepreneurial antecedents, regional cluster characteristics, entrepreneurial ecosystem dimensions, firm performance, MSME sustainability, and SDG alignment within a single conceptual framework in the North Karnataka context. The present study addresses this gap by proposing an integrated model in which entrepreneurial and cluster conditions influence access to ten entrepreneurial ecosystem dimensions, which subsequently strengthen MSME performance and long-term sustainability. The framework further positions these relationships within SDG 8 and SDG 9, thereby connecting regional entrepreneurial ecosystem development with the wider sustainable development agenda.

DISCUSSION

The conceptual framework developed in this study provides an integrated explanation of how entrepreneurial ecosystem conditions can contribute to the performance and long-term sustainability of MSMEs in North Karnataka. The framework moves beyond an entrepreneur-centric interpretation of enterprise development by recognizing that MSME outcomes emerge from interactions among individual entrepreneurial capabilities, regional cluster conditions and the wider entrepreneurial ecosystem. In doing so, the study positions MSME sustainability as the outcome of a systemic process in which entrepreneurs mobilize resources and opportunities available within their surrounding institutional and regional environment.

A central proposition of the framework is that the effectiveness of an entrepreneurial ecosystem depends on the interaction of Formal Institutions, Entrepreneurial Culture, Social Networks, Physical Infrastructure, Demand, Leadership, Talent, Finance, Knowledge, and Intermediate Business Support Services. These dimensions should not be viewed as isolated determinants of enterprise development. Rather, they represent interconnected conditions through which MSMEs gain access to financial resources, human capital, infrastructure, knowledge, markets, networks and institutional support. The framework therefore supports the entrepreneurial ecosystem perspective that productive entrepreneurship results from the configuration and interaction of multiple regional conditions rather than from the presence of any single resource.

The inclusion of entrepreneurial antecedents further strengthens this explanation. Educational qualification, industry experience, family support and social network support can influence entrepreneurs' ability to recognize opportunities and effectively utilize ecosystem resources. Entrepreneurs possessing stronger knowledge, experience and networks may be better positioned to navigate institutions, obtain finance, establish business relationships and respond to market opportunities. This indicates that the availability of ecosystem resources alone may not be sufficient; entrepreneurs must also possess the capabilities required to access and utilize those resources.

Similarly, the incorporation of cluster characteristics acknowledges the spatial and industrial embeddedness of MSMEs. Geographical proximity, supporting and related industries, labour availability and competitive intensity can influence the manner in which enterprises interact with ecosystem actors. Industrial clustering can facilitate access to

suppliers, customers, specialized labour and knowledge while simultaneously creating competitive pressures that encourage enterprises to improve productivity, quality and innovation. This relationship is particularly relevant in North Karnataka, where MSMEs operate within geographically concentrated manufacturing, engineering, foundry, automobile component, agro-processing, textile, food-processing and service activities.

From a theoretical perspective, the framework demonstrates the complementary nature of Entrepreneurial Ecosystem Theory, Cluster Theory, the Resource-Based View and Social Capital Theory. Entrepreneurial Ecosystem Theory explains the systemic interaction of regional actors and resources; Cluster Theory explains the importance of geographical proximity and industrial interdependencies; the Resource-Based View explains how ecosystem resources can complement the internal resources and capabilities of MSMEs; and Social Capital Theory explains how relationships and networks facilitate access to knowledge, information and other resources. Their integration provides a broader explanation of sustainable MSME development than would be possible through any single theoretical perspective.

An important contribution of the proposed framework is the positioning of firm performance as a pathway between entrepreneurial ecosystem conditions and MSME sustainability. Access to finance, talent, infrastructure, markets, knowledge and business support can strengthen sales, revenue, efficiency, profitability, growth and reputation. Stronger organizational performance can subsequently enhance an enterprise's capacity to survive, adapt and maintain competitive activity over time. Thus, sustainability in the proposed model is not treated as an isolated outcome but as the longer-term consequence of the firm's ability to transform ecosystem resources into sustained organizational performance.

Entrepreneurial Ecosystem and SDG 8

The framework has particularly strong conceptual relevance to SDG 8: Decent Work and Economic Growth. The entrepreneurial ecosystem can create conditions conducive to productive entrepreneurship and sustainable MSME development. Formal Institutions can establish supportive regulatory and policy environments; Finance can facilitate enterprise investment and expansion; Talent and Knowledge can strengthen managerial and technological capabilities; Entrepreneurial Culture can encourage entrepreneurial activity and innovation; and Intermediate Business Support Services can assist MSMEs in accessing specialized resources.

