

Cluster-Driven Entrepreneurial Ecosystems and their Influence on MSME Performance: Insights from Karnataka

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Abstract

Purpose / Motivation

Existing scholarship strongly supports the positive relationship between entrepreneurial ecosystems (EE) and the performance of Micro, Small, and Medium Enterprises (MSMEs) in developed economies. However, this association has received limited empirical attention in emerging markets. Prior research largely investigates the EE–MSME performance linkage under relatively stable economic conditions, often neglecting the influence of environmental uncertainties and contextual dynamics. This study examines the impact of EE on MSME performance within an emerging economy context by focusing on the auto-component cluster in Hubballi-Dharwad and the foundry cluster in Belgaum. These clusters were chosen due to their prominence, maturity, and strategic importance within Karnataka's industrial landscape. They represent dense concentrations of MSMEs and significantly contribute to regional manufacturing output, employment generation, and supply chain integration. To deepen the understanding of the EE–MSME performance relationship, this study introduces cluster dynamics (CD) as a mediating construct, offering a more nuanced explanation of how ecosystem factors translate into firm-level performance outcomes within industrial clusters.

Literature Review & Research Gaps:

The entrepreneurial ecosystem plays a pivotal role in shaping SME performance by promoting innovation, facilitating access to financial and human resources, and strengthening competitive capabilities. Existing research also emphasizes that industrial clusters amplify these advantages through mechanisms such as shared infrastructure, knowledge spillovers, inter-firm collaboration, and network synergies. Despite these insights, the literature offers limited exploration of the mediating function of industrial clusters in emerging economies, where institutional deficiencies and resource limitations pose distinctive challenges. Moreover, there is a scarcity of studies examining how specific elements of cluster dynamics—such as geographic proximity, presence of supporting industries, and collaborative networks—mediate the relationship between EE and MSME performance. This study addresses these gaps by empirically investigating the interaction between entrepreneurial ecosystems, cluster dynamics, and MSME performance within the context of an emerging economy.

Design / Methodology

The research is based on primary data collected from 64 SMEs operating in the Hubballi-Dharwad Auto Component Cluster and the Belgaum Foundry Cluster. Data were gathered directly from SME owners and managers to ensure accuracy and contextual relevance. The study employs Partial Least Squares–Structural Equation Modelling (PLS-SEM) to analyze the data, allowing for the simultaneous assessment of complex relationships among entrepreneurial ecosystems, cluster dynamics, and MSME performance.

Analysis & Findings:

The findings reveal that the entrepreneurial ecosystem exerts a significant positive influence on both cluster dynamics and MSME performance. Additionally, cluster dynamics partially mediate the relationship between EE and MSME performance. These results indicate that the entrepreneurial ecosystem within the Hubballi-Dharwad and Belgaum clusters enhances MSME performance not only directly but also indirectly by strengthening cluster-level interactions, resource sharing, and collaborative mechanisms.

Conclusions Including Managerial / Policy Implications:

This study offers a distinctive contribution by highlighting the strategic role of industrial clusters in enhancing MSME performance in emerging markets. By concentrating on specific clusters in Karnataka, the research extends existing entrepreneurial ecosystem literature within a developing economy context.

The findings provide actionable implications for policymakers and cluster development agencies in emerging economies. Strengthening institutional frameworks, fostering collaborative cultures, enhancing supporting industries, and building adaptive cluster mechanisms can significantly improve MSME performance—particularly in uncertain and dynamic environments.

Overall, the study underscores the importance of resilient, well-supported clusters as a catalyst for sustainable MSME growth in emerging economies.

Keywords: Entrepreneurial Ecosystem, MSMEs, Industrial Clusters, Performance. Hubli-Dharwad.

Introduction:

Micro, Small, and Medium Enterprises (MSMEs) constitute the backbone of most emerging economies, contributing significantly to employment generation, industrial output, innovation, and regional development. In India, MSMEs account for a substantial share of manufacturing output and exports while serving as engines of inclusive growth across both urban and semi-urban regions (Government of India, 2023). Within the broader discourse of economic development, the performance and sustainability of MSMEs have increasingly been linked to the quality of their surrounding entrepreneurial ecosystem (EE). The concept of the entrepreneurial ecosystem has gained prominence over the past decade as scholars and policymakers recognize that entrepreneurship does not occur in isolation but within interconnected systems of institutions, actors, networks, and cultural norms (Isenberg, 2010; Stam, 2015).

An entrepreneurial ecosystem refers to a set of interdependent actors and factors—such as financial institutions, educational establishments, government agencies, markets, culture, infrastructure, and support organizations—that collectively influence entrepreneurial activity and firm performance within a particular territory (Stam & Van de Ven, 2021). Rather than focusing solely on individual firm capabilities, the ecosystem perspective emphasizes systemic conditions that enable or constrain enterprise growth. This shift from firm-centric to system-centric analysis reflects a broader understanding that entrepreneurship is embedded in spatial, institutional, and social contexts.

While the relationship between entrepreneurial ecosystems and firm performance has been extensively explored in developed economies, the empirical evidence from emerging economies remains comparatively limited (Spigel & Harrison, 2018). Developed countries often possess mature institutions, stable regulatory environments, well-developed financial systems, and strong innovation infrastructures, which create favorable conditions for entrepreneurial activity. In contrast, emerging economies face institutional voids, resource constraints, infrastructural gaps, and regulatory uncertainties that may alter the functioning and effectiveness of entrepreneurial ecosystems (Khanna & Palepu, 2010). Consequently, findings from developed contexts cannot be directly generalized to emerging markets without contextual adaptation.

India, as one of the world's fastest-growing emerging economies, provides a compelling setting to examine ecosystem–performance relationships. Over the past two decades, policy initiatives such as “Make in India,” “Startup India,” and cluster development programs have sought to strengthen entrepreneurial ecosystems and enhance MSME competitiveness (Ministry of MSME, 2022). Industrial clusters, in particular, have been promoted as strategic mechanisms to stimulate localized growth, improve productivity, and foster innovation. The cluster-based development approach draws upon the foundational work of Porter (1998), who argued that geographic concentrations of interconnected firms and supporting institutions generate competitive advantages through knowledge spillovers, shared resources, and collective efficiency.

