

A Conceptual Framework for Understanding the Entrepreneurial Ecosystem in Higher Educational Institutions

Ashalakshmi Sarma*

Anjan Bhuyan**

Abstract

Ecosystems in entrepreneurial environments are dynamic systems with many interplaying factors rather than solely relying on individual entrepreneurs. Current literature existing in Higher Educational Institutions on this topic remains fragmented instead of adequately illustrating how all these factors interplay with each other. As a conceptual piece of literature, this article systematically searches the literature existing between 2010 and 2025 to come up with an integrated model of categorizing these factors into three broad forms of environments: Internal, External and Educational, incorporating individual personality traits playing a mediating role in these systems. Using multiple existing ecosystem elements in an entrepreneurial environment presented by other authors and organizing them systematically into a better-defined environment, this research adds comprehensiveness in understanding how Higher Educational Institutions impact entrepreneurial outputs. The model presented in this piece of literature proposes a viewpoint where support for entrepreneurs in Higher Educational Institutions is more than just educational reforms, but rather efficient institutions with better culture, systems, infrastructure, and policies in place.

Keywords: Entrepreneurial ecosystem, HEIs, Conceptual model, Environment.

How to Cite: Sarma, A., & Bhuyan, A. (2026). A conceptual framework for understanding the entrepreneurial ecosystem in higher educational institutions. *Journal of Management and Entrepreneurship*, 20(1), 1–13.

DOI:10.70906/20262001001013

A
b
s
t
r
a
c
t

* Research Scholar, Department of Business Administration, Tezpur University, Ph.No.: +91 7896912020, Email Id: asha062@gmail.com.

** Professor, Department of Business Administration, Tezpur University, Napaam, Assam, Ph. No.: +91 9954060665, Email Id: anjanb@tezu.ernet.in.

1. Introduction

Entrepreneurial activities have changed the global economic scenario significantly by establishing ecosystems whose main characteristic factors are innovation, sustainable economic development and job creation (Isenberg, 2011; Stam & Spigel, 2018). This entrepreneur ecosystem defines entrepreneurship not as an individual job, but rather a team effort where different interdependent actors and resources are interlinked within a particular area, packed within a dense network (Spigel, 2020). Although existing frameworks provide a basic understanding, there is a need to consider unique factors and specific inputs that influence each setup differently in this network.

The Higher Education Institution (HEI) in this global network is regarded as one of the significant and influential factors. Usually, universities are thought to be centers of knowledge and research, but in current times, this concept has shifted a bit and there is a kind of “*second revolution*” where their core mission is economic and social development (Etzkowitz, 1993; Kirby, 2006). Institutions are central to knowledge creation, talent development and the creation of spin-off companies and they contribute to the critical components of the ecosystem, such as human capital and commercializable innovative products (Malecki, 2018; Etzkowitz et al., 2000). The available literature has highlighted that the University Entrepreneurial Ecosystem (UEE) has the potential to enhance the entrepreneurial intentions of the students by providing support and accessibility to resources. The UEE offers training and mentorship and maintains an entrepreneurial culture (Astuty et al., 2022; Bischoff et al., 2017).

This shift in perception towards the educational institutions creates a demand for the in-depth and institution-specific framework. This framework would describe how different factors interact within the UEE (Alvedalen & Boschma, 2017). The presence of a demographic dividend, or a predominantly young population, in India presents both a challenge and an opportunity for developing a job creator rather than job seeker culture (Chatterji et al., 2014). As part of this, the strategic step taken by the Government of India, like “Startup India”, places the

onus of fulfilling the national objective of innovation on the HEIs, for developing the entrepreneurial hubs and facilitating industry linkages (Kandakatla et al., 2021). However, available academic literature points to their efficiency in practice being typically bolstered by varying fits of institutional goals with resource distribution. The entrepreneurial frameworks at the macro level cannot capture the various institutional forms prevalent across India’s higher educational landscape, variations in kind and form of administrative challenges as well as a variable range of state-based policies (Jha, 2018).

Hence, this implies that a gap may exist in these frameworks on both conceptual and empirical grounds. A lack of a rigorous conceptual model specific to this area of HEIs, which would focus especially on organizing a variety of factors playing a role in this ecosystem, is evident. A lack of differentiation in these ecosystem models in defining layers of environment in HEIs brings up a conceptual gap, which this paper focuses on filling. Therefore, this research sheds light on this conceptual gap by developing this conceptual model based on synthesizing existing literature in EE. Eleven elements in EE have been presented in this paper, and these would be logically linked in a total of three different environments.

Environments are important in an ecosystem; the elements in an environment describe it, and their interaction defines an ecosystem. Therefore, the elements of an ecosystem in three distinct environments, namely Educational, Internal, and External, are integrated in alignment. Eminent authors such as Whetten (1989), Lynham (2002), and Jaakkola (2020) have described theory-building methodologies, which have assisted in this research in incorporating elements of an ecosystem into a unified structure of an environment relevant to HEIs. In this paper, the following sections will begin with a brief theoretical background; thereafter, the process of theoretical model development will be explained and the conceptual model will be presented. Followed by the implications and future research of this study will be described and finally, this study will be concluded.