These relationships are especially consistent with the emphasis of SDG Target 8.2 on productivity, diversification, technological upgrading and innovation, and Target 8.3 on entrepreneurship and the growth of micro-, small- and medium-sized enterprises, including through access to financial services. The proposed model therefore suggests that strengthening entrepreneurial ecosystem conditions can provide a regional mechanism through which MSMEs may contribute to the broader objectives associated with sustainable economic growth and productive enterprise development.

The relationship should, however, be interpreted as conceptual alignment rather than direct SDG achievement. The present model does not directly measure official indicators of decent employment or SDG performance. Instead, it identifies enterprise-level and ecosystem-level mechanisms that are theoretically relevant to SDG 8.

Entrepreneurial Ecosystem and SDG 9

The framework also demonstrates substantial alignment with SDG 9: Industry, Innovation and Infrastructure. Physical Infrastructure directly reflects the importance of transportation, energy, telecommunications, digital connectivity and industrial facilities for enterprise development. Finance influences MSMEs' capacity to invest in technology, machinery and expansion, while Knowledge and Talent strengthen their ability to develop and absorb technological and managerial capabilities. Demand and supporting industries facilitate market integration and value-chain participation.

These ecosystem conditions are particularly relevant to SDG Targets 9.1, 9.2, 9.3 and 9.5, which respectively emphasize resilient infrastructure, sustainable industrialization, financial and market access for small-scale enterprises, and technological and innovation capabilities. Industrial clusters can reinforce these relationships by connecting MSMEs with suppliers, skilled employees, supporting industries, knowledge organizations and markets.

The integration of SDG 8 and SDG 9 is particularly important because sustainable MSME development requires both an enabling entrepreneurial environment and a strong industrial and innovation infrastructure. Economic growth and

enterprise development under SDG 8 depend partly on infrastructure, finance, technology and innovation associated with SDG 9. Conversely, investments in infrastructure and innovation generate sustainable regional development when enterprises can convert these resources into productive activity, growth and long-term competitiveness.

Accordingly, the central conceptual pathway emerging from the study can be represented as:

Entrepreneurial Antecedents + Cluster Characteristics → Entrepreneurial Ecosystem → Firm Performance → MSME Sustainability → Potential Contribution toward SDG 8 and SDG 9

SCOPE FOR FUTURE RESEARCH

The conceptual nature of the present study provides several opportunities for future empirical research. First, the proposed relationships among entrepreneurial antecedents, cluster characteristics, entrepreneurial ecosystem dimensions, firm performance and MSME sustainability should be empirically validated using data collected from MSMEs operating in North Karnataka. Future studies can develop and validate measurement scales for the constructs and employ multivariate techniques such as Structural Equation Modelling (SEM) to simultaneously examine the direct and indirect relationships proposed in the framework.

Second, future research can examine the relative importance of the ten entrepreneurial ecosystem dimensions. Formal Institutions, Entrepreneurial Culture, Social Networks, Physical Infrastructure, Demand, Leadership, Talent, Finance, Knowledge and Intermediate Business Support Services may not contribute equally to MSME performance and sustainability. Identifying the strongest ecosystem dimensions can help policymakers and regional development agencies prioritize interventions and allocate resources more effectively.

Third, future studies can examine firm performance as a mediating mechanism between entrepreneurial ecosystem quality and MSME sustainability. This would provide empirical evidence regarding whether ecosystem conditions directly influence sustainability or whether their effects primarily occur by strengthening financial, operational and market performance.

Fourth, comparative research can investigate differences across micro, small and medium enterprises, as their dependence on external ecosystem resources may vary substantially. Sector-wise comparisons among manufacturing, engineering, foundry, automobile components, agro-processing, textiles, food processing and service enterprises may also reveal differences in ecosystem requirements.

Fifth, the geographical scope can be expanded beyond North Karnataka. Comparative studies involving Bengaluru, other regions of Karnataka, other Indian states or comparable emerging-economy regions could establish whether the proposed relationships are context-specific or generalizable across entrepreneurial ecosystems. Longitudinal research could additionally examine how entrepreneurial ecosystems and MSME sustainability evolve over time and in response to technological, economic and institutional changes.

Sixth, future studies should strengthen the SDG dimension through explicit empirical measurement. The present framework establishes conceptual alignment with SDG 8 and SDG 9 but does not measure official SDG indicators. Subsequent studies can incorporate enterprise-level measures associated with employment generation, employment quality, labour productivity, innovation expenditure, technology adoption, access to formal finance, infrastructure utilization, market and value-chain integration, and other indicators that can be appropriately linked to relevant SDG targets. This would enable researchers to move from conceptual SDG alignment toward evidence-based assessment of MSME contributions to sustainable development.

Seventh, the sustainability construct can be expanded beyond the present emphasis on continuous growth, long-term survival, resilience and adaptability. Future research may incorporate clearly defined economic, social and environmental sustainability dimensions. This extension could permit investigation of responsible resource utilization, energy efficiency, circular-economy practices, employee well-being, social inclusion and environmentally sustainable production. Such an extension would also provide a stronger basis for examining additional SDGs where theoretically and empirically justified.