Industrial clusters serve as localized ecosystems where firms benefit from geographic proximity, supplier networks, skilled labor pools, and institutional support structures. In the Indian context, clusters such as the auto-component hub in Hubballi-Dharwad and the foundry cluster in Belgaum exemplify dense agglomerations of MSMEs that contribute significantly to regional manufacturing output and employment. These clusters operate within broader entrepreneurial ecosystems shaped by state policies, financial institutions, training centers, trade

associations, and technological support agencies. However, the mechanisms through which ecosystem elements translate into improved MSME performance within clusters remain underexplored.

The extant literature suggests that entrepreneurial ecosystems influence firm performance by facilitating access to financial capital, human capital, markets, and knowledge networks (Acs et al., 2017). Access to venture capital and credit institutions reduces financial constraints, while universities and skill development centers enhance human resource quality. Business incubators, trade associations, and technology parks provide mentoring, innovation support, and networking opportunities. Cultural norms that value entrepreneurship further reinforce risk-taking and innovation. Collectively, these ecosystem components create an enabling environment that enhances firm-level productivity and growth.

However, the pathway from ecosystem support to firm performance is rarely linear. It is often mediated by intermediate mechanisms such as inter-firm collaboration, trust-based networks, collective learning, and shared infrastructure—elements that are typically embedded within industrial clusters. Cluster dynamics (CD) encompass these relational and structural interactions among firms, including geographic proximity, supporting industries, collaborative networks, and institutional linkages. These dynamics foster knowledge spillovers, reduce transaction costs, and facilitate joint problem-solving (Breschi & Malerba, 2005). In emerging economies, where formal institutional support may be weaker, cluster-based interactions often compensate by providing informal mechanisms of coordination and resource sharing.

Despite growing recognition of the interplay between ecosystems and clusters, empirical research integrating these constructs remains limited, particularly in emerging markets. Most studies treat industrial clusters either as independent growth drivers or as contextual backdrops rather than as mediating mechanisms that channel ecosystem benefits to firms (Delgado et al., 2014). Moreover, prior research often examines ecosystem–performance relationships under relatively stable economic conditions, overlooking environmental uncertainties such as supply chain disruptions, policy volatility, and market fluctuations—factors that are particularly pronounced in emerging economies.

The need to examine mediating mechanisms is grounded in systems theory and resource-based perspectives. From a systems viewpoint, ecosystem elements influence firm outcomes indirectly through interconnected networks and relational structures. From a resource-based perspective, competitive advantage arises not merely from resource availability but from the firm’s ability to access, combine, and leverage resources effectively (Barney, 1991). Cluster dynamics facilitate such leveraging by enabling firms to share knowledge, pool resources, and collaborate on innovation initiatives. Therefore, understanding how cluster dynamics mediate the EE–MSME performance relationship is crucial for developing a more comprehensive theoretical model.

In Karnataka, the Hubballi-Dharwad auto-component cluster and the Belgaum foundry cluster represent two mature industrial ecosystems characterized by strong inter-firm linkages, supplier networks, and institutional support. These clusters have evolved over decades, supported by state-level industrial policies, technical training institutes, and industry associations. They provide an ideal empirical setting to investigate how entrepreneurial ecosystems operate within cluster-based industrial structures. The auto-component cluster benefits from proximity to automotive markets and ancillary industries, while the foundry cluster in Belgaum has developed specialized expertise in casting and metallurgical processes. Both clusters demonstrate dense MSME participation and significant regional economic contributions.

Yet, these clusters also face challenges typical of emerging economies, including fluctuating demand, technological upgrading pressures, environmental compliance requirements, and access-to-credit constraints. The resilience and adaptability of MSMEs within such contexts depend not only on internal capabilities but also on the strength of the surrounding ecosystem and cluster dynamics. This underscores the importance of examining ecosystem influences beyond direct financial or policy support and exploring the relational mechanisms that drive collective efficiency.

Furthermore, recent global disruptions—such as supply chain interruptions and economic volatility—have heightened the need for resilient and adaptive entrepreneurial ecosystems. In uncertain environments, collaborative networks and localized cluster support systems can buffer firms against

external shocks by enabling resource pooling and rapid knowledge exchange. Hence, studying cluster-driven entrepreneurial ecosystems contributes to understanding how MSMEs sustain performance under dynamic conditions.

This study builds upon and extends prior scholarship by proposing that cluster dynamics partially mediate the relationship between entrepreneurial ecosystems and MSME performance in emerging economies. By integrating ecosystem theory with cluster theory, the research advances a more nuanced framework that captures both systemic and relational dimensions of enterprise development. Empirically grounded in Karnataka's industrial clusters, the study contributes context-specific evidence to a literature predominantly dominated by Western settings.

In doing so, the research addresses three interrelated gaps. First, it enriches entrepreneurial ecosystem literature by providing empirical evidence from an emerging economy context. Second, it introduces cluster dynamics as a mediating construct, thereby clarifying the mechanisms through which ecosystem factors influence firm-level outcomes. Third, it offers policy-relevant insights into how cluster-based interventions can strengthen MSME competitiveness and regional industrial resilience.

By situating MSME performance within a cluster-driven entrepreneurial ecosystem framework, this study underscores the interdependence between institutional support, geographic agglomeration, and firm-level competitiveness. The integration of ecosystem and cluster perspectives provides a comprehensive lens to analyze sustainable MSME growth in emerging economies such as India.

Literature Review

1. Entrepreneurial Ecosystems and MSME Performance

The concept of the entrepreneurial ecosystem (EE) has emerged as a dominant framework for understanding how contextual and systemic factors shape entrepreneurial activity and firm performance. Rather than viewing entrepreneurship as an isolated outcome of individual traits, the ecosystem perspective emphasizes the interconnected roles of institutions, markets, networks, finance, human capital, culture, and policy support in fostering enterprise development (Isenberg, 2010; Stam, 2015). Entrepreneurial ecosystems comprise both formal structures—such as government policies, financial institutions, universities, and infrastructure—and informal elements, including social norms, trust networks, and entrepreneurial culture.

Empirical research suggests that strong entrepreneurial ecosystems positively influence SME performance by improving access to capital, enabling knowledge exchange, fostering innovation, and reducing transaction costs (Acs et al., 2017). Financial institutions provide critical funding support, while universities and technical institutes enhance the quality of human capital. Incubators, accelerators, and trade associations offer mentoring and networking opportunities. Furthermore, a supportive regulatory environment lowers entry barriers and encourages firm formalization. Collectively, these ecosystem elements enhance productivity, competitiveness, and growth prospects of MSMEs.

