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Determinants of Brazilian entrepreneurial cities: an analysis from the ranking of the National School of Public Administration

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Resumo: Este estudo busca identificar os fatores que impulsionam cidades empreendedoras no Brasil, analisando o ranking elaborado pela Escola Nacional de Administração Pública utilizando o Índice de Cidades Empreendedoras. Foram realizadas análises de correlação e regressão utilizando o método dos mínimos quadrados ordinários. Os resultados indicaram que a proporção de Microempreendedores Individuais, a educação voltada ao empreendedorismo e o número de graduados em ensino superior são fatores que exercem uma influência positiva sobre as cidades empreendedoras. No entanto, a gestão municipal não apresentou nenhuma influência sobre elas. Os resultados mostraram os níveis de empreendedorismo e educação que alicerçam os ecossistemas municipais em empreendedorismo, bem como apontaram a ausência de influência da gestão municipal no índice de cidades empreendedoras, o que poderá comprometer a infraestrutura desses ecossistemas. Este estudo avança na compreensão dos impulsionadores de cidades empreendedoras no Brasil, apresentando, assim, uma contribuição teórica para o estudo de ecossistemas de empreendedorismo no contexto de países emergentes.

Palavras-chave: cidade empreendedora; empreendedorismo; educação empreendedora; capital humano; gestão municipal.

Abstract: This study aims to identify the drivers of entrepreneurial cities in Brazil by analysing the ranking established by the National School of Public Administration using the Entrepreneurial Cities Index. Correlation and regression analyses were performed using the Ordinary Least Squares method. The results indicated that the proportion of Individual Microentrepreneurs, entrepreneurial education and graduates of higher education are factors that exert a positive influence on entrepreneurial cities. However, municipal management did not have any influence on them. The results showed the levels of entrepreneurship and education that underpin municipal ecosystems in entrepreneurship and pointed out the absence of the influence of municipal management on the index of entrepreneurial cities, which may compromise the infrastructure of these ecosystems. This study advances the understanding of the drivers of entrepreneurial cities in Brazil, and thus presents a theoretical contribution to the study of entrepreneurship ecosystems in the context of emerging countries. The results provide a more accurate analysis of the Entrepreneurial Cities Index for municipal managers and investors.

Keywords: entrepreneurial city; entrepreneurship; entrepreneurship education; human capital; municipal management.

Introduction

Entrepreneurial cities (EC) are a topic of interest to policymakers and public managers because they represent a path to the development of localities (Berjani, Burg and Verduijn, 2023; Lange and Schmidt, 2021). Entrepreneurial ecosystems in urban environments (Ziyae, Rezvani and Eynolghozat, 2022) and entrepreneurial cities can produce economic, social, ecological and sustainable development (Kvilvang, Bjurström and Almqvist, 2020; Ziyae, Rezvani and Eynolghozat, 2022). As a social way of organizing the territory, this type of urban governance is more decentralized and can significantly give more autonomy to local leaders (Lauerman, 2018), leading to transformations in the place, as well as attracting investments and creating value (Jokela, 2019), thereby increasing the rate of entrepreneurial behaviours of citizens (Eynolghozat, Ziyae and Rezvani, 2023).

Entrepreneurial cities represent ecosystem strategies to develop and transform regions through the formation of a local entrepreneurial culture (Maroufkhani, Wagner and Ismail, 2018). Therefore, several governments in emerging countries are devoting efforts

to developing their entrepreneurial ecosystems (Kantis, Federico and García, 2020). This topic is relevant to Latin America due to the growing unrest regarding the social, political, economic and environmental situation that suggests a deep challenge to the development model (Garcés-Velástegui, 2022). However, this strategy requires the ability to deal with the complexity of ecosystems, which, due to participation and the pursuit of empowerment over the territory, becomes a stage for power struggles (Mason and Brown, 2014).

