

**ROLE OF ENTREPRENEURIAL ECOSYSTEMS IN SHAPING
ENTREPRENEURIAL SUCCESS AND GROWTH**

GOURAV AGGARWAL



**DEPARTMENT OF MANAGEMENT STUDIES
INDIAN INSTITUTE OF TECHNOLOGY DELHI**

APRIL 2026

© Indian Institute of Technology Delhi (IITD), New Delhi, 2026

**ROLE OF ENTREPRENEURIAL ECOSYSTEMS IN SHAPING
ENTREPRENEURIAL SUCCESS AND GROWTH**

by:

GOURAV AGGARWAL

DEPARTMENT OF MANAGEMENT STUDIES

Submitted

in fulfilment of the requirements for the degree of Doctor of Philosophy

to the



INDIAN INSTITUTE OF TECHNOLOGY DELHI

April 2026

CERTIFICATE

This is to certify that the thesis titled “**Role of Entrepreneurial Ecosystems in Shaping Entrepreneurial Success and Growth**” being submitted by **Mr. Gourav Aggarwal**, to the Indian Institute of Technology Delhi for the award of the degree of Doctor of Philosophy, is a record of bona fide original research work carried out by him. He has worked under my guidance and supervision and has fulfilled all the requirements for the submission of the thesis, which has attained the standard requirements for a Ph.D. degree of the Institute. The results presented in this thesis have not been submitted elsewhere for the award of any degree or diploma.

Dr. Smita Kashiramka

Professor

Department of Management Studies

Indian Institute of Technology Delhi

ACKNOWLEDGEMENTS

I am deeply and sincerely grateful to everyone whose guidance, encouragement, and invaluable support have been instrumental in completing this doctoral thesis. First and foremost, I express my heartfelt gratitude to my esteemed research supervisor, Prof. Smita Kashiramka. Her insightful guidance, steadfast support, and unwavering encouragement have been the foundation of this accomplishment. Especially during moments when the path forward seemed insurmountable, her motivation and mentorship were crucial in enabling me to reach this significant milestone. Her scholarly expertise, critical insights, and thoughtful oversight have not only refined this work but have also profoundly shaped my research journey.

I extend my sincere appreciation to the distinguished members of my Student Research Committee (SRC): Prof. Seema Sharma, Prof. Shveta Singh, and Prof. VM Chariar, for their invaluable feedback and constructive suggestions throughout this endeavor. Their consistent input and encouragement have significantly enhanced the depth and rigor of my research, for which I am truly thankful.

My deepest gratitude goes to my family, my parents and my brother, Sourav Aggarwal, whose unwavering support, unconditional love, and unshakable belief in me have been my greatest sources of strength and motivation throughout this journey. I am especially indebted to my mother, Mrs. Nirmala Aggarwal, whose endless sacrifices, unconditional care, and relentless encouragement have been the backbone of my success. Her unwavering belief in my abilities and her selfless devotion have inspired me to push forward, even during the most challenging times. I am deeply grateful to my wife, Kajal Aggarwal, whose steadfast encouragement and understanding provided me with solace during moments of doubt. Her ability to listen patiently during my lowest moments and her constant reassurances during challenging times were

essential to navigating the ups and downs of this endeavor. Together, my family has been my pillar of strength, providing the inspiration and resilience needed to overcome every challenge.

I am fortunate to have been supported by incredible colleagues and friends throughout this journey. I extend my heartfelt thanks to my batchmates and fellow researchers, Apoorva Malik, Zeeshan, Shelly Gupta, Harshita Gupta, Yashika Sardana, Mansi Singh, and Prof. Juhi Raghuvanshi, for their collaboration, intellectual insights, and support that made this challenging journey enriching and rewarding. I also owe special thanks to my closest friend, Ashish Taneja, for their unwavering support, optimism, and faith in my abilities. Their companionship and encouragement were a constant source of positivity and motivation. I also acknowledge the unwavering support of the administrative staff at IIT Delhi, whose dedication and assistance in managing the administrative aspects of my thesis greatly facilitated this process.