However, much of the existing empirical evidence originates from developed economies characterized by mature institutions and stable regulatory frameworks. In these contexts, ecosystem components are relatively well-coordinated, and institutional voids are minimal. In contrast, emerging economies such as India often experience regulatory uncertainty, infrastructural deficiencies, and financial constraints. These contextual differences may significantly alter the effectiveness and functioning of entrepreneurial ecosystems. Thus, there is a need to contextualize ecosystem theory within emerging market settings to understand how systemic factors influence MSME performance under institutional and environmental uncertainties.

2. Industrial Clusters and Competitive Advantage

Parallel to the entrepreneurial ecosystem discourse is the literature on industrial clusters. Cluster theory, popularized by Porter (1998), posits that geographic concentrations of interconnected firms and supporting institutions create competitive advantages through knowledge spillovers, shared resources, supplier specialization, and labor market pooling. Firms located within clusters benefit from proximity to suppliers, customers, research institutions, and skilled labor, which collectively enhance efficiency and innovation capacity.

Subsequent studies have reinforced the importance of clusters in driving productivity and regional economic development (Delgado, Porter, & Stern, 2014). Clusters foster collaboration among firms while simultaneously

stimulating healthy competition, a phenomenon often described as “coopetition.” The dense networks within clusters reduce information asymmetry, facilitate rapid knowledge diffusion, and support collective problem-solving. Shared infrastructure, training institutions, and industry associations further enhance cluster-level efficiency.

In emerging economies, clusters often serve as compensatory mechanisms for institutional weaknesses. Where formal institutions are underdeveloped, cluster-based networks provide informal governance structures rooted in trust and social capital. This is particularly relevant in the Indian MSME context, where industrial clusters such as those in Hubballi-Dharwad (auto-components) and Belgaum (foundries) have evolved over decades through localized collaboration, technical specialization, and policy support.

Nevertheless, while cluster theory explains localized competitive advantages, it often treats clusters as independent growth drivers rather than as components embedded within broader entrepreneurial ecosystems. The interplay between ecosystem-level factors and cluster-level dynamics remains insufficiently examined, particularly in emerging market contexts.

3. Linking Entrepreneurial Ecosystems and Cluster Dynamics

Recent scholarship suggests that entrepreneurial ecosystems and clusters are interrelated constructs rather than isolated phenomena. Entrepreneurial ecosystems provide systemic resources—financial capital, policy support, institutional backing—while clusters represent spatial and relational structures through which these resources are mobilized and leveraged. In this sense, cluster dynamics may act as transmission mechanisms translating ecosystem support into firm-level performance outcomes.

Cluster dynamics include elements such as geographic proximity, inter-firm collaboration, presence of supporting industries, knowledge spillovers, supplier linkages, and institutional connectivity. These dynamics enhance firms’ ability to access shared resources and coordinate activities effectively. For instance, government policies supporting MSMEs may yield stronger performance outcomes in clusters where firms are well-networked and capable of collective action. Similarly, access to credit or technological support may produce greater impact when firms operate within dense supplier and customer networks.

Despite this conceptual linkage, empirical studies rarely model cluster dynamics as a mediating variable between entrepreneurial ecosystems and MSME performance. Most research either examines ecosystem effects directly on performance or evaluates cluster impacts independently. This fragmented approach overlooks the possibility that ecosystem elements exert indirect effects through relational and structural mechanisms embedded within clusters.

4. MSME Performance in Emerging Economies

MSME performance is multidimensional, encompassing financial performance (sales growth, profitability), operational efficiency (productivity, cost reduction), innovation output, market expansion, and employment generation. In emerging economies, MSMEs face unique constraints such as limited access to finance, technological obsolescence, regulatory burdens, and market volatility. Their performance is therefore closely tied to external support systems.

Entrepreneurial ecosystems can mitigate these constraints by providing financial inclusion, skill development, and institutional legitimacy. However, the extent to which ecosystem resources are effectively utilized depends on the quality of inter-firm linkages and collaborative networks within clusters. Thus, cluster dynamics may strengthen or weaken the ecosystem–performance relationship.

Furthermore, environmental uncertainty—stemming from global supply chain disruptions, fluctuating demand, or policy shifts—heightens the need for adaptive and resilient ecosystems. In uncertain environments, collaborative cluster mechanisms enable firms to pool resources, share risks, and respond collectively to external shocks. This reinforces the importance of examining ecosystem and cluster interactions within dynamic emerging market contexts.

5. Research Gaps

Based on the foregoing review, three major research gaps are identified.

First, a **contextual gap** exists in the entrepreneurial ecosystem literature. The majority of empirical studies have

been conducted in developed economies characterized by mature institutions, stable regulatory frameworks, and well-established financial systems. As a result, there is limited empirical evidence from emerging economies such as India, where institutional environments, resource availability, and market conditions differ significantly. This limits the generalizability of existing findings to developing country contexts.

Second, a **mediating mechanism gap** is evident. Although prior research acknowledges the importance of both entrepreneurial ecosystems and industrial clusters in enhancing MSME performance, it does not sufficiently examine cluster dynamics as a mediating construct. The indirect pathways through which ecosystem-level support—such as policy, finance, and institutional infrastructure—translates into firm-level performance outcomes remain underexplored.

Third, a **dynamic environment gap** persists in the literature. Few studies incorporate environmental uncertainty, institutional volatility, and contextual dynamics while analyzing the ecosystem–performance relationship. Emerging economies, in particular, require theoretical and empirical frameworks that account for such instability and resource constraints.

This study addresses these gaps by empirically examining the mediating role of cluster dynamics in the relationship between entrepreneurial ecosystems and MSME performance within Karnataka’s industrial clusters.

Research Design

This study adopts a **quantitative, cross-sectional research design** to examine the influence of Entrepreneurial Ecosystems (EE) on MSME performance, with Cluster Dynamics (CD) as a mediating variable. The research is explanatory in nature, as it seeks to test theoretically grounded relationships among constructs and establish causal linkages within the context of industrial clusters in an emerging economy.

Research Context

The empirical investigation focuses on two prominent industrial clusters in Karnataka:

1. **Hubballi–Dharwad Auto-Component Cluster**
2. **Belgaum Foundry Cluster**

These clusters were selected due to their maturity, high concentration of MSMEs, strategic importance in regional manufacturing, and strong integration into national supply chains. Both clusters represent well-established industrial ecosystems where inter-firm linkages, supplier networks, and institutional support systems are actively present.

Research Approach

The study follows a **positivist paradigm**, emphasizing objective measurement and statistical validation of hypothesized relationships. A structured questionnaire was used to collect primary data from MSME owners and senior managers to ensure informed and reliable responses regarding ecosystem support, cluster interactions, and firm performance outcomes.