To evaluate ecosystems, measurement has been used as a tool (Machado *et al.*, 2023) because it is relevant to identify the strengths and weaknesses of the ecosystem (Stam, 2015), which enables its assessment and adaptation. Accordingly, some indicators have sought to measure regional development from an ecosystem perspective. One example is the Regional Entrepreneurship and Development Index (REDI), used to measure entrepreneurial cities in Europe. In Brazil, there is the Index of Entrepreneurial Cities (ECI), introduced by the National School of Public Administration (ENAP) in 2014. This index established a ranking among the 100 most populous Brazilian municipalities and identified the largest local ecosystems (ENAP, 2022). According to this indicator, the entrepreneurial ecosystem is measured by a group of seven variables: regulatory environment, infrastructure, market, access to capital, innovation, human capital, and entrepreneurial culture.

In Brazilian cities, some variables have shown their importance in their dynamics. One is the individual micro-entrepreneur (MEI), a growing type of entrepreneurship in all Brazilian cities. Another variable that can be observed in the Brazilian context is the growing number of graduates, which has been expanding significantly in Brazil, encompassing a diverse range of courses, such as those offered in distance learning or technological higher education. To expand academic training at the undergraduate level, distance learning courses have been introduced as a means of social inclusion and democratization of higher education (Guilherme and Reis, 2018). Regarding entrepreneurship, the role of SEBRAE[1] is notable through the offering of Entrepreneurial Education courses throughout the country. Finally, through municipal management, the government is crucial for the injection of resources and provision of infrastructure, which are important for entrepreneurial ecosystems (Audretsch, Heger and Veith, 2015; Roundy, Bradshaw and Brochen, 2018). Taking all the aforementioned into consideration, this study aims to answer the following question: are individual micro-entrepreneurs, the formation of human capital with higher education, entrepreneurial education and municipal government determinants of entrepreneurial cities in Brazil? Therefore, the objective of this research is to identify the determinants of entrepreneurial cities in Brazil, evaluated by the ECI model, which will highlight the configuration of these urban ecosystems and their characteristics in the Brazilian context. Identifying the influence of these four aspects - type of entrepreneurship, human capital, entrepreneurial education, and municipal management–in the ranking of Brazilian cities will provide an expanded understanding of the determinants and profile of entrepreneurial cities. This study advances the understanding of Brazilian entrepreneurial cities, bringing information to policymakers as well as to potential investors and governmental and non-governmental organizations focused on interests associated with the development of localities. In addition, our study progresses in the discussion on entrepreneurial cities by presenting entrepreneurial determinants in emerging countries, such as Brazil.

The remainder of this paper is organized as follows: first, we present aspects of ecosystems and entrepreneurial cities, as well as the conceptual determinants upon which our model was built, emphasizing the four factors that affect entrepreneurial cities. Then, we describe the methodology used to develop and analyze the data. In the results section, the influence of the factors on Brazilian entrepreneurial cities is presented, focusing on

1: SEBRAE is a Brazilian private, non-profit entity that promotes the competitiveness and sustainable development of micro and small businesses.

the four determinants. Finally, based on the analysis of the drivers of Brazilian entrepreneurial cities, there is a discussion of the results and the proposal of some policy recommendations.

Ecosystems and entrepreneurial cities

Entrepreneurial ecosystems are guided by the premise that such a model fosters entrepreneurship within a context and coevolves through interactions among various elements (Isenberg, 2010). According to Spigel (2017), entrepreneurial ecosystems are combinations of social, political, economic, and cultural elements within a region that support the development and growth of innovative firms and encourage nascent entrepreneurs and other actors to take the risk of starting high-risk businesses.

There is no consensus among authors regarding the type of entrepreneurship that should be prioritized in ecosystems. Many advocate attracting high-growth companies (Audretsch and Belitski, 2017; Mason and Brown, 2014; Stam, 2015), while others support the attraction of innovative companies (Spigel, 2017). There are also those who emphasize the importance of inclusive enterprises, such as social enterprises, immigrant businesses, and non-governmental organizations (Malecki, 2018; Spigel and Harrison, 2018)

Isenberg (2010) highlights the importance of implementing an ecosystem according to local conditions rather than trying to replicate other models, while engaging the private sector. According to the author, an ecosystem needs to reconcile local social, political, economic, and cultural resources and introduce an entrepreneurial culture that fosters sustainable development.