Lastly, this research would not have been possible without the generosity and contributions of the respondents and participants who shared their valuable time and insights. Their inputs are the cornerstone of this study, and I am profoundly grateful for their cooperation and openness. Furthermore, this research builds upon the foundation laid by countless researchers and academics whose work has paved the way for future inquiries in this field. I am deeply indebted to their contributions, which have provided a guiding light for my own study.

To everyone who has been part of this remarkable journey, thank you. Your support has made this accomplishment possible.

Gourav Aggarwal

ABSTRACT

Entrepreneurial ecosystems (EEs) have gained recognition as pivotal drivers of innovation, enterprise development, and inclusive economic growth, particularly in emerging economies. Yet, a comprehensive understanding of how EE elements interact, affect entrepreneurial outcomes across different startup lifecycle stages, and how they respond to targeted policy interventions remains limited. This thesis addresses these critical gaps by developing a multi-theoretical and empirically validated framework to analyse the structure, performance, and evolution of India's EE, with a particular focus on the national 'Startup India' initiative.

The research is guided by four key objectives: first, to identify and prioritise critical EE elements from stakeholder perspectives; second, to examine the impact of foundational health factors on ecosystem performance; third, to assess the causal effect of the Startup India program using quasi-experimental methods; and fourth, to explore how EE elements affect startups across various stages of their lifecycle.

The study begins by identifying essential ecosystem components through expert consultations using the Delphi method, followed by the Best-Worst Method (BWM) to determine their relative importance. These elements are categorised into two broad groups: Health Factors, which represent foundational supports such as finance, culture, education, infrastructure, and policy; and Performance Factors, which reflect outcomes like entrepreneurial activity, market dynamics, and value creation. This classification provides a structured lens to examine ecosystem effectiveness.

To evaluate the impact of health factors on ecosystem outcomes, the study employs Partial Least Squares Structural Equation Modelling (PLS-SEM), revealing significant direct and mediated relationships, particularly highlighting Innovation and Research as a key enabler. The thesis also examines the impact of the Startup India initiative using Propensity Score Matching

(PSM) and Difference-in-Differences (DiD), demonstrating a statistically significant improvement in India's Ease of Doing Business (EoDB) indicators following the program's implementation.

Complementing the quantitative analysis, the study incorporates qualitative case studies to explore how startups engage with EE elements across four lifecycle stages: ideation, establishment, break-even, and growth. The findings reveal that ecosystem priorities shift over time, finance and mentoring are most critical during early stages, while infrastructure, regulatory ease, and institutional maturity become more significant as ventures scale. These insights underline the importance of lifecycle-aligned policy and ecosystem design.

The thesis offers an integrated, empirically grounded model of EE performance, drawing on Systems Theory, Resource-Based View, Dynamic Capabilities Theory, and Institutional Theory. By bridging conceptual frameworks with applied analysis, the research contributes to academic literature and offers actionable strategies for policymakers, ecosystem architects, and entrepreneurs. It advocates for adaptive, inclusive, and stage-sensitive ecosystem interventions to support sustainable entrepreneurial growth in India and similar emerging markets.

In conclusion, this research illuminates the complex interdependencies within EEs and underscores the multifaceted roles these systems play in promoting entrepreneurial success and economic growth. The insights derived from this study are intended to guide future research and inform ongoing efforts to optimize the entrepreneurial landscape in India and similar contexts globally, ensuring that EEs not only thrive but are also resilient and responsive to the needs of their constituents.

सारांश

उद्यमिता पारितंत्र (Entrepreneurial Ecosystems - EEs) नवाचार, उद्यम विकास और समावेशी आर्थिक प्रगति के प्रमुख उत्प्रेरक के रूप में विशेष रूप से उभरती अर्थव्यवस्थाओं में तेजी से मान्यता प्राप्त कर रहे हैं। इसके बावजूद, यह समझ अब भी अधूरी है कि पारितंत्र के विभिन्न तत्व आपस में कैसे अंतःक्रिया करते हैं, स्टार्टअप के जीवनचक्र के विभिन्न चरणों में उद्यमिता परिणामों को कैसे प्रभावित करते हैं, और लक्षित नीतिगत पहलों के प्रति किस प्रकार प्रतिक्रिया देते हैं। यह शोध इन महत्वपूर्ण शोध-अंतरालों को संबोधित करते हुए भारत के उद्यमिता पारितंत्र की संरचना, प्रदर्शन और विकास का विश्लेषण करने हेतु एक बहुसिद्धांतात्मक और अनुभवजन्य रूप से प्रमाणित रूपरेखा प्रस्तुत करता है, जिसमें 'स्टार्टअप इंडिया' पहल पर विशेष ध्यान दिया गया है।