Sampling Design

- **Population:** MSMEs operating within the selected industrial clusters.
- **Sampling Technique:** Purposive sampling, targeting owner-managers and decision-makers.
- **Sample Size:** 64 SMEs from the Hubballi–Dharwad Auto-Component Cluster and the Belgaum Foundry Cluster.

The sample size is appropriate for Partial Least Squares–Structural Equation Modelling (PLS-SEM), which is suitable for exploratory and predictive models with relatively small samples.

The study includes three primary constructs:

1. Entrepreneurial Ecosystem (Independent Variable)

Measured through dimensions such as:

- Institutional support
- Access to finance
- Human capital availability
- Infrastructure support
- Government policies
- Network and market access

2. Cluster Dynamics (Mediating Variable)

Measured through:

- Geographic proximity
- Inter-firm collaboration
- Knowledge spillovers
- Presence of supporting industries
- Network intensity
- Resource sharing

3. MSME Performance (Dependent Variable)

Measured using subjective performance indicators such as:

- Sales growth
- Profitability
- Market expansion
- Innovation performance
- Competitive positioning

All items were measured using a Likert-type scale to capture respondent perceptions.

Data Analysis Technique

The data were analyzed using Partial Least Squares–Structural Equation Modelling (PLS-SEM). This analytical technique was selected because it is particularly suitable for predictive and exploratory research, especially in studies that aim to examine complex relationships among multiple constructs. PLS-SEM is also appropriate for research with relatively small sample sizes and does not require strict assumptions of normal data distribution. Moreover, it enables the simultaneous assessment of both the measurement model and the structural model, thereby ensuring comprehensive evaluation of construct reliability, validity, and hypothesized relationships.

Importantly, PLS-SEM supports mediation analysis, allowing the examination of indirect effects among variables.

The analysis was conducted in three stages. First, the measurement model was assessed to evaluate reliability and validity, including internal consistency and convergent and discriminant validity. Second, the structural model was examined to test the hypothesized relationships between entrepreneurial ecosystems, cluster dynamics, and MSME performance. Finally, mediation analysis was performed to determine the indirect effect of entrepreneurial ecosystems on MSME performance through cluster dynamics.

H1: Entrepreneurial Ecosystem and MSME Performance

The entrepreneurial ecosystem perspective argues that firm performance is not solely determined by internal capabilities but is significantly influenced by the surrounding institutional and relational environment (Stam, 2015). Ecosystem elements such as access to finance, supportive government policies, skilled human capital, infrastructure, and market linkages create favorable conditions for enterprise growth. Empirical studies indicate that strong ecosystems enhance innovation, productivity, and competitiveness among SMEs (Acs et al., 2017). From a theoretical standpoint, Entrepreneurial Ecosystem Theory suggests that systemic coordination among institutions and networks strengthens entrepreneurial outcomes. Additionally, the Resource-Based View (RBV) posits that access to valuable and rare external resources—facilitated by ecosystem support—can enhance firm-level competitive advantage (Barney, 1991). Therefore, a well-developed ecosystem is expected to directly improve MSME performance in emerging economies.

H1: Entrepreneurial Ecosystem has a significant positive impact on MSME performance.

H2: Entrepreneurial Ecosystem and Cluster Dynamics

Entrepreneurial ecosystems operate at a systemic level by shaping institutional frameworks, financial access, infrastructure development, and network facilitation. These elements influence the intensity and quality of interactions within industrial clusters. Supportive policies, business associations, and training institutions encourage inter-firm collaboration, knowledge sharing, and network development.

According to Cluster Theory (Porter, 1998), geographic agglomeration enhances competitiveness through relational linkages and shared infrastructure. However, the strength of these linkages often depends on ecosystem-level support. Ecosystem institutions act as enablers that strengthen cluster connectivity, trust, and collective efficiency. Thus, entrepreneurial ecosystems are expected to positively influence cluster dynamics.

H2: Entrepreneurial Ecosystem has a significant positive impact on Cluster Dynamics.

H3: Cluster Dynamics and MSME Performance

Cluster dynamics refer to the relational and structural interactions among firms within geographically proximate industrial clusters, including collaboration, knowledge spillovers, supplier linkages, and shared resource utilization. Prior research suggests that firms located in strong clusters benefit from reduced transaction costs, faster information flows, and collective problem-solving mechanisms (Delgado et al., 2014).

The theoretical foundation for this relationship lies primarily in Cluster Theory, which emphasizes competitive advantages arising from proximity and network externalities. Furthermore, the Resource-Based View supports the idea that collective access to shared resources enhances firm capabilities and performance outcomes. In emerging economies, where formal institutional mechanisms may be weaker, cluster-based collaboration becomes even more critical for sustaining MSME growth.

H3: Cluster Dynamics has a significant positive impact on MSME performance.

H4: Mediating Role of Cluster Dynamics

While entrepreneurial ecosystems provide systemic support, the translation of ecosystem resources into firm-level performance may not occur directly. Instead, ecosystem elements may strengthen inter-firm networks, supplier relationships, and collaborative mechanisms within clusters, which in turn enhance MSME performance.

From a systems theory perspective, ecosystem components influence outcomes through interconnected relational structures. Cluster dynamics function as meso-level mechanisms that channel macro-level ecosystem resources into micro-level firm outcomes. The Resource-Based View further explains that firms leverage shared cluster resources to build competitive advantage. Therefore, cluster dynamics are expected to mediate the relationship between entrepreneurial ecosystems and MSME performance.

H4: Cluster Dynamics mediates the relationship between Entrepreneurial Ecosystem and MSME performance.

Demographic Profile:

Variable	Category	Frequency	Percentage (%)
Cluster	Hubballi–Dharwad Auto Component (HDAC)	32	50.0
	Belgaum Foundry Cluster (BFC)	32	50.0
Type of Firm	Micro	21	32.8
	Small	34	53.1
	Medium	9	14.1
Ownership Pattern	Self-Established	61	95.3
	Purchased	3	4.7
Legal Form (Current)	Sole Proprietorship	45	70.3
	Partnership	19	29.7
Gender of Entrepreneur	Male	61	95.3
	Female	3	4.7
Age of Entrepreneur	Below 20 Years	2	3.1
	21–30 Years	3	4.7
	31–40 Years	8	12.5
	Above 40 Years	51	79.7
Family Background	Joint Family	41	64.1
	Nuclear Family	23	35.9
First Business	Yes	9	14.1
	No	55	85.9
Quality Certification	Yes	36	56.2
	No	28	43.8

Reliability and Validity of Constructs

In this study, the reliability and validity of the measurement scales were assessed using SmartPLS 4. The internal consistency of each construct—Entrepreneurial Ecosystem (EE), Cluster Dynamics (CD), and MSME Performance (MP)—was evaluated using Cronbach’s Alpha and Composite Reliability (CR). Cronbach’s Alpha measures the internal consistency of items within a construct, while Composite Reliability provides a more robust estimate of reliability in PLS-SEM by accounting for outer loadings of indicators (Hair et al., 2016).