Similarly, the concept of entrepreneurial cities (EC) emerges as cities that can help people identify and exploit opportunities (Krishna and Kummitha, 2019), which could develop the locality economically, socially, and sustainably (Kvilvang, Bjurström and Almqvist, 2020; Ziyae, Rezvani and Eynolghozat, 2022), as a continuous process of wealth creation (Ziyae, Rezvani and Eynolghozat, 2022). It encompasses a local attitude that encourages entrepreneurship and the inclusion of various actors (Carvalho, 2023). Chan and Li (2017) that the EC can be understood as a political narrative about the local economy and a governance strategy to manage local development.

Jokela (2019) positions the concept of "city branding" in the context of urban entrepreneurship. For her, the concept of an entrepreneurial city is associated with the concept of "city branding," which focuses on urban competition under a neoliberal vision of entrepreneurship. According to the author, there are universal traits in urban entrepreneurship; however, context-specific manifestations are present and should be interpreted in historical and particular contexts. Additionally, the author points out that while the concept of "city branding" may engage a flexible network of actors in the making of the city, the logic and the power relations behind the formation of the boundaries of this network may not always be transparent" (Jokela, 2019, p.13).

Determinants of entrepreneurial cities

In this section, specific aspects related to the drivers of entrepreneurial cities are explored, as pointed out in previous studies (Agasisti and Bertoletti, 2022; Kantis, Federico and García, 2020; Nakamura, 2020). We selected the following four variables: company type, human capital (education), entrepreneurial education, and municipal management.

The type of enterprises

There is no consensus in the literature on whether it is more important for local development to encourage innovative and high-growth companies (Fischer and Nijkamp, 2021; Shane, 2009) or to encompass a diversity of businesses (Morris, Neumeyer and Kuratko, 2015). Innovative or Schumpeterian firms can present two possible impacts on the envi-

ronment: a) low impact (disruptive firms in small sectors and new startups) and b) high impact (firms that show high growth through technological or business innovations) (Henrekson and Sanandaji, 2020).

Similarly, other types of entrepreneurship can also contribute to localities. For example, survival businesses focus on the survival of the entrepreneur and their family, are often informal, and are determined by survival factors that push individuals to entrepreneurship. The other type is lifestyle businesses, which focus on the well-being of the entrepreneur, with modest reinvestment and local competitiveness. Managed growth businesses are another type that have a business model and seek growth over time, occasionally launching new products and entering new markets, but developing a strong local and regional brand, reinvesting constantly, but in a moderate way (Morris, Neumeyer and Kuratko, 2015). Thus, not only innovative companies, but also other types of companies that focus on survival and growth can contribute to entrepreneurial cities.

While some researchers believe that environments should prioritise policies and incentives for the creation of high-growth and innovative firms (Shane, 2009; Spigel, 2017; Stam and Ven, 2021), others argue that an entrepreneurial environment must encompass firms of different types, such as anchor firms (Malecki, 2018) or small firms (Cravo, Gourlay and Becker, 2012; Morris, Neumeyer and Kuratko, 2015). Morris, Neumeyer and Kuratko (2015) adds that small businesses are important for regions, although most of them start small and remain small, not creating many jobs or wealth. In addition, routine or replicated businesses would bring economic growth, even though most of these businesses offer only products and services based on existing methods and technologies (Henrekson and Sanandaji, 2020).

In this sense, for the development of territories, the diversity of enterprises would be more fruitful and should include social and family enterprises (Basco, 2015; Malecki, 2018), self-entrepreneurs or solo entrepreneurs, freelancers, and service providers (Henrekson and Sanandaji, 2020; Stam, 2015). This strategy could favour the promotion of social happiness and dynamism, poverty reduction, technology creation and development, employment, wealth generation, and welfare increase (Ziyae, Rezvani and Eynolghozat, 2022).