यह शोध चार प्रमुख उद्देश्यों द्वारा संचालित है: (1) हितधारकों के दृष्टिकोण से महत्वपूर्ण EE तत्वों की पहचान और प्राथमिकता तय करना; (2) स्वास्थ्य कारकों (Health Factors) का पारितंत्र प्रदर्शन पर प्रभाव विश्लेषित करना; (3) स्टार्टअप इंडिया कार्यक्रम का कारणात्मक प्रभाव अर्ध-प्रयोगात्मक विधियों से मापना; तथा (4) यह समझना कि विभिन्न जीवनचक्र चरणों में EE तत्व स्टार्टअप्स को किस प्रकार प्रभावित करते हैं।

अध्ययन की शुरुआत डेल्फी विधि के माध्यम से विशेषज्ञ परामर्श द्वारा प्रमुख पारितंत्र तत्वों की पहचान से होती है, जिसके बाद बेस्ट-वस्ट मेथड (BWM) के माध्यम से उनकी सापेक्षिक महत्ता निर्धारित की जाती है। इन तत्वों को दो व्यापक श्रेणियों में वर्गीकृत किया गया है: हेल्थ फैक्टर्स, जो वित्त, संस्कृति, शिक्षा, अवसंरचना और नीति जैसे बुनियादी समर्थन को दर्शाते हैं; और परफॉर्मेंस फैक्टर्स, जो उद्यमिता गतिविधि, बाजार गतिशीलता और मूल्य सृजन जैसे परिणामों को प्रतिबिंबित करते हैं। यह वर्गीकरण पारितंत्र की प्रभावशीलता के विश्लेषण के लिए एक संरचित दृष्टिकोण प्रदान करता है।

स्वास्थ्य कारकों के प्रदर्शन पर प्रभाव का मूल्यांकन करने के लिए, शोध Partial Least Squares Structural Equation Modelling (PLS-SEM) का प्रयोग करता है, जिसके निष्कर्षों में नवाचार और अनुसंधान (Innovation & Research) की भूमिका एक प्रमुख मध्यस्थ कारक के रूप में उभर कर सामने आती है। इसके अतिरिक्त, Propensity Score Matching (PSM) और Difference-in-Differences (DiD) जैसे अर्ध-प्रयोगात्मक तरीकों से स्टार्टअप इंडिया कार्यक्रम के प्रभाव का विश्लेषण किया गया है, जो कार्यक्रम के लागू होने के पश्चात भारत की ईज ऑफ डूइंग बिजनेस (EoDB) रैंकिंग में सांख्यिकीय रूप से महत्वपूर्ण सुधार को दर्शाता है।

मात्रात्मक विश्लेषण के साथ-साथ, अध्ययन गुणात्मक केस स्टडीज़ को भी सम्मिलित करता है, जिनके माध्यम से यह विश्लेषण किया गया है कि स्टार्टअप्स अपने जीवनचक्र के चार

चरणों, विचार चरण (Ideation), स्थापना चरण (Establishment), ब्रेकईवन चरण (Break-even), और विकास चरण (Growth), में पारितंत्र तत्वों से कैसे जुड़ते हैं। निष्कर्षों से स्पष्ट होता है कि समय के साथ पारितंत्र की प्राथमिकताएं बदलती हैं: आरंभिक चरणों में वित्तीय सहायता और मेंटरिंग सर्वाधिक आवश्यक होती है, जबकि विकास के साथ-साथ अवसंरचना, नियामक सुगमता और संस्थागत परिपक्वता की भूमिका बढ़ जाती है। ये निष्कर्ष जीवनचक्र-संरेखित नीतिगत हस्तक्षेपों की आवश्यकता को रेखांकित करते हैं।