For this research, a Composite Reliability value greater than 0.70 was considered acceptable, although values above 0.60 are permissible in exploratory studies. However, values exceeding 0.95 are not desirable, as they may indicate redundancy among items. In the present study, all constructs exhibited CR values between 0.80 and 0.93, indicating satisfactory internal consistency without redundancy.

Convergent validity was assessed using Average Variance Extracted (AVE). AVE measures the extent to which a construct explains the variance of its indicators relative to measurement error. A threshold value of 0.50 or higher indicates adequate convergent validity (Hair et al., 2011). In this study, all constructs reported AVE values above 0.50, confirming that the items sufficiently represent their respective constructs.

The outer loadings of individual indicators were also examined. Outer loadings represent the contribution of each indicator to its latent construct. A loading value greater than 0.50 is considered acceptable. In this analysis, all indicators demonstrated satisfactory loadings above the recommended threshold, and no items were removed from the model.

Overall, the reliability and convergent validity assessments confirm that the measurement scales used for Entrepreneurial Ecosystem, Cluster Dynamics, and MSME Performance are internally consistent and statistically reliable for further structural model evaluation.

Construct	No. of Items	Cronbach's Alpha	Composite Reliability (CR)	Average Variance Extracted (AVE)
Entrepreneurial Ecosystem (EE)	6	0.88	0.91	0.62
Cluster Dynamics (CD)	5	0.85	0.89	0.60
MSME Performance (MP)	5	0.87	0.90	0.64

Note: All values exceed the recommended thresholds (Cronbach's Alpha > 0.70, CR > 0.70, AVE > 0.50), indicating satisfactory internal consistency and convergent validity.

Data Analysis

In this study, Partial Least Squares–Structural Equation Modelling (PLS-SEM) was employed to test the hypothesized relationships among Entrepreneurial Ecosystem (EE), Cluster Dynamics (CD), and MSME Performance (MP). PLS-SEM combines features of principal component analysis and multiple regression, enabling simultaneous examination of measurement and structural models. It is particularly suitable for predictive research, exploratory frameworks, and studies with relatively small sample sizes (Fornell & Bookstein, 1982; Hair et al., 2019).

PLS-SEM does not impose strict distributional assumptions and accommodates complex models involving mediating relationships. Furthermore, it supports both reflective and formative constructs, making it more flexible than covariance-based SEM approaches such as AMOS and LISREL (Fornell & Larcker, 1981). Given the exploratory and predictive nature of this study, along with the modest sample size ($N = 64$), SmartPLS® software was used for analysis.

Following Hair et al. (2016), the PLS-SEM procedure was conducted in two stages:

1. **Assessment of the Measurement Model**
2. **Evaluation of the Structural Model (Hypothesis Testing)**

Measurement Model

The measurement model was assessed to establish convergent and discriminant validity. Convergent validity was evaluated using Composite Reliability (CR) and Average Variance Extracted (AVE). Convergent validity is established when $CR > 0.70$ and $AVE > 0.50$ (Fornell & Larcker, 1981).

All constructs in this study satisfied these threshold criteria, confirming adequate internal consistency and convergent validity.

Table 1: Convergent Validity

Construct	Cronbach's Alpha	Composite Reliability (CR)	Average Variance Extracted (AVE)
Entrepreneurial Ecosystem (EE)	0.88	0.91	0.62
Cluster Dynamics (CD)	0.85	0.89	0.60
MSME Performance (MP)	0.87	0.90	0.64

All CR values exceed 0.70 and AVE values are above 0.50, confirming convergent validity.

Discriminant Validity

Discriminant validity was assessed using the **Fornell–Larcker criterion**. According to this method, the square root of the AVE of each construct must be greater than its correlations with other constructs.

Table 2: Discriminant Validity (Fornell–Larcker Criterion)

Constructs	EE	CD	MP
Entrepreneurial Ecosystem (EE)	0.787		
Cluster Dynamics (CD)	0.652	0.775	
MSME Performance (MP)	0.734	0.701	0.800

Diagonal values (bold) represent the square root of AVE.

Since the diagonal elements are greater than the inter-construct correlations, discriminant validity is established.

Model Fit

Although PLS-SEM is primarily prediction-oriented, model fit indices were also examined.

Table 3: Model Fit Summary

Fit Index	Saturated Model	Estimated Model
SRMR	0.061	0.082
d_ ULS	1.442	3.107
d_ G	0.689	0.794
Chi-square	3987.215	4215.904
NFI	0.834	0.812

The SRMR value for the estimated model is below 0.10, indicating acceptable model fit.

Structural Model

After confirming the measurement model's reliability and validity, the structural model was evaluated using bootstrapping (5,000 resamples) to test the hypotheses.

The threshold values for significance were:

- **T-statistic > 1.96**
- **P-value < 0.05**

Table 4: Structural Model Results

Hypothesis	Path	Original Sample (O)	T Statistics	P Values	Result
H1	EE → MP	0.421	3.487	0.001	Supported
H2	EE → CD	0.652	8.764	0.000	Supported
H3	CD → MP	0.389	2.976	0.003	Supported
H4	EE → CD → MP (Indirect Effect)	0.254	2.418	0.016	Supported

Discussion:

This study examined the influence of Entrepreneurial Ecosystems (EE) on MSME Performance (MP), with Cluster Dynamics (CD) functioning as a mediating mechanism within industrial clusters in Karnataka. The empirical findings provide strong statistical support for the proposed model and validate the theoretical integration of Entrepreneurial Ecosystem Theory, Cluster Theory, and the Resource-Based View (RBV).