2. Review of literature

2.1 Evolution of Entrepreneurial Ecosystem (EE) Theory

Over the last ten years, EE as a concept has developed quite significantly. It has become more of a complicated system to understand the development of new businesses and startups. According to Isenberg (2010), entrepreneurship is not an individual's work; rather, it is based on the connections between different domains such as culture, finance, policies, support systems, and human capital. When all these elements combine, they create conditions where entrepreneurship can flourish. Previous research was more about listing these domains or elements in order to show what supports business growth. However, recent research puts forward the idea that, since ecosystems are constantly changing and interacting differently, a simple listing is not sufficient anymore (Spigel, 2017).

To overcome these shortcomings, certain researchers came up with viewing EE as dynamic and adaptive systems rather than as static clusters. This type of ecosystems evolve through continuous interactions between people, organizations, and emerging conditions (Stam, 2015; Stam & Spigel, 2018). In the present context, authors such as Spigel and Harrison (2018) have related changes in the EE to industry life cycles such as birth, growth and decline phases. They pointed out that ecosystems undergo phases and dominance may shift between entrepreneurial and larger organizational activities. This perspective helps to understand not just what an ecosystem consists, but also how it develops and adapts to new scenarios (Cantner et al., 2020).

In the current times, several researchers have established that evolutionary principles must be the focal point in this ecosystem theory. Wurth et al. (2023) stated that in establishing causal relationships, how people, ideas, and socio-economic factors interact will be important. This therefore shows the shift in the development of ecosystems and how it changes with time. Through such, evolutionary researchers established that long-term changes, shifting in group roles, and governance methods, which are often not considered, control ecosystem development (Cho et al., 2021).

Hence, the evolution of ecosystem thinking would suggest that entrepreneurial environments should not be considered solely as snapshots but as living systems wherein the structure, the participants, and the resources available undergo continuous change, reformation, and renewal. This dynamism thus affords the researcher a far stronger platform from which to develop models capable of quantifying ecosystem features in detail and investigating how they interact and evolve.

2.2 The Role of University as the Entrepreneurial HEIs

Educational institutions have gradually changed their orientation from teaching and research to one that plays a crucial role in regional innovation (Zakaria et al., 2023). This change or shift has been articulated through the Triple Helix and quadruple helix models, where universities work closely with industry, government, and society to support knowledge-based development (Leydesdorff, 2012; Zhang et al., 2019). The literature evidences that HEIs are practical in supporting entrepreneurial activities such as business incubation, technology transfer, and helping new ventures beyond conventional academic roles (Cai et al., 2020; Reichert, 2019).

Gachie (2019) indicated that in most developing countries, universities act as local drivers of entrepreneurship. Such is more evident in locations where formal innovation systems happen to be weak or even absent. Further, studies examine academic leadership, campus culture, and governance, which strongly affect students' and other stakeholders' engagement in entrepreneurship (Cai et al., 2020). In another study, Thomas et al. (2023) highlighted that when universities inculcate entrepreneurship in their curriculum and prioritize research and community projects, it helps in creating stronger entrepreneurial mindsets and more start-up activities. Thus, universities at present times are seen as ecosystem builders and partners, not just as knowledge providers (Mbitse et al., 2024).

2.3 Identifying the core variables and the conceptual gap

The existing literature on EE repeatedly identifies a common set of key elements such as finance,

markets, culture, networks, government policy, support systems, and human capital. These factors have been refined in most of the studies by using slightly different names, but ultimately leading to the same major components of EE (Isenberg, 2011; Stam, 2015; Rao, 2020; Spigel, 2017). Nevertheless, researchers have also enlightened that these components do not always work together in the same way, especially in developing economies, as the context matters a lot.

Hence, there is a conceptual gap. In the regional context, the quality of institutions, local economic structures, geography, and cultural norms vary and impact the functionality of these elements (Roundy, 2017). While in the global context, these region-specific facts are ignored (Autio et al., 2018; Malecki, 2018). It is found that the current frameworks of EE are not detailed enough for university-based ecosystems, and also, the regional environmental conditions are not linked to the university-specific features. Therefore, this gap supports the need for a new model that connects contextual factors with the core ecosystem elements, especially within the HEIs.

3. Research gap and objectives

Previous literature has highlighted the different elements of EE. The GEM model (Jha, 2018) and many other models, such as Isenberg (2011), Rao (2020), Cohen (2005), etc., have highlighted multiple components that interact with each other to sustain an EE. However, if the focus shifts to EE's environment, there are gaps in the literature. Studies on EE in an HEI are in the nascent stage (Thai et al., 2023), and thus, the mechanisms underlying the EE environment are yet to be identified. Therefore, keeping this in mind, this paper aims to fulfill two objectives:

- a) To categorise the environment of the entrepreneurial ecosystem of HEIs.
- b) To align the elements of the entrepreneurial ecosystem with the environments.

4. Methodology

This is a conceptual paper that uses secondary sources to extract data. For this purpose, existing

literature from multiple databases, such as Google Scholar, WOS and JSTOR, was reviewed. A timeframe from 2010 to 2025 was considered. A conceptual exploratory approach was adopted to synthesize existing literature to propose a theoretical model. Below is a summary table of the methodology adopted for this study.