यह शोध सिस्टम्स थ्योरी, रिसोर्स-बेस्ड व्यू, डायनामिक कैपेबिलिटीज थ्योरी, और इंस्टिट्यूशनल थ्योरी जैसे विविध सैद्धांतिक दृष्टिकोणों पर आधारित एक एकीकृत और अनुभवजन्य मॉडल प्रस्तुत करता है। यह शोध न केवल शैक्षणिक साहित्य को समृद्ध करता है, बल्कि नीति-निर्माताओं, पारितंत्र डिज़ाइनरों और उद्यमियों के लिए व्यावहारिक रणनीतियाँ भी प्रस्तुत करता है। यह भारत और अन्य उभरते बाजारों में स्थायी उद्यमिता वृद्धि के लिए अनुकूल, समावेशी और चरण-संवेदी पारितंत्र हस्तक्षेपों की वकालत करता है।

अंततः, यह शोध उद्यमिता पारितंत्रों की जटिल अंतःनिर्भरताओं को स्पष्ट करता है और यह दर्शाता है कि ये प्रणालियाँ उद्यमिता सफलता और आर्थिक विकास को बढ़ावा देने में कितनी विविध और निर्णायक भूमिका निभाती हैं। इस अध्ययन से प्राप्त अंतर्दृष्टियाँ भविष्य के शोधों के लिए दिशा-निर्देश प्रदान करती हैं और भारत सहित अन्य देशों में उद्यमिता परिदृश्य को और अधिक अनुकूल, लचीला और उत्तरदायी बनाने की निरंतर प्रयासों को सशक्त बनाती हैं।

Table of Contents

CERTIFICATE	I
ACKNOWLEDGEMENTS	II
ABSTRACT	IV
Table of Contents	IX
List of Figures	XIII
List of Tables	XIV
List of Abbreviations	XV
Chapter 1: Introduction	1
1.1 Motivation for the study	3
1.2 Research Gaps	3
1.3 Research Questions and Objectives	5
1.4 Theoretical Framework and Methodology	7
1.5 Scope of the study	9
1.6 Significance of the study	10
1.7 Structure of the Thesis	11
1.8 Chapter Summary	13
Chapter 2: Review of Literature	15
2.1 Concept of EEs	15
2.2 Elements of EEs	22
2.3 Interconnectivity of Elements of EEs	30
2.4 EEs and policies around the world	32
2.4.1 Indian EE and ‘Startup India’ Initiative	32
2.4.2 EEs and Development Schemes in Emerging Markets Around the World	37
2.5 Startups at the Centre of EE	43
2.6 Research Gaps	47
2.6.1 Lack of studies examining EE elements comprehensively and from entrepreneur-centric perspectives	47
2.6.2 Limited research on dynamic interrelationships of EE elements using a dual-lens of health and performance factors	48
2.6.3 Limited studies evaluating the ecosystem-level impact of the Startup India programme	49
2.6.4 Limited literature on how EE elements interact with startups across lifecycle stages	50

2.7 Chapter Summary	52
Chapter 3: Research Design and Methodology	54
3.1 Research Objectives	54
3.2 Methodology used to study the objectives	56
3.3 Research Flow	58
3.4 Identifying crucial elements of an EE	59
3.4.1 Sample & Data	63
3.5 Understanding the interaction of different elements of EE	66
3.5.1 Variables used in this study	69
3.5.2 Sample & Data	74
3.6 Analyzing the impact of the Startup India program on Indian EE	76
3.7 Understanding the impact of EE elements during different lifecycle stages of a startup	80
3.8 Chapter Summary	84
Chapter 3: Appendix.....	85
3.A1 List of scales used to measure each variable.....	85
Chapter 4: Elements of Entrepreneurial Ecosystems	88
4.1 Introduction.....	88
4.2 Methodology: Identifying the Health and Performance Factors	89
4.3 Results and Discussion.....	92
4.3.1 Findings from Delphi Study	92
4.3.2 Determining the weighted contribution of EE elements using MCDM – BWM	99
4.3.3 Sensitivity analysis of the findings.....	102
4.4 Conclusion	106
Chapter 5: Interaction between Elements of Entrepreneurial Ecosystems.....	110
5.1 Introduction.....	110
5.1.1 Conceptual Framework and Hypotheses Development	112
5.2 Methodology	113
5.3 Model Development and Preliminary Analysis	115
5.3.1 Conceptual Model	115
5.3.2 Relationships and Hypotheses	117
5.3.3 Descriptive Analysis and Preliminary Screening of the Data	125
5.4 Results and Discussion.....	125