The results demonstrate that the Entrepreneurial Ecosystem has a significant positive impact on MSME performance. This finding aligns with prior research suggesting that systemic factors such as institutional support, access to finance, infrastructure, human capital, and network linkages enhance enterprise growth and competitiveness (Acs et al., 2017; Stam, 2015). In emerging economies, where MSMEs often face institutional voids and resource constraints, ecosystem-level support becomes particularly critical. The significant direct relationship between EE and MP confirms that firms embedded in supportive ecosystems exhibit stronger performance outcomes in terms of growth, innovation, and market positioning.

The findings further reveal that Entrepreneurial Ecosystem significantly influences Cluster Dynamics. This suggests that ecosystem-level interventions—such as policy frameworks, training institutions, industry associations, and financial access—strengthen inter-firm collaboration, knowledge sharing, and network intensity within clusters. This observation is consistent with Porter’s (1998) argument that clusters thrive when supported by strong institutional and infrastructural foundations. Ecosystem elements appear to enhance trust-based relationships, supplier linkages, and collective efficiency among firms operating in geographically proximate environments.

Moreover, Cluster Dynamics significantly influence MSME performance. This supports Cluster Theory, which posits that firms located within strong agglomerations benefit from knowledge spillovers, shared infrastructure, reduced transaction costs, and collaborative innovation (Delgado, Porter, & Stern, 2014). In the context of Hubballi-Dharwad and Belgaum clusters, the relational interactions among firms appear to facilitate resource pooling and collective problem-solving, thereby improving firm-level competitiveness. These findings also resonate with the Resource-Based View (Barney, 1991), which emphasizes that competitive advantage arises from access to valuable and rare resources. Cluster networks allow MSMEs to collectively access such resources, strengthening their performance capacity.

One of the most important contributions of this study lies in validating the mediating role of Cluster Dynamics. The mediation results indicate that Entrepreneurial Ecosystem influences MSME performance both directly and indirectly through strengthened cluster interactions. This finding addresses a significant gap in the literature, as previous studies have often examined ecosystems and clusters independently rather than exploring their integrated effects (Spigel & Harrison, 2018). The results suggest that ecosystem resources—such as policy incentives, financial support, and institutional frameworks—are translated into tangible firm-level outcomes through relational and structural mechanisms embedded within clusters.

The mediation effect also supports a systems-theoretic perspective, which posits that macro-level institutional factors influence micro-level outcomes through meso-level relational structures. In this study, Cluster Dynamics function as the meso-level bridge connecting ecosystem support to firm performance. This layered interaction reinforces the need to conceptualize entrepreneurial development as a multilevel phenomenon rather than a direct cause-effect relationship.

Additionally, the findings have important implications in the context of environmental uncertainty and emerging economy volatility. Industrial clusters in Karnataka operate under fluctuating market conditions, technological upgrading pressures, and regulatory challenges. In such dynamic environments, collaborative cluster mechanisms enable firms to adapt collectively, share risks, and respond to external shocks more effectively. This aligns with arguments that resilient ecosystems and adaptive cluster structures enhance sustainability and long-term growth (Stam & Van de Ven, 2021).

The empirical validation of the proposed model demonstrates that the integrated framework accurately predicts MSME performance within cluster-driven entrepreneurial ecosystems. All hypothesized paths were statistically significant and conceptually meaningful. The model fit indices further confirm that the theoretical structure aligns well with observed data. These results strengthen the theoretical robustness of Entrepreneurial Ecosystem Theory in emerging economy contexts and extend Cluster Theory by positioning cluster dynamics as mediating mechanisms rather than standalone drivers.

From a policy perspective, the findings suggest that strengthening ecosystem components alone may not be sufficient. Policymakers and cluster development agencies must simultaneously nurture collaborative networks, supplier integration, and knowledge-sharing mechanisms within clusters. Investments in infrastructure, training institutions, and financial access should be complemented by initiatives that foster trust, partnership formation, and collective innovation among MSMEs.

For practitioners, the results highlight the strategic importance of active participation in cluster networks. MSMEs that engage in collaborative platforms, industry associations, and joint problem-solving initiatives are likely to leverage ecosystem resources more effectively. Cluster embeddedness enhances firms' ability to convert ecosystem support into tangible performance outcomes.

Overall, this study contributes significantly to the entrepreneurial ecosystem literature by providing empirical evidence from an emerging economy context and by demonstrating the mediating role of cluster dynamics. The integration of ecosystem theory, cluster theory, and RBV offers a comprehensive framework for understanding MSME performance within industrial agglomerations.

The findings reaffirm that entrepreneurial development is not merely a function of individual firm capabilities but is deeply embedded in systemic and relational contexts. In emerging economies such as India, resilient and well-supported clusters act as catalysts for sustainable MSME growth. By empirically validating this cluster-driven ecosystem model, the study provides a strong foundation for future research examining multilevel interactions between institutional environments, relational networks, and firm performance outcomes.

Limitations and Scope for Future Research Limitations

Despite offering important theoretical and empirical contributions, this study is subject to several limitations that should be acknowledged.

First, the study adopts a **cross-sectional research design**, which captures relationships among Entrepreneurial Ecosystem (EE), Cluster Dynamics (CD), and MSME Performance (MP) at a single point in time. While the findings establish significant associations, they do not allow for strong causal inferences or examination of changes over time. Entrepreneurial ecosystems and cluster interactions are dynamic phenomena that evolve with policy shifts, technological changes, and market conditions. A longitudinal approach would provide deeper insights into how these relationships develop and strengthen over time.

Second, the sample size is relatively modest ($N = 64$), drawn from two industrial clusters in Karnataka—Hubballi-Dharwad and Belgaum. Although Partial Least Squares–Structural Equation Modelling (PLS-SEM) is suitable for small samples, the limited sample size may restrict the generalizability of findings to other regions or industries. The selected clusters are mature and relatively well-established, which may not reflect the dynamics of emerging or less-developed clusters.

Third, the study relies primarily on **self-reported data** collected from MSME owners and managers. While respondents were decision-makers with substantial knowledge of their firms, subjective measures may introduce response bias, social desirability bias, or common method variance. Objective financial performance indicators could strengthen the robustness of future investigations.

Fourth, the research focuses exclusively on **reflective measurement constructs** and does not examine potential moderating variables such as firm size, age, technological capability, or environmental uncertainty. These contextual factors may influence the strength or direction of relationships between ecosystem support, cluster dynamics, and firm performance.

Finally, the study is geographically confined to Karnataka, India. Although the state has strong industrial clusters, institutional, cultural, and policy contexts may vary significantly across other Indian states or emerging economies. Therefore, caution should be exercised when generalizing the findings beyond similar industrial environments.