Table 1

Summary of Methodology

Component	Description
Research Type	Conceptual (theory-building)
Data Type	Secondary data
Data Collection Method	Review of existing literature from 2010 – 2025
Sources/ Databases	Google Scholar, WOS, JSTOR
Search Query Used	"Entrepreneurial ecosystem" AND "HEIs" OR "Universit*" AND "Entrepreneur* Environment"
Inclusion Criteria	Research articles, book chapters, blogs from reputable institutions and websites related to entrepreneurship
Exclusion Criteria	Articles NOT describing the entrepreneurial ecosystem, the environment of entrepreneurship, elements of the ecosystem, etc.

Numerous researchers (Isenberg, 2011; Rao, 2020; Cohen, 2005; Stam & van de Ven, 2019; Global Entrepreneurship Monitor, 2019) have worked on different models using different elements or factors of EE. Therefore, these elements were considered and condensed into 11 elements of EE. Further, using secondary sources, four types of environments that impacted the EE were identified, and these 11 elements were tried to align with the environment types by designing a conceptual model.

Below is the table of the chosen variables or elements of the entrepreneurial ecosystem for HEI considered from existing resources:

Table 2*11 elements of EE in HEIs*

Sl. No.	Variables / Elements	Equivalent constructs in previous literature	Key references
1.	GOVERNMENT REGULATION	Government, Regulatory Framework, Policy	Cohen (2005); Isenberg (2010); Rao (2020); Xu and Dobson (2019); Suresh and Ramraj (2012)
2.	NETWORKS	Informal and Formal Networks, Networks, Social Capital	Cohen (2005); Isenberg (2010); Entezari (2015); Stam and van de Ven (2019); Suresh and Ramraj (2012)
3.	EDUCATIONAL INSTITUTIONS	Universities, Formal Institutions	Cohen (2005); Stam and van de Ven (2019); Rao (2020)
4.	HUMAN CAPITAL	The Talent Pool, Human Capital, Talents, Personal Traits, Talent Knowledge	Cohen (2005); Entezari (2015); Liu (2016); Isenberg (2010); Xu and Dobson (2019); Rao (2020)
5.	SUPPORT SERVICES	Professional Services and Support, Support Services, Entrepreneurship Opportunities, Intermediate Services	Cohen (2005); Isenberg (2010); Entezari (2015); Stam and van de Ven (2019); Rao (2020); Suresh and Ramraj (2012)
6.	FINANCE	Capital Services, Financial Capital, Innovation Capital, Funding, and Financing	Cohen (2005); Isenberg (2010); Entezari (2015); Xu and Dobson (2019); Stam and van de Ven (2019); Rao (2020); Suresh and Ramraj (2012)
7.	CULTURE	Culture, Entrepreneurial Culture, Socio-cultural environment, Social	Entezari (2015); Isenberg (2010); Xu and Dobson (2019); Stam and van de Ven (2019); Rao (2020); Suresh and Ramraj (2012)
8.	INFRASTRUCTURE	Infrastructure, Infostructure	Xu and Dobson (2019); Entezari (2015); Isenberg (2010); Stam and van de Ven (2019)
9.	MARKETS	Markets, Economic Clusters, Demand	Xu and Dobson (2019); Isenberg (2010); Stam and van de Ven (2019); Rao (2020); Suresh and Ramraj (2012)
10.	LEADERSHIP	Leadership	Isenberg (2010); Stam and van de Ven (2019)
11.	EDUCATION AND TRAINING	Education, Course Content, Training, Knowledge Production	Isenberg (2010); Liu (2016); Rao (2020); Entezari (2015)

5. Theoretical model development process

Formulation of the theoretical framework requires a strict process consisting of understanding the previous literature and incorporating a sound component into the study (Jaakkola, 2020; Whetten, 1989). Since the aim of the paper is developing the proposed theoretical model, an approach consisting of three stages has been followed to design the theoretical framework based on the well-known guidelines for theory building (Lynham, 2002).

Stage 1: Origination of concept

The first level grounds the model on the literature and identifies the problem areas. Ecological studies are mostly performed on the national or regional level and for HEIs the ecological model is still underdeveloped (Wurth et al., 2021; Thai et al., 2023). The current models disregard the elements within the ecosystem and represent them as an integral set with everything interconnected without separating the model into layers appropriate for HEIs (Wurth et al., 2021). This is why a universal framework for the environment is lacking about the position of HEIs within the layers for the internal, external environment, and the educational ecosystem (Gonzales Flores & Katonáné Kovács, 2018).

Stage 2: Structuring and validating the model

The second stage is where the structured guidelines for applying theory-building in the framework are used to produce consistency among the components of the framework. The proposed framework would specifically focus on Indian HEIs and use secondary data related to ecosystem factors from 2010 to 2025, following conceptual study guidelines (Lynham, 2002). The assumptions for this framework were made after careful consideration of theoretical compatibility, specifically for the assumptions highlighting the role of stratified environments in ecosystem outputs and the position of HEIs as nodes in this stratified structure (Thai et al., 2023; Wurth et al., 2021). These assumptions were compared with pre-existing models like Triple Helix and the Entrepreneurial university and HEInnovate framework to reduce duplication and improve validity (Leydesdorff, 2012; Gachie, 2019; Reichert, 2019).

Then, framework design was able to construct an internal, external, and educational environment using leadership, culture, infrastructure, finance, infrastructure, markets, and government and other factors and variables identified in literary studies and so on into categories similar to (Thai et al., 2023 and Gonzales Flores & Katonáné Kovács, 2018). By cross-validating it with other frameworks, it was found that categories are distinct and meet established criteria (Whetten, 1989 and Jaakkola, 2020).