5.4.1 Analysis of measurement model: Diagnostic tests.....	126
5.4.2 Analysis of the structural model	130
5.5 Conclusion	153
Chapter 5: Appendix.....	156
5.A1 EFA Results.....	156
5.A2 Summary of descriptive analysis for variables used in this study	159
5.A3 Diagnostic test results for measurement model.....	162
5.A4 Results for diagnostic analysis of structural model	168
5.A5 Impact assessment of health factors on individual performance factors.....	169
Chapter 6: Impact of ‘Startup India’ Program on Indian Entrepreneurial Ecosystem	171
6.1 Introduction.....	172
6.2 Methodology	174
6.3 Results and Discussion.....	178
6.3.1 Preliminary data screening and analysis	178
6.3.2 Identifying a control group using PSM.....	180
6.3.3 DiD Estimation	181
6.4 Conclusion	183
Chapter 7: Interaction of Entrepreneurial Ecosystem Elements with Startups	186
7.1 Introduction.....	187
7.2 Methodology	189
7.2.1 Data Collection	190
7.3 Results and Discussion.....	192
7.3.1 Ideation Stage.....	194
7.3.2 Establishment Stage.....	201
7.3.3 Break-even Stage.....	209
7.3.4 Growth Stage	216
7.3.5 Key Insights	222
7.4 Conclusion	226
Chapter 8: Conclusion.....	229
8.1 Discussions and Conclusion	229
8.1.1 Elements of EEs.....	230
8.1.2 Inter-relationships between EE Elements.....	232
8.1.3 Impact of 'Startup India' program on Indian EE.....	235

8.1.4 Interaction of EE elements with Startups across lifecycle stages	238
8.2 Contribution and Implications	241
8.2.1 Theoretical Implications	242
8.2.2 Policy Implications	244
8.2.3 Practical Implications & Recommendations	246
8.3 Limitations and Future Scope of the Study	248
8.4 Chapter Summary	250
References	252
Thesis Appendix:	287
A1. Questionnaire for multiple rounds of Delphi study	287
A.1.1 Questionnaire for Round 1 of Delphi study	287
A.1.2 Questionnaire for Round 2 of Delphi study	289
A.1.3 Questionnaire for Round 3 of Delphi study	292
A2. Questionnaire for capturing relative perception in Best-Worst Method	295
A3. Questionnaire for capturing perception about Indian EE	300
A4. Semi-structured interview plan for case study discussion	307
Resume	312

List of Figures

Figure 2. 1: Comprehension of Startup India scheme.....	37
Figure 3. 1: Research flow and phases.....	58
Figure 4. 1: Methodological flow to identify, classify, and measure the EE elements	90
Figure 4. 2: Ranking of health factors using sensitivity analysis	103
Figure 4. 3: Ranking of performance factors using sensitivity analysis	105
Figure 4. 4: EE framework.....	105
Figure 5. 1: Conceptual path model.....	116
Figure 5. 2: Measurement model	127
Figure 5. 3: Structural model	131
Figure 6. 1: Three-stage methodology for evaluating the Startup India program’s impact on the EE.....	174
Figure 7. 1: Impact of health factors on ideation stage.....	196
Figure 7. 2: Impact of health factors on establishment stage.....	203
Figure 7. 3: Impact of health factors on break-even stage.....	210
Figure 7. 4: Impact of health factors on growth stage	217
Figure 7. 5: Heatmap analysis of the impact of health factors across the startup lifecycle stages.....	224
Figure 7. 6: Heatmap analysis of the impact of health factors across the startup lifecycle stages.....	225