Social entrepreneurs have contributed to the development of various locations in Brazil (Kuyumjian, Souza and Sant'Anna, 2014). In addition, it is important to mention a growing type of small business: the microentrepreneur (MEI), which, like a solo entrepreneur, can hire up to an employee and receive a government subsidy (Cenci, Machado and Carvalho, 2022). This type of entrepreneurship softens the problem of unemployment and informality (Justen, Braga and Gurgel, 2023) and is not associated with the type of entrepreneurship that promotes economic growth (Shane, 2009). In the Brazilian entrepreneurial context, the number of people becoming MEI[2] is increasing (Cenci, Machado and Carvalho, 2022). Considering the number of enterprises, this is currently the primary modality in all Brazilian cities. So, in that sense, the first research question in this study is: is this type of solo entrepreneurship (MEI) a determinant of Brazilian entrepreneurial cities?

This type of entrepreneur is important because the transformation of a region results from several types of entrepreneurship (Henning and Mckelvey, 2020). It can influence the ECI ranking because it is the type of entrepreneurship with the highest growth rates in the Brazilian context. This leads us to suppose that there is a positive relationship between the number of individual entrepreneurs per Brazilian municipality and the degree of municipal entrepreneurship, as evaluated by the ECI (H1).

2: MEI refers to the Individual Micro-entrepreneurs.

Human capital

Entrepreneurial cities require infrastructure, technology, knowledge, and human capital (Krishna and Kummitha, 2019; Nakamura, 2020; Ziyae, Rezvani and Eynolghozat, 2022). Education and human capital have been used as indicators of entrepreneurial environments and cities (Henrekson and Sanandaji, 2020; Instituto de Estudos Superiores da Empresa, 2015; Kantis, Federico and García, 2020). Human talent through education, universities, and university students has been shown to influence entrepreneurial environments (Agasisti and Bertoletti, 2022; Farinha *et al.*, 2020; Roundy and Burke-Smalley, 2022; Shwetzer, Maritz and Nguyen, 2019; Vekić, Borocki and Fajsi, 2019). For instance, recently, (Agasisti and Bertoletti, 2022) identified the positive impact of universities on economic development in Europe. Similarly, (Cravo, Gourlay and Becker, 2012) identified the positive impact of human capital on the economic growth of localities in Brazil.

Entrepreneurial human capital is required for the development of entrepreneurship in Latin American cities (Kantis, Federico and García, 2020). University students and education are relevant to entrepreneurial ecosystems (Henrekson and Sanandaji, 2020; Roundy and Burke-Smalley, 2022; Shwetzer, Maritz and Nguyen, 2019; Vekić, Borocki and Fajsi, 2019). In order to develop entrepreneurial cities in Latin America, it is necessary to develop a critical mass of individuals with the vocation, motivation, and capacity to start a new firm (Kantis, Federico and García, 2020), which is generally achieved through higher education. This raises the following research question: is undergraduate education a determinant of entrepreneurial cities measured by the ECI?

High school education has been shown to be negatively associated with regional resilience (Svoboda and Klementova, 2014), while higher education has shown a positive relationship (e.g., (Duschl, 2016; Rios and Gianmoena, 2020; Rizzi, Graziano and Dallara, 2018; Svoboda and Klementova, 2014; Xiao and Drucker, 2013)). This leads us to the second research hypothesis: there is a positive relationship between higher education and the Index of Brazilian Entrepreneurial Cities (ECI). The ranking of Brazilian entrepreneurial cities (ECI) consider human capital, but only at the graduate level (number of master´s and doctoral students) and it considers only undergraduate courses with evaluations of excellence according to the criteria of the Ministry of Education, and so not include the total number of undergraduate students (H2).