Stage 3: Contribution and future extensions

The last level of analysis narrows down to how it creates value for its application. This model gives meaning to diverse ecosystem research to give it a relevant framework appropriate to HEIs, while former models could not differentiate between internal and external factors (Gachie, 2019; Thai et al., 2023). There is room to develop this model to benefit specific regions with appropriate application based on recommendations to continually improve conceptual models through empirical research (Lynham, 2002; Jaakkola, 2020). There is room to test this model with empirical research and improve it by developing new application variables based on its outcomes (Jaakkola, 2020).

6. Conceptual Framework

6.1 Rationale for a multi-layer ecosystem framework

Till now, it is clear that EEs are not single uniform systems; rather, they are developed from various interactions among social, material, institutional, and individual factors. Stam and Spigel (2018) have described EE as a combination of social, political, economic, and cultural elements that support the creation and growth of new businesses. Further, they have mentioned that external conditions (like rules, regulations, and social factors) and internal conditions (like networks, skills, and support services) jointly shape entrepreneurial activities (Ierapetritis, 2019).

Additionally, many existing models till now focus mainly on the larger regional or institutional level and pay less attention to the individual level. They often ignore how individual attitudes, confidence, and intentions link ecosystem conditions to the actual

entrepreneurial mindset (Rudnák et al., 2025). Recent studies have shown that a supportive university environment and good exposure to entrepreneurship can highly influence students' intentions, and this can lead to becoming future entrepreneurs (Amofah & Saladrigues, 2022; Maheshwari et al., 2022).

HEIs are like small ecosystems, where students and staff are influenced by different components surrounding them. This includes academic rules, campus infrastructure, organizational systems, and the broader entrepreneurial environment outside the campus (Reichert, 2019; Cai et al., 2020). Meanwhile, studies have shown that an individual's decisions to start a business cannot be understood without looking at their personal traits like self-belief, confidence, creativity, and leadership qualities (Thomas et al., 2023).

Hence, this model suggests a four-layered environment of the EE:

- a) Educational Environment,
- b) Internal Environment,
- c) External Environment, and
- d) Individual Personality.

These four forms of environment together explain how universities and the people within them influence their entrepreneurial behaviour and mindset.

6.2 Components of the four environmental ecosystems

A) External Environment

The external environment includes forces and opportunities outside the university, like the markets, regulations, society, and local entrepreneurial activity. Partnerships with industry leaders, alumni networks, professional service providers, and government initiatives (such as Assam Startup (NEST) or Atal Innovation Mission (AIM)) provide students and faculty access to real-world expertise, funding, and markets. Regional entrepreneur groups and support enterprises can reduce barriers for new entrepreneurs by offering mentorship, networks, and resources (Isenberg, 2010). Through these external links, educational institutions can extend

their entrepreneurial support beyond the campus, helping ideas grow into ventures that operate in real market conditions (Liguori et al., 2018).

B) Internal Environment

The internal environment is the immediate campus climate. It includes leadership style, how people connect inside the institution, and the support systems available for entrepreneurship. In simple words, leadership is more than just formal positions; it is actually the building of problem-solving skills, confidence, creativity and innovation-oriented behaviour among students and staff. (Priyadarshini J, 2021). Strong internal networks among peers, faculty, alumni and through campus events facilitate collaboration and idea-sharing, besides access to more resources (Dixit et al., 2024). Incubation centres, entrepreneurship cells, and support offices are structures that help bright ideas turn into real ventures through guidance, mentorship, and step-by-step institutional processes (Liguori et al., 2018).

C) Educational Environment

The educational environment in question refers to what and how students are trained, and the commitment of the faculty towards the students. It also involves curriculum design and teaching methodology, along with academic rules. When teaching is more practical, experiential and problem-solving-oriented, the more significant development of entrepreneurial skills and confidence in students take place (Fayolle & Gailly, 2015). A supportive, open academic environment characterized by flexible policies and responsive faculty with entrepreneurship-related courses contributes to building an entrepreneurial mindset in students (Guerrero et al., 2020). In Assam, if educational institutions take entrepreneurship into their regular pedagogy and offer interdisciplinary courses, then it can greatly help students face real-world issues. This would increase entrepreneurial thinking and practice.

D) Individual personality

Entrepreneurship in a university starts with the individual. It depends on how students and faculty think, feel, and behave in relation to new ideas and opportunities (Krueger, 2007). Traits like creativity,

confidence, belief in one's abilities, willingness to take risks, and resilience strongly influence an individual's take on opportunities, venture planning, and finally taking action to grab the opportunity (Rauch & Frese, 2007). In a higher education setup, this psychological factor forms the basis on which all other supports function (Priyadarshini J, 2021). Hence, entrepreneurship is not just encouraged by the institution but also genuinely accepted and owned by individuals.

6.3 Alignment of 11 entrepreneurial elements with the four environments

Therefore, based on the entrepreneurial theories and literature on different environments, the 11 variables given in Table 2 above can be distributed among these three types of environments: Internal, External, and Educational.