List of Tables

Table 1. 1: Research questions and corresponding methodologies.....	12
Table 2. 1: Comprehensive frameworks of EEs and key contributions.....	21
Table 2. 2: Comparison of different government schemes with Startup India program focused on developing entrepreneurship in the country.....	41
Table 3. 1: Methodology used for different objectives	57
Table 3. 2: Profiles of experts involved in the Delphi study.....	64
Table 3. 3: Profiles of experts involved in the BWM process	65
Table 3A. 1: List of Indicators used to measure each variable used in the study	85
Table 4. 1: EE elements as classified by Delphi process: health Factors and performance factors.....	94
Table 4. 2: Ranking the health factors based on importance rating in round 2.....	96
Table 4. 3: Ranking the performance factors based on importance rating in round 2	97
Table 4. 4: Weighted contribution of health factors in the development of an EE	100
Table 4. 5: Weighted contribution of performance factors in the overall outcome of an EE.	101
Table 4. 6: Ranking of health factors post-sensitivity analysis.....	102
Table 4. 7: Ranking of performance factors post-sensitivity analysis	104
Table 5. 1: Direct path analysis of health factors, innovation and performance in the Indian EE.....	133
Table 5. 2: Indirect path analysis of health factors, innovation and performance in the Indian EE.....	139
Table 5. 3: Total effect analysis of health factors and performance in the Indian EE	140
Table 5. 4: Coefficient of determination (R^2) values	152
Table 5. 5: Model fitness (SRMR) value	152
Table 5. 6: Summary of results	153
Table 5A. 1: EFA – KMO and Bartlett's test results	156
Table 5A. 2: EFA – Rotated component matrix	157
Table 5A. 3: Descriptive statistics of first-order constructs used in the study.....	159
Table 5A. 4: Kurtosis and Skewness for latent variables.....	162
Table 5A. 5: Construct reliability.....	162
Table 5A. 6: AVE and outer loadings of first-order constructs used in the study.....	163
Table 5A. 7: VIF values for all the indicators and variables used in the study.....	164
Table 5A. 8: Fornell-Larcker criterion: Discriminant validity for first-order constructs	166
Table 5A. 9: HTMT matrix: Discriminant validity for first order constructs	167
Table 5A. 10: Fornell-Larcker criterion: discriminant validity for second-order constructs.	168
Table 5A. 11: HTMT Matrix: Discriminant validity for second-order constructs.....	168
Table 5A. 12: Multicollinearity check for health factors in structural model.....	168
Table 5A. 13: Impact of health factors on individual performance factors	169
Table 6. 1: Correlation matrix of covariates	179
Table 6. 2: Means of covariates for treated and control groups, before and after matching..	180
Table 6. 3: DiD estimation results.....	182
Table 7. 1: Case descriptions	191

List of Abbreviations

AF – Availability of Finance
AVE – Average Variance Extracted
BWM - Best-Worst Method
CUL - Entrepreneurial Culture
CMV – Common Method Variance
DCT – Dynamic Capabilities Theory
DID – Difference-in-Difference
DPIIT - Department for Promotion of Industry and Internal Trade
EA - Entrepreneurial Activity
EC - Perception about Entrepreneurship as a Career Choice
EE - Entrepreneurial Ecosystem
EI - Entrepreneurial Intentions
EO - Employment Opportunities
EoDB – Ease of Doing Business
ES - Ease of Shutting Down
ET - Entrepreneurial Education & Training
EVC - Value Creation by Entrepreneurial Activities
GEM – Global Entrepreneurship Monitor
GP - Government Programs
HTMT – Heterotrait-monotrait ratio of correlations
IR - Innovation & Research
LF - Legal Framework
LI – Legal Infrastructure
MD - Market Dynamics
NM - Networking & Mentoring
PCA – Principal Component Analysis
PI - Physical Infrastructure
PLS-SEM - Partial Least Square – Structural Equation Modelling
PSM – Propensity Score Matching
RBV – Resource-Based View
SDGs – Sustainable Development Goals
SE - Self-Efficacy
STIP - Science, Technology and Innovation Policy
SRMR – Standardized Root Mean Squared Residual
VIF – Variance Inflation Factor