Entrepreneurship education

Entrepreneurial education influences entrepreneurial intentions (Cassol *et al.*, 2022), which can boost entrepreneurship in localities. Entrepreneurial skills education programs are pivotal for cities (Farinha *et al.*, 2020; Ziyae, Rezvani and Eynolghozat, 2022). In emerging countries, including Brazil, education in entrepreneurship is relevant (Kantis, Federico and García, 2020). However, the ECI does not consider entrepreneurial education in the measurement of entrepreneurial cities. One type of entrepreneurial education in Brazil is offered by the Brazilian Service of Support for Micro and Small Businesses (SEBRAE). The Serviço Brasileiro de Apoio às Micro e Pequenas Empresas (SEBRAE) offers several programs at the national level that focus on entrepreneurial education (Serviço Brasileiro de Apoio às Micro e Pequenas Empresas, 2023). Accordingly, our research intends to answer the following research question: is entrepreneurial education offered by SEBRAE a determinant of Brazilian entrepreneurial cities?

Entrepreneurial education is relevant to ensuring the creation of companies, as it can generate entrepreneurial intentions, self-efficacy (Cassol *et al.*, 2022; Harima *et al.*, 2021; Martínez-Gregorio, Badenes-Ribera and Oliver, 2021), and entrepreneurial skills (Kantis, Federico and García, 2020). Training in creating or managing SMEs, when incorporated into the education and training system, is related to entrepreneurship in cities (Farinha *et al.*, 2020; Laspita *et al.*, 2023). Therefore, we suppose that there is a positive relationship between entrepreneurial education and the ECI in Brazil (H3).

The local government

Public policies can develop systemic conditions that favor entrepreneurship (Kantis, Federico and García, 2020) and public management can improve efficiency (Instituto de Estudos Superiores da Empresa, 2015) and the capacity to work together in partnership with private actors (Doucet, 2013). This is necessary for ecosystems in cities and regions (Jiang and Waley, 2020; Ziyae, Rezvani and Eynolghozat, 2022).

Furthermore, public managers have agency power over the determination of resources, projects, and policies (Davidsson, Recker and Briel, 2020), favoring the structural conditions of entrepreneurial cities.

The role of governments exceeds that of norms and regulations and includes public policies relevant to promoting a favorable context for the creation and development of new firms (Kantis, Federico and García, 2020). Nevertheless, emerging entrepreneurial cultures are based on economies with negative governmental policies (Farinha *et al.*, 2020). In Brazil, there is an established ranking related to the quality of city management (Municipal Management Index - MMI). Therefore, this study is guided by the following research question: is the Municipal Management Index a determinant of Brazilian entrepreneurial cities?

Entrepreneurial cities require governance, leadership, and a balance of power among actors (Lauerman, 2018; Malecki, 2018). Municipal management can play a significant role in this direction by providing infrastructure and technology (Chen *et al.*, 2020). The government is also important for attracting capital and professionals and promoting innovation and diversified forms of urban facilities (Kourtit, Nijkamp and Steenbruggen, 2017; Wu, 2003; Zheng, 2011). Hence, we suppose that there is a positive relationship between the management of the cities and the entrepreneurial cities, measured by the ECI (H4).

Methods

This study is applied in nature with a quantitative approach and descriptive and explanatory objectives. For the estimation of results, Pearson's correlation coefficient and multiple linear regression were used, which were estimated using the ordinary least squares (OLS) method. Data were obtained from the following national agencies: Federal Revenue Service, *Instituto Brasileiro de Geografia e Estatística* (IBGE), *Serviço Brasileiro de Apoio às Micro e Pequenas Empresas* (SEBRAE), National School of Public Administration (ENAP), *Instituto Nacional de Estudos e Pesquisas Educacionais Anísio Teixeira* (INEP) and *Conselho Federal de Administração* (CFA).