- i) *Educational Environment*: It would include the educational institutions, education and training, and human capital.
- ii) *Internal Environment*: This is the organizational support system and thus would include infrastructure, leadership, and the culture of the institution.
- iii) *External Environment*: This would include government regulation, networks, external support services, finance, and market opportunities

The individual personality would actually include entrepreneurial intention, self-efficacy, attitude towards entrepreneurship, and risk-taking ability (Amofah & Saladrigues, 2022; Priyadarshini J, 2021; Bischoff et al., 2017; Fayolle & Gailly, 2015). This is not directly linked to the factors or components of the ecosystem and, therefore, cannot be measured using the 11 elements listed above. This is the reason why two students in the same ecosystem respond differently to entrepreneurship or any other opportunities. However, this individual personality layer acts as a mediator or a linking factor to the other three environments of the entrepreneurial ecosystem of an educational institution.

Further, the main objective of this paper was to align the 11 elements of the EE to the different environments of the ecosystem where entrepreneurship can flourish in an HEI, and this has been shown above.

6.4 Interactions of the environments and mechanisms of influence

This conceptual model depicts multiple interactions within the environments that influence the overall entrepreneurial ecosystem of the institutions.

- The external is linked to the internal and the education environment, and these are both linked to the individual personality. External regulations and policies, market conditions, and provide the base for opportunities. Leadership opportunities and infrastructure give the confidence and risk-taking ability to the individual. Thus, setting the stage for culturing entrepreneurship within an HEI.
- The linking of internal and external environments on the entrepreneurial outcomes is mediated by the individual personality. Motivation, self-efficacy, risk-taking ability, and resilience all influence the entrepreneurial outcomes because of the internal and external environments.
- When students and graduates become successful entrepreneurs, they improve the university's reputation, attract more funding and skilled human capital, and strengthen networks with industry and policymakers. This, in turn, supports both the external and internal environments.
- Educational initiatives work best when they are backed by strong institutional support and favourable external conditions. If any of these are missing, the overall impact becomes weaker.

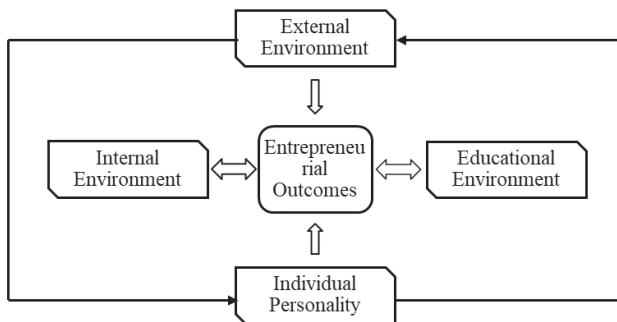
Thus, overall, this means entrepreneurial outcomes do not come from any single environment alone but from the combined and coordinated working of all four types.

6.5 Proposed Conceptual Model

Below is the diagram of the conceptual model of the entrepreneurial ecosystem in higher educational institutions.

Figure. 1

The proposed conceptual model of the environment of the entrepreneurial ecosystem of HEIs



Here, certain propositions can be framed:

P1: When the external environment is supportive through better regulations, funding, markets, and networks, it strengthens institutional support and educational initiatives in HEIs. This raises students' interest in entrepreneurship.

P2: Strong internal support and high-quality education work together to build students' and faculty's confidence and belief in their ability to start a business.

P3: Entrepreneurial intentions and self-belief act as a bridge between the multiple ecosystem environments (internal, external, and educational) and the real entrepreneurial behaviour.

P4: Feedback loops here depict that successful entrepreneurial outcomes feed back into the system. This improves both internal supports and external environmental conditions over time. That means, successful entrepreneurs must provide their expertise and support to guide new and nascent entrepreneurs.

Therefore, these propositions can provide the theoretical base for future empirical analysis.

6.6. Theoretical contributions of the model

According to Stam (2015), environments should work together as one system that supports entrepreneurship in a complete and balanced way. Hence, this framework can push research on EE and university entrepreneurship in many directions. The individual personality environment, along with the institutional and external environment, can link personal entrepreneurial psychology with the larger ecosystem structure. Further, the role of HEIs is made clearer by separating internal institutional support from the educational environment where human capital is built, which helps in designing better policies and measurements. By bringing together psychological factors like mindset and motivation, academic and institutional factors, and broader environmental influences, the model offers a clear and comprehensive way to study entrepreneurship in HEIs of Assam.

This thus sets up a sensitive yet contextual framework and emphasizes that ecosystems are dynamic in nature (Cantner et al., 2020). It takes into consideration interactions, feedback loops and influences across multiple levels. This addresses the call of those models that are more systemic and less static. Finally, it provides a clear roadmap for empirical research because the key variables and propositions are already provided. This would make work easier in designing surveys, multi-level statistical models, or mixed-methods studies based on this structure.

7. Implications and Future Research

The newly developed conceptual framework on the entrepreneurial ecosystem has very important implications for theory as well as practice. The framework developed enhances the existing conceptual frameworks on ecosystems by introducing the level of individual personalities and associating it with both the internal and external environments of HEIs, and not restricting it to purely external structures (Stam, 2015; Spigel, 2017; Isenberg, 2011; Rao, 2020). The conceptual framework emphasizes the intervention of personalities and asserts that a change in HEIs can simultaneously accompany a change in personalities for achieving an entrepreneurial culture.

The proposed model indicates that the role of “promoting entrepreneurship” for HEIs involves more than the establishment of infrastructure or the setting up of start-up cells. There also has to be investment in building strong leadership cultures in regards to the faculty and students of the HEIs, entrepreneurship-focused education, and external partnerships for entrepreneurship-related activity or teaching (Guerrero et al., 2020; Liguori et al., 2018). The categorization of ecosystem components into environmental levels provides the HEIs with an understanding of the levels of change required from within the ecosystem, which could be culture, leadership or infrastructure, among others.