Scope for Future Research

The limitations identified above provide meaningful directions for future research.

First, future studies could adopt a **longitudinal research design** to capture the evolution of entrepreneurial ecosystems and cluster dynamics over time. Examining how policy interventions, technological adoption, or economic disruptions influence MSME performance would enhance understanding of dynamic ecosystem processes.

Second, expanding the research to include **multiple clusters across different states or countries** would improve generalizability and allow for comparative analysis between developed and emerging clusters. Cross-country comparisons could provide deeper insights into how institutional environments shape ecosystem–cluster–performance relationships.

Third, future research may incorporate **moderating variables**, such as environmental uncertainty, technological turbulence, digital adoption, or entrepreneurial orientation, to enrich the theoretical model. Exploring whether ecosystem effects vary across micro, small, and medium enterprises could also provide nuanced insights.

Fourth, researchers may integrate **objective financial data** alongside perceptual measures to strengthen empirical validity. Combining quantitative approaches with qualitative methods—such as interviews or case studies—could offer richer contextual understanding of how cluster interactions operate in practice.

Fifth, future studies may explore **sector-specific variations**, examining whether cluster dynamics function differently in technology-intensive industries, service sectors, or rural-based clusters.

Finally, further theoretical development could examine additional mediating mechanisms, such as innovation capability, knowledge absorption capacity, or social capital, thereby advancing multilevel ecosystem research.

Managerial Implications and Policy Implications Managerial Implications

The findings of this study offer several important implications for MSME owners, cluster leaders, and industry associations operating within emerging economy contexts. First, the significant positive relationship between Entrepreneurial Ecosystems (EE) and MSME Performance (MP) suggests that managers must move beyond a purely firm-centric perspective and actively engage with the broader ecosystem. MSMEs should leverage available institutional support such as government schemes, financial assistance programs, technical training centers, and industry associations. Proactive participation in ecosystem platforms enhances access to resources, knowledge, and networks that contribute to sustained competitiveness.

Second, the strong influence of Cluster Dynamics (CD) on MSME performance highlights the strategic importance of collaboration within industrial clusters. Managers should foster cooperative relationships with suppliers, competitors, and supporting institutions. Instead of viewing nearby firms solely as competitors, MSMEs can benefit from “co-opetition” through joint problem-solving, shared technology adoption, pooled procurement, and collective marketing initiatives. Active engagement in cluster development programs, trade associations, and knowledge-sharing forums can significantly enhance innovation and operational efficiency.

Third, the mediating role of cluster dynamics indicates that ecosystem benefits are maximized when firms are deeply embedded in cluster networks. Managers should invest in building trust-based relationships and social capital within the cluster. Developing long-term partnerships, participating in cluster-level training initiatives, and contributing to shared infrastructure projects can strengthen the firm’s ability to convert ecosystem support into

measurable performance outcomes.

Fourth, MSME leaders must focus on strengthening internal capabilities to absorb and utilize ecosystem resources effectively. Access to finance, training, and policy incentives alone is insufficient unless firms possess managerial competence, technological readiness, and strategic vision. Therefore, managerial capacity-building programs and professional development initiatives are essential to enhance absorptive capacity and competitive advantage.

Finally, in environments characterized by uncertainty and rapid change, cluster-based collaboration can enhance resilience. Managers should adopt adaptive strategies that leverage collective intelligence and shared learning mechanisms within clusters to respond to market volatility, technological disruptions, and regulatory changes.

Policy Implications

The findings also provide meaningful insights for policymakers, government agencies, and cluster development authorities. First, the significant impact of Entrepreneurial Ecosystems on MSME performance underscores the need for comprehensive ecosystem development policies rather than isolated interventions. Policymakers should adopt an integrated approach that simultaneously strengthens financial infrastructure, skill development institutions, innovation support systems, and regulatory frameworks.

Second, given the mediating role of Cluster Dynamics, policies should prioritize cluster-based development initiatives. Investment in common facility centers, testing laboratories, logistics infrastructure, and digital platforms can enhance inter-firm collaboration and knowledge sharing. Cluster development programs should focus not only on physical infrastructure but also on building relational capital and trust among firms.

Third, institutional coordination is crucial. Policymakers should ensure alignment among government departments, financial institutions, training agencies, and industry bodies to create a cohesive and supportive ecosystem. Reducing bureaucratic complexities and improving access to credit and technology will enhance MSME competitiveness.

Fourth, targeted support for micro and small enterprises within clusters is necessary, as they often face greater resource constraints compared to medium firms. Tailored financial schemes, digital transformation support, and innovation incentives can strengthen inclusivity and equitable growth.

Finally, policymakers should encourage public–private partnerships and collaborative innovation platforms within clusters. Promoting knowledge exchange between universities, research institutions, and MSMEs can foster technological upgrading and sustainable industrial growth.

Conclusion:

This study set out to examine the influence of Entrepreneurial Ecosystems (EE) on MSME Performance (MP), with Cluster Dynamics (CD) serving as a mediating mechanism within industrial clusters in Karnataka. By integrating Entrepreneurial Ecosystem Theory, Cluster Theory, and the Resource-Based View (RBV), the research developed and empirically tested a cluster-driven ecosystem framework that explains how systemic and relational factors jointly shape firm-level outcomes in an emerging economy context.

The empirical findings confirm that a strong entrepreneurial ecosystem significantly enhances MSME performance. Ecosystem components such as institutional support, access to finance, infrastructure, human capital availability, and policy facilitation contribute directly to improved firm competitiveness, growth, and sustainability. These results reinforce the argument that entrepreneurship and enterprise development are deeply embedded within broader systemic conditions rather than determined solely by internal firm capabilities.

Importantly, the study demonstrates that cluster dynamics play a significant mediating role in this relationship. The findings reveal that ecosystem-level resources are not automatically translated into firm performance; instead, they operate through relational and structural mechanisms within industrial clusters. Geographic proximity, inter-firm collaboration, knowledge spillovers, supplier networks, and collective efficiency enable MSMEs to effectively access, absorb, and leverage ecosystem support. This mediation effect highlights the importance of multilevel interactions—macro-level institutional structures, meso-level cluster networks, and micro-level firm

performance—in shaping enterprise outcomes.

The results also contribute to the literature by extending ecosystem theory to an emerging economy setting. Much of the prior research has focused on developed economies characterized by stable institutional environments. By examining industrial clusters in Hubballi-Dharwad and Belgaum, this study provides context-specific evidence from India, where MSMEs operate under conditions of resource constraints, regulatory complexities, and environmental volatility. The findings suggest that resilient and well-coordinated clusters can compensate for institutional gaps by fostering collaborative networks and shared resource utilization.

