

## **Factor driving deep-tech entrepreneurship: Evidence from a panel study with Global Innovation Index (GII) data**

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### **Introdução**

In recent years, the number of early-stage ventures based on deep technologies (e.g., artificial intelligence, big data, quantum computing, among others) has been growing. A deep-tech startup is a “company founded on a scientific discovery or meaningful engineering innovation” (Chaturvedi, 2015, p. 1). The success of these startups is uncertain, as they require long/slow R&D cycles to transform technologies into suitable innovations for markets. For these reasons, studies show that these ventures are less attractive to venture capitalists.

### **Problema de Pesquisa e Objetivo**

Deep-tech entrepreneurship is more concentrated in innovation-driven economies. Countries in other stages of development such as China, India and Brazil have a high number of these companies. Studies on entrepreneurship (EE) ecosystems focus on high-growth or digital startups. So far, there are few studies on deep-tech startups from an EE perspective, i.e., which aim to reveal which factors drive or inhibit the creation of these startups. Therefore, the purpose of this article is to assess whether the resource endowment of entrepreneurial ecosystems influences the number of deep-tech startups.

### **Fundamentação Teórica**

An entrepreneurial ecosystem portrays an environment characterized by actors interacting interdependently, providing tangible and intangible resources, such as infrastructure, human capital, knowledge, information, and financial resources, among others (Spigel & Vinodrai, 2020). The resource endowment of an entrepreneurial ecosystem and the ease of access to these resources can either boost or inhibit entrepreneurial activity (Stam & van de Ven, 2021).

### **Metodologia**

In this study, we applied a panel data analysis to a database composed of 123 countries evaluated during a period of 4 years (2019-2022). Thus, we adopted the data panel for balanced data. To create our database, we collect data about deep-tech startups from Crunchbase and for data about entrepreneurial ecosystem resources we collect data from the Global Innovation Index (GII). The number of active deep-tech startups was defined as a dependent variable. While 18 of the GII indicators were collected, with 15 selected as independent variables and 3 as control variables.

### **Análise dos Resultados**

Our results showed the size of the knowledge-intensive industry, availability of credit, general infrastructure and use and access to ICTs are good predictors of entrepreneurial activity based on deep technologies. Furthermore, we identified that R&D and the capacity of a country's firms to absorb knowledge, the ability to generate and incorporate knowledge to increase productivity and online creativity in terms of coding and APP development influence the number of deep-tech startups. Despite this, we identified that university-industry cooperation inhibits deep-tech entrepreneurship.

### **Conclusão**

We identified that even if a factor is a determinant for deep-tech entrepreneurship, this factor can inhibit entrepreneurial activity, as in the case of innovation linkage, which even expresses a cause-and-effect relationship, the estimated coefficient showed a negative value, which indicates that an

increase in university-industry interactions does not increase deep-tech entrepreneurship. The existence of innovative environments, characterized by the generation and absorption of knowledge and the dissemination of this knowledge in other industries are good predictors of deep-tech startups.

**Referências Bibliográficas**

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