This model, useful for policymakers, suggests that start-up public policies and funding should be combined with an appropriate institutional and educational context. The institutional environment can be more easily combined with outside incentives and thus, the promotion of entrepreneurship at the regional level will become simpler.

As a conceptual framework, the framework gives a clear roadmap on the kind of future studies should be conducted in HEIs using primary data. These four levels can be studied on the basis of their interaction with each other, and the mediational role played by their individual characteristics on such associations (Spigel, 2020; Stam and Van De Ven, 2019). Additional models can be formulated, with empirical supports, on the basis of their critical examination of the entrepreneurial ecosystem. This framework could be used to conduct empirical studies with data from different geographies and check on the basis of which they affect each other, and their association with the performance outcome. This is also a platform for comparison with HEIs at the national level.

8. Conclusion

This paper brings together entrepreneurial ecosystem research from 2010 to 2025, collected from various databases to develop a four-layer conceptual model for HEIs. It combines individual personality, internal environment, educational environment and external ecosystem forces into a single integrated structure, rather than focusing mainly on external conditions. Placing entrepreneurial outcomes and individual actors at the centre and surrounding them with

institutional and environmental layers offers a more holistic and context-sensitive view of HEI ecosystems, particularly for regions like Assam.

The model is theoretical rather than procedural. It organises diverse insights into a clear representation that shows how internal, external and educational factors interact through the individual layer. This dynamic multi-level perspective highlights that strengthening entrepreneurship in HEIs requires more than curriculum reform. It also depends on supportive institutional cultures, infrastructure, networks and aligned policies. Because the framework is built from secondary literature and critical reflection, it provides conceptual clarity for scholars and a useful guide for institutions and policymakers. Future research can test and refine the model with empirical data across different institutional settings, helping to build more inclusive and sustainable entrepreneurial ecosystems (Gheorghiu et al., 2021).

References

- Alvedalen, J., & Boschma, R. (2017). A critical review of entrepreneurial ecosystems research: towards a future research agenda. *European Planning Studies*, 25(6), 887–903. <https://doi.org/10.1080/09654313.2017.1299694>
- Amofah, K., & Saladrighes, R. (2022). Impact of attitude towards entrepreneurship education and role models on entrepreneurial intention. *Journal of Innovation and Entrepreneurship*, 11(36). <https://doi.org/10.1186/s13731-022-00197-5>
- Astuty, E., Yustian, O. R., & Ratnapuri, C. I. (2022). Building Student Entrepreneurship Activities Through the Synergy of the University Entrepreneurship Ecosystem. *Frontiers in Education*, 7. <https://doi.org/10.3389/educ.2022.757012>
- Autio, E., Nambisan, S., Thomas, L. D. W., & Wright, M. (2018). Digital affordances, spatial affordances, and the genesis of entrepreneurial ecosystems. *Strategic Entrepreneurship Journal*, 12(1), 72–95. <https://doi.org/10.1002/sej.1266>
- Bischoff, K., Volkmann, C. K., & Audretsch, D. B. (2017). Stakeholder collaboration in entrepreneurship education: an analysis of the entrepreneurial ecosystems of European higher educational institutions. *The Journal of Technology Transfer*, 43(1), 20–46. <https://doi.org/10.1007/s10961-017-9581-0>