Model variables

Dependent variable

This study uses the Entrepreneurial Cities Index (ECI) as the dependent variable. The ECI variable was obtained from the ENAP. The ECI is based on seven groups of variables (determinants) and ranks Brazil's 100 largest entrepreneurial cities. The ECI has established a ranking of 100 cities (ENAP, 2022). In the ranking available for 2022, Marabá (PA) was included in the ranking of the 100 most populous cities, and Santa Maria (RS) was excluded from the ranking compared to the last estimation. However, Santa Maria was also analyzed in the 2022 ranking as a demand of entrepreneurs and public managers. Thus, the sample of municipalities with ECI includes 101 municipalities (ENAP, 2022). ECI is composed of 49 indicators, distributed in 14 sub-determinants, derived from the seven determinants (Table 1).

Table 1: Determinants of Brazilian Entrepreneurial Cities

Regulatory environment	**Infrastructure**	**Market**	**Access to Capital**	**Innovation**	**Human capital**	**Entrepreneurial culture**
Process time	Intercity transportation	Economic development	Available Capital	Inputs	Access and quality of basic labor	Entrepreneurship image
Taxation	Urban conditions	Potential customers	-	Outputs	Access and quality of qualified labor	-
Bureaucratic complexity	-	-	-	-	-	-

The determinants shown in Table 1 include the regulatory environment, which considers processing time, taxation, and bureaucratic complexity. In terms of infrastructure, the indicators include inter-urban transportation and urban conditions, such as access to high-speed Internet, average price per square meter, cost of electricity, and homicide rate. To calculate the market variable, the ECI considers economic development and potential customers. The access to capital variable includes available capital, and the innovation variable covers inputs (number of masters and doctorates, employees in R&D, investments, and technological infrastructure) and outputs (information technology companies, innovative companies, patents, and creative economy). In terms of human capital, the ECI considers basic labor (focus on high school and technical education) and qualified labor (the proportion of undergraduate students from high-quality courses (ENADE)). In the culture index, initiatives and institutions are considered (ENAP, 2022). For the measurement of ECI, the methodology applied by ENAP follows the factor analysis method. In this research, we used the ECI indices from 2022, which can be seen in Table 2.

Table 2
Index of Entrepreneurial Cities (ECI). Source: ENAP (2022).

Cidade	**Rank**	**ECI**
Ananindeua	72ª	5.48
Anápolis	55ª	5.83
Aparecida de Goiânia	65ª	5.59
Aracaju	25ª	6.52
Bauru	49ª	6.02
Belém	44ª	6.11
Belford Roxo	101ª	3.75
Belo Horizonte	5ª	7.86
Betim	71ª	5.5
Blumenau	20ª	6.65
Boa Vista	47ª	6.08
Brasília	69ª	5.53
Camaçari	88ª	5.01
Campina Grande	67ª	5.58
Campinas	27ª	6.47
Campo Grande	34ª	6.32
Campos dos Goytacazes	61ª	5.72

Cidade	Rank	ECI
Canoas	45ª	6.09
Carapicuíba	90ª	4.96
Cariacica	74ª	5.44
Caruaru	89ª	5
Cascavel	13ª	7.14
Caucaia	98ª	4.32
Caxias do Sul	36ª	6.27
Contagem	48ª	6.03
Cuiabá	10ª	7.6
Curitiba	3ª	8.17
Diadema	50ª	6.01
Duque de Caxias	73ª	5.45
Feira de Santana	68ª	5.53
Florianópolis	2ª	8.5
Fortaleza	33ª	6.36
Franca	70ª	5.51
Goiânia	14ª	6.99
Gravataí	79ª	5.38
Guarujá	83ª	5.18
Guarulhos	92ª	4.84
Itaquaquecetuba	100ª	3.95
Jaboatão dos Guararapes	93ª	4.62
João Pessoa	35ª	6.27
Joinville	9ª	7.68
Juiz de Fora	78ª	5.38
Jundiaí	24ª	6.54
Limeira	43ª	6.11
Londrina	17ª	6.8
Macapá	40ª	6.17
Maceió	29ª	6.44
Manaus	31ª	6.38
Marabá	91ª	4.84
Maringá	30ª	6.43
Mauá	80ª	5.35
Mogi das Cruzes	53ª	5.87
Montes Claros	66ª	5.59
Mossoró	84ª	5.14
Natal	42ª	6.14
Niterói	11ª	7.38
Nova Iguaçu	85ª	5.12
Olinda	81ª	5.23
Osasco	8ª	7.72