Eighth, future studies can investigate the role of digital transformation and emerging technologies in strengthening entrepreneurial ecosystems. Digital platforms, artificial intelligence, cloud technologies, digital finance, e-commerce and Industry 4.0 technologies may alter how MSMEs access finance, markets, knowledge, talent and business-support

services. Digital ecosystem capability could therefore be examined as an antecedent, moderator or complementary capability within the proposed framework.

Finally, future research can examine the role of multi-stakeholder collaboration involving government institutions, universities, financial institutions, industry associations, research organizations, incubators, suppliers and larger enterprises. Such research could extend the present SDG 8 and SDG 9 positioning toward SDG 17: Partnerships for the Goals, particularly where empirical measures of knowledge sharing, resource mobilization and public-private or institutional collaboration are incorporated.

These research directions can transform the proposed conceptual framework into an empirically validated model and contribute to a more comprehensive understanding of how regional entrepreneurial ecosystems influence MSME performance, sustainability and sustainable development outcomes.

CONCLUSION

This study develops an integrated conceptual framework for understanding how entrepreneurial ecosystems can support the performance and long-term sustainability of MSMEs in North Karnataka while establishing their conceptual alignment with SDG 8: Decent Work and Economic Growth and SDG 9: Industry, Innovation and Infrastructure. The framework recognizes that sustainable MSME development is not determined solely by the characteristics or resources of individual enterprises but by the interaction of entrepreneurs with the institutional, financial, social, infrastructural, knowledge and market conditions surrounding them.

The proposed model integrates entrepreneurial antecedents, cluster characteristics, ten entrepreneurial ecosystem dimensions, firm performance and MSME sustainability. Educational qualification, industry experience, family support and social network support represent the entrepreneurial foundations that can influence engagement with the ecosystem. Geographical proximity, supporting and related industries, labour availability and competitive intensity provide the cluster context within which these interactions occur. At the ecosystem level, Formal Institutions, Entrepreneurial Culture, Social Networks, Physical Infrastructure, Demand, Leadership, Talent, Finance, Knowledge and Intermediate Business Support Services collectively provide the resources and enabling conditions necessary for enterprise development.

The framework further proposes that an effective entrepreneurial ecosystem enhances firm performance through improved sales, revenue, efficiency, profitability, growth and reputation, which subsequently strengthens MSME sustainability through continuous growth, resilience, adaptability and long-term survival. Firm performance therefore functions as an important mechanism through which ecosystem resources can be translated into sustainable enterprise outcomes.

The study's SDG perspective extends the significance of this relationship. The entrepreneurial ecosystem aligns with SDG 8 by supporting productive entrepreneurship, MSME growth, financial accessibility, productivity and innovation. It aligns with SDG 9 through infrastructure, industrial development, financial and market access, knowledge, technological capability and innovation. The interaction between these goals is particularly relevant for regional MSME development because sustained economic activity requires both supportive entrepreneurial conditions and strong industrial and innovation capabilities.

The study consequently contributes to the literature by integrating Entrepreneurial Ecosystem Theory, Cluster Theory, the Resource-Based View and Social Capital Theory within a single conceptual framework and applying this perspective to MSMEs operating in the industrial clusters of North Karnataka. It also establishes a conceptual connection between regional entrepreneurial ecosystem development and the Sustainable Development Goals, thereby broadening the discussion of MSME sustainability from firm survival toward sustainable regional economic and industrial development.

From a policy perspective, the framework suggests that strengthening MSME sustainability requires coordinated interventions rather than isolated support programmes. Policymakers, financial institutions, universities, research organizations, industry associations and business-support agencies need to strengthen financial accessibility, physical and digital infrastructure, entrepreneurial and technical skills, knowledge networks, institutional support, market linkages and stakeholder collaboration. Such ecosystem-oriented interventions can improve the capacity of MSMEs to convert regional resources into stronger performance and long-term sustainability.

However, the SDG relationships proposed in this study remain conceptual rather than empirical. The framework identifies mechanisms through which entrepreneurial ecosystems and sustainable MSME development may support the objectives of SDG 8 and SDG 9; it does not establish that the enterprises examined have achieved official SDG targets or indicators. This distinction provides an important foundation for subsequent empirical investigation.

Overall, the study concludes that the entrepreneurial ecosystem can serve as an important regional mechanism connecting entrepreneurial capabilities and cluster conditions with firm performance, MSME sustainability and the broader sustainable development agenda. Strengthening the entrepreneurial ecosystem of North Karnataka may therefore provide a pathway toward more resilient, competitive and sustainable MSMEs while supporting the regional localization of SDG 8 and SDG 9

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