- Cai, Y., Ma, J., & Chen, Q. (2020). Higher Education in Innovation Ecosystems. *Sustainability*, 12(11), 4376. <https://doi.org/10.3390/su12114376>
- Cantner, U., Cunningham, J. A., Lehmann, E. E., & Menter, M. (2020). Entrepreneurial ecosystems: a dynamic lifecycle model. *Small Business Economics*, 57(57). <https://doi.org/10.1007/s11187-020-00316-0>
- Chatterji, A., Glaeser, E., & Kerr, W. (2014). Clusters of Entrepreneurship and Innovation. *Innovation Policy and the Economy*, 14(1), 129–166. <https://doi.org/10.1086/674023>
- Cho, D. S., Ryan, P., & Buciuni, G. (2021). Evolutionary entrepreneurial ecosystems: a research pathway. *Small Business Economics*, 58, 1865–1883. <https://doi.org/10.1007/s11187-021-00487-4>
- Cohen, B. (2005). Sustainable valley entrepreneurial ecosystems. *Business Strategy and the Environment*, 15(1), 1–14. <https://doi.org/10.1002/bse.428>
- Dixit, P., Kumar, U., Rautela, R., & L, S. G. (2024). Role of Incubation Centers in Educational Institutions in Motivating Start-up Entrepreneurs: An Empirical Investigation of B-School Graduates. *Journal of Informatics Education and Research*, 4(1). <https://doi.org/10.52783/jier.v4i1.612>
- Entezari, Y. (2015). Building Knowledge- Based Entrepreneurship Ecosystems: Case of Iran. *Procedia - Social and Behavioral Sciences*, 195, 1206–1215. <https://doi.org/10.1016/j.sbspro.2015.06.242>
- Etzkowitz, H. (1993). Enterprises from science: The origins of science-based regional economic development. *Minerva*, 31(3), 326–360. <https://doi.org/10.1007/bf01098626>
- Etzkowitz, H., Webster, A., Gebhardt, C., & Terra, B. R. C. (2000). The future of the university and the university of the future: evolution of ivory tower to entrepreneurial paradigm. *Research Policy*, 29(2), 313–330. [https://doi.org/10.1016/s0048-7333\(99\)00069-4](https://doi.org/10.1016/s0048-7333(99)00069-4)
- Fayolle, A., & Gailly, B. (2015). The Impact of Entrepreneurship Education on Entrepreneurial Attitudes and Intention: Hysteresis and Persistence. *Journal of Small Business Management*, 53(1), 75–93. <https://doi.org/10.1111/jsbm.12065>
- Gachie, W. (2019). Higher education institutions, private sector and government collaboration for innovation within the framework of the Triple Helix Model. *African Journal of Science, Technology, Innovation and Development*, 12(2), 203–215. <https://doi.org/10.1080/20421338.2019.1631120>
- Gheorghiu, G., Spătaru, E. C., Sorici, C. O., Ștefan, M., & Bunghez, C. L. (2021). Creating a sustainable entrepreneurial ecosystem at higher education institution level. *Economic Computation and Economic Cybernetics Studies and Research*, 55(2), 265–280.
- Global Entrepreneurship Monitor. (2019). *Mission & Values*. GEM Global Entrepreneurship Monitor; GEM. <https://www.gemconsortium.org/about/gem/5>
- Gonzales Flores, K. M., & Katonáné Kovács, J. (2018). Defining the entrepreneurship ecosystem. *SEA- Practical Application of Science*, 6(18), 299–306. <https://dea.lib.unideb.hu/server/api/core/bitstreams/85028599-ccf4-4d18-8dc5-200c42b7a58d/content>
- Guerrero, M., Urbano, D., & Gajón, E. (2020). Entrepreneurial university ecosystems and graduates' career patterns: do entrepreneurship education programmes and university business incubators matter? *Journal of Management Development*, 39(5), 753–775. <https://doi.org/10.1108/jmd-10-2019-0439>
- Ierapetritis, D. G. (2019). Discussing the Role of Universities in Fostering Regional Entrepreneurial Ecosystems. *Economies*, 7(4), 119. <https://doi.org/10.3390/economies7040119>
- Isenberg, D. (2010). How to Start an Entrepreneurial Revolution. *Harvard Business Review*, 88, 40. https://edisciplinas.usp.br/pluginfile.php/5419320/mod_resource/content/1/Harvard-Ecosystem.pdf
- Isenberg, D. (2011). *Introducing the Entrepreneurship Ecosystem: Four Defining Characteristics*. Forbes. <https://www.forbes.com/sites/danisenberg/2011/05/25/introducing-the-entrepreneurship-ecosystem-four-defining-characteristics/>
- Jaakkola, E. (2020). Designing conceptual articles: four approaches. *AMS Review*, 10, 18–26. <https://doi.org/10.1007/s13162-020-00161-0>