Cidade	Rank	ECI
Palmas	41ª	6.15
Paulista	96ª	4.34
Pelotas	64ª	5.61
Petrolina	86ª	5.11
Petrópolis	75ª	5.42
Piracicaba	46ª	6.09
Ponta Grossa	59ª	5.74
Porto Alegre	6ª	7.82
Porto Velho	37ª	6.26
Praia Grande	56ª	5.77
Recife	18ª	6.75
Ribeirão das Neves	99ª	4.19
Ribeirão Preto	22ª	6.59
Rio Branco	62ª	5.62
Rio de Janeiro	15ª	6.95
Salvador	39ª	6.22
Santa Maria	19ª	6.69
Santarém	63ª	5.62
Santo André	12ª	7.32
Santos	26ª	6.49
São Bernardo do Campo	16ª	6.94
São Gonçalo	51ª	5.92
São João de Meriti	97ª	4.34
São José do Rio Preto	54ª	5.84
São José dos Campos	7ª	7.8
São José dos Pinhais	38ª	6.24
São Luís	57ª	5.75
São Paulo	1ª	9.29
São Vicente	94ª	4.51
Serra	58ª	5.75
Sorocaba	32ª	6.37
Sumaré	95ª	4.39
Suzano	76ª	5.4
Taboão da Serra	82ª	5.21
Taubaté	77ª	5.39
Teresina	60ª	5.73
Uberaba	52ª	5.92
Uberlândia	21ª	6.62
Várzea Grande	23ª	6.57
Vila Velha	28ª	6.45
Vitória da Conquista	87ª	5.01
Vitória	4ª	7.87

To select the variables that influence ECI, four independent variables were chosen: type of enterprise, human capital (undergraduate students), entrepreneurial education (SEBRAE Programs), and Municipal Management.

Independent variables

Regarding the type of enterprise, this variable represents the number of Individual Micro-entrepreneurs per 100 inhabitants (MEI), meaning that the number of individual micro-entrepreneurs in 2020 was divided by the population and multiplied by 100. The MEI data were extracted from the Federal Revenue Service, and the population data were obtained from IBGE. Human Capital (Proportion of Higher Education Graduates - HIG_LEV) was obtained by dividing the number of undergraduate graduates in 2020 by the population. The data on graduates were collected from INEP, and the population data were obtained from IBGE.

The independent variable, Entrepreneurial Education Index (ENT_EDU), represents a sub-dimension of the Índice Sebrae de Desenvolvimento Econômico Local (ISDEL) 2019, measured by SEBRAE (Serviço Brasileiro de Apoio às Micro e Pequenas Empresas, 2023). It considers data from clients of the Sebraetec and Empreendedor do Futuro programs, including both individuals and legal entities. The measurement of this index was based on the factor analysis method with orthogonal rotation (varimax). The guidelines to construct the ISDEL present several points: (i) evaluating the original version of the ISDEL; (ii) evaluating the new database with the new variables as a whole; (iii) assessing the relevance of each variable within the dimensions; (iv) redesigning the existing subdimensions and creating new subdimensions; and (v) guiding the choice of weights for the dimensions, subdimensions and variables.

Finally, municipal management was measured using the Municipal Management Index (MMI) developed by the Conselho Federal de Administração (Conselho Federal de Administração, 2023), encompassing a group of 12 indicators distributed across the following dimensions: Finance, Management, and Performance. The Finance dimension consists of the following indicators: Fiscal, Per Capita Investment, Legislative Cost, and Pension Balance. The Management dimension is formed by the following indicators: Planning, Employees, and Transparency. The Performance dimension comprises the following indicators: Health, Education, Security, Sanitation and Environment, and Social Vulnerability.