The integration of ecosystem theory and cluster theory represents a key theoretical contribution of this research. Rather than viewing clusters as independent growth drivers, the study positions cluster dynamics as mediating mechanisms within broader entrepreneurial ecosystems. This integrated perspective offers a more nuanced understanding of how systemic support structures influence firm-level performance outcomes.

From a practical standpoint, the study underscores the importance of strengthening both ecosystem components and cluster-level interactions. MSME growth and sustainability require coordinated institutional support, collaborative networks, and strategic resource leveraging. Policymakers and practitioners must recognize that industrial clusters are not merely geographic concentrations of firms but dynamic relational systems that channel ecosystem resources into competitive advantage.

In conclusion, this research advances the understanding of cluster-driven entrepreneurial ecosystems and their impact on MSME performance in emerging economies. The findings emphasize that sustainable MSME development depends on the synergy between institutional environments and collaborative cluster mechanisms. By empirically validating this multilevel framework, the study provides a strong foundation for future research and offers valuable insights for policymakers, managers, and development agencies seeking to promote inclusive and resilient industrial growth in India and similar emerging markets.

References:

- [1] Acs, Z. J., Stam, E., Audretsch, D. B., & O'Connor, A. (2017). The lineages of the entrepreneurial ecosystem approach. *Small Business Economics*, 49(1), 1–10. <https://doi.org/10.1007/s11187-017-9864-8>
- [2] Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17(1), 99–120. <https://doi.org/10.1177/014920639101700108>
- [3] Delgado, M., Porter, M. E., & Stern, S. (2014). Clusters, convergence, and economic performance.
- [4] *Research Policy*, 43(10), 1785–1799. <https://doi.org/10.1016/j.respol.2014.05.007>
- [5] Fornell, C., & Bookstein, F. L. (1982). Two structural equation models: LISREL and PLS applied to consumer exit-voice theory. *Journal of Marketing Research*, 19(4), 440–452. <https://doi.org/10.1177/002224378201900406>
- [6] Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(1), 39–50. <https://doi.org/10.1177/002224378101800104>
- [7] Hair, J. F., Jr., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2016). *A primer on partial least squares structural equation modeling (PLS-SEM)* (2nd ed.). Sage Publications.
- [8] Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European Business Review*, 31(1), 2–24. <https://doi.org/10.1108/EBR-11-2018-0203>
- [9] Porter, M. E. (1998). Clusters and the new economics of competition. *Harvard Business Review*, 76(6), 77–90.
- [10] Spigel, B., & Harrison, R. (2018). Toward a process theory of entrepreneurial ecosystems. *Strategic Entrepreneurship Journal*, 12(1), 151–168. <https://doi.org/10.1002/sej.1268>
- [11] Stam, E. (2015). Entrepreneurial ecosystems and regional policy: A sympathetic critique. *European Planning Studies*, 23(9), 1759–1769. <https://doi.org/10.1080/09654313.2015.1061484>

- [12] Stam, E., & Van de Ven, A. (2021). Entrepreneurial ecosystem elements. *Small Business Economics*, 56(2), 809–832. <https://doi.org/10.1007/s11187-019-00270-6>
- [13] Bischoff, K., & Volkmann, C. K. (2018). Stakeholder support for sustainable entrepreneurship-a framework of sustainable entrepreneurial ecosystems “Stakeholder support for sustainable entrepreneurship-a framework of sustainable entrepreneurial ecosystems.” In *Int. J. Entrepreneurial Venturing* (Vol. 10, Issue 2).
- [14] Candelario-Moreno, C., & Sánchez-Hernández, M. I. (2024). Redefining rural entrepreneurship: The impact of business ecosystems on the success of rural businesses in Extremadura, Spain. *Journal of Entrepreneurship, Management and Innovation*, 20(2), 36–52. <https://doi.org/10.7341/20242022>
- [15] Cavallo, A., Ghezzi, A., & Balocco, R. (2018). Entrepreneurial ecosystem research: present debates and future directions. In *International Entrepreneurship and Management Journal*.
- [16] Chaudhary, S., Kaur, P., Ferraris, A., Bresciani, S., & Dhir, A. (2024). Connecting entrepreneurial ecosystem and innovation. Grasping at straws or hitting a home run? *Technovation*, 130. <https://doi.org/10.1016/j.technovation.2023.102942>
- [17] Das, S., & P, D. N. (n.d.). 96 *MAPPING THE DIVERSE ENTREPRENEURIAL ECOSYSTEMS ACROSS INDIAN STATES: A COMPARATIVE ANALYSIS*.
- [18] Egere, O. M., Maas, G., & Jones, P. (2024). A critical analysis of the Nigerian entrepreneurial ecosystem on transformational entrepreneurship. *Journal of Small Business Management*, 62(3), 1187–1218. <https://doi.org/10.1080/00472778.2022.2123109>
- [19] Entrepreneurial Ecosystem Diagnostic Toolkit. (2013).
- [20] Guide for Mapping the Entrepreneurial Ecosystem Observe-Analyse-Visualise. (n.d.).
- [21] Korpysa, J., Singh, U. S., & Singh, S. (2023). Decision Criteria and Determining Factors Importance Validation Advocating Sustainability of Entrepreneurial Startups for Social Inclusion and Capacity Building. <https://doi.org/10.20944/preprints202305.0186.v1>
- [22] Mujahid, S., Mubarik, S., & Naghavi, N. (2019a). Prioritizing dimensions of entrepreneurial ecosystem: a proposed framework. *Journal of Global Entrepreneurship Research*, 9(1). <https://doi.org/10.1186/s40497-019-0176-0>
- [23] Mujahid, S., Mubarik, S., & Naghavi, N. (2019b). Prioritizing dimensions of entrepreneurial ecosystem: a proposed framework. *Journal of Global Entrepreneurship Research*, 9(1). <https://doi.org/10.1186/s40497-019-0176-0>
- [24] Stam, E., & van de Ven, A. (2021). Entrepreneurial ecosystem elements. *Small Business Economics*, 56(2), 809–832. <https://doi.org/10.1007/s11187-019-00270-6>
- [25] Tsai, S.-Bing., Du, Xiaomin., & Xin, Chunlin. (2020). Sustainability in the entrepreneurial ecosystem : operating mechanisms and enterprise growth. Business Science Reference (an imprint of IGI Global).