- Jha, S. K. (2018). Entrepreneurial ecosystem in India: Taking stock and looking ahead. *IIMB Management Review*, 30(2), 179–188. <https://doi.org/10.1016/j.iimb.2018.04.002>
- Kandakatla, R., Aluvalu, R., Devireddy, S., Kulkarni, N., & Joshi, G. (2021, November 15). Role of Indian Higher Education Institutions towards Aatmanirbhar India: Government Policies and Initiatives to promote Entrepreneurship and Innovation. *2021 World Engineering Education Forum/Global Engineering Deans Council (WEEF/GEDC)*. <https://doi.org/10.1109/weef/gedc53299.2021.9657261>
- Kirby, D. A. (2006). Creating Entrepreneurial Universities in the UK: Applying Entrepreneurship Theory to Practice. *The Journal of Technology Transfer*, 31(5), 599–603. <https://doi.org/10.1007/s10961-006-9061-4>
- Krueger, N. F. (2007). What Lies Beneath? The Experiential Essence of Entrepreneurial Thinking. *Entrepreneurship Theory and Practice*, 31(1), 123–138. <https://doi.org/10.1111/j.1540-6520.2007.00166.x>
- Leydesdorff, L. (2012). The Triple Helix of University-Industry-Government Relations (February 2012). *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.1996760>
- Liguori, E., Bendickson, J., Solomon, S., & McDowell, W. C. (2018). Development of a multi-dimensional measure for assessing entrepreneurial ecosystems. *Entrepreneurship & Regional Development*, 31(1-2), 7–21. <https://doi.org/10.1080/08985626.2018.1537144>
- Liu, X. (2016). Research on Entrepreneurship Ecosystem of Entrepreneurial University. In *2016 4th International Education, Economics, Social Science, Arts, Sports and Management Engineering Conference (IEESASM 2016)*, pp. 1122–1125. <https://doi.org/10.2991/ieesasm-16.2016.245>
- Lynham, S. A. (2002). The General Method of Theory-Building Research in Applied Disciplines. *Advances in Developing Human Resources*, 4(3), 221–241. <https://doi.org/10.1177/1523422302043002>
- Maheshwari, G., Kha, K. L., & Arokiasamy, A. R. A. (2022). Factors affecting students' entrepreneurial intentions: a systematic review (2005–2022) for future directions in theory and practice. *Management Review Quarterly*, 73(1), 1903–1970. <https://doi.org/10.1007/s11301-022-00289-2>
- Malecki, E. J. (2018). Entrepreneurship and entrepreneurial ecosystems. *Geography Compass*, 12(3). <https://doi.org/10.1111/gec3.12359>
- Mbitse, Y., Salomo, S., & zu Knyphausen-Aufseß, D. (2024). Universities as Keystone Orchestrators during Innovation Ecosystem Nascence. *Academy of Management Perspectives*, 38(4), 512–533. <https://doi.org/10.5465/amp.2023.0047>
- Priyadarshini J. (2021). *Impact Of The Factors Of Entrepreneurial Ecosystem On Entrepreneurial Firm Performance With Dual Mediating Effects Of Entrepreneurial Attitude In Msmes* [Doctoral thesis]. <http://hdl.handle.net/10603/358697>
- Rao, U. T. (2020). *Entrepreneurial Ecosystem Assessment Framework for Educational Institutes to Foster Entrepreneurship An Indian Context* [Doctoral thesis]. <http://hdl.handle.net/10603/312803>
- Rauch, A., & Frese, M. (2007). Let's put the person back into entrepreneurship research: A meta-analysis on the relationship between business owners' personality traits, business creation, and success. *European Journal of Work and Organizational Psychology*, 16(4), 353–385. <https://doi.org/10.1080/13594320701595438>
- Reichert, S. (2019). The Role of Universities in Regional Innovation Ecosystems. In *EUA Study*. https://www.reichert-consulting.de/wp-content/uploads/2021/11/EUA_-TheRoleofUniversitiesinRegionallInnovationEcosystem_report_final_2019.pdf
- Roundy, P. T. (2017). “Small town” entrepreneurial ecosystems: Implications for developed and emerging economies. *Journal of Entrepreneurship in Emerging Economies*, 9(3), 238–262. <https://doi.org/10.1108/jeee-09-2016-0040>
- Rudnák, I., Kollár, K., & Wu, J. (2025). Factors influencing entrepreneurial intentions of international and local students in Hungary. *Journal of Innovation and Entrepreneurship*, 14(26). <https://doi.org/10.1186/s13731-025-00490-z>
- Spigel, B. (2017). The Relational Organization of Entrepreneurial Ecosystems. *Entrepreneurship Theory and Practice*, 41(1), 49–72. <https://doi.org/10.1111/etap.12167>

- Spigel, B. (2020). *Entrepreneurial Ecosystems: The theoretical foundations of an entrepreneurial policy framework*. Edward Elgar Publishing.
- 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>
- 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>
- Stam, E., & Spigel, B. (2018). Entrepreneurial Ecosystems. In R. Blackburn, D. De Clercq, & J. Heinonen (Eds.), *SAGE Handbook of Small Business and Entrepreneurship* (Vol. 21, pp. 407–421). SAGE Publications. <https://doi.org/10.4135/9781473984080.n21>
- Stam, E., & van de Ven, A. (2019). Entrepreneurial ecosystem elements. *Small Business Economics*, 56(2), 809–832. <https://doi.org/10.1007/s11187-019-00270-6>
- Suresh, J., & Ramraj, R. (2012). Entrepreneurial Ecosystem: Case Study on the Influence of Environmental Factors on Entrepreneurial Success. *European Journal of Business and Management*, 4(16).
- Thai, Q. H., Mai, K. N., & Do, T. T. (2023). An Evolution of Entrepreneurial Ecosystem Studies: A Systematic Literature Review and Future Research Agenda. *SAGE Open*, 13(1), 215824402311530. <https://doi.org/10.1177/21582440231153060>
- Thomas, E., Pugh, R., Soetanto, D., & Jack, S. L. (2023). Beyond ambidexterity: universities and their changing roles in driving regional development in challenging times. *The Journal of Technology Transfer*, 48. <https://doi.org/10.1007/s10961-022-09992-4>
- Whetten, D. A. (1989). What Constitutes a Theoretical Contribution? *Academy of Management Review*, 14(4), 490–495. <https://doi.org/10.5465/amr.1989.4308371>
- Wurth, B., Stam, E., & Spigel, B. (2021). Toward an Entrepreneurial Ecosystem Research Program. *Entrepreneurship Theory and Practice*, 46(3), 729–778. <https://doi.org/10.1177/1042258721998948>
- Wurth, B., Stam, E., & Spigel, B. (2023). Entrepreneurial Ecosystem Mechanisms. *Foundations and Trends in Entrepreneurship*, 19(3), 224–339. <https://doi.org/10.1561/03000000089>
- Xu, Z., & Dobson, S. (2019). Challenges of building entrepreneurial ecosystems in peripheral places. *Journal of Entrepreneurship and Public Policy*, 8(3), 408–430. <https://doi.org/10.1108/jepp-03-2019-0023>
- Zakaria, H., Kamarudin, D., Fauzi, M. A., & Wider, W. (2023). Mapping the helix model of innovation influence on education: A bibliometric review. *Frontiers in Education*, 8. <https://doi.org/10.3389/feduc.2023.1142502>
- Zhang, Y., Chen, K.-H., & Fu, X. (2019). Scientific effects of Triple Helix interactions among research institutes, industries and universities. *Technovation*, 86–87, 33–47. <https://doi.org/10.1016/j.technovation.2019.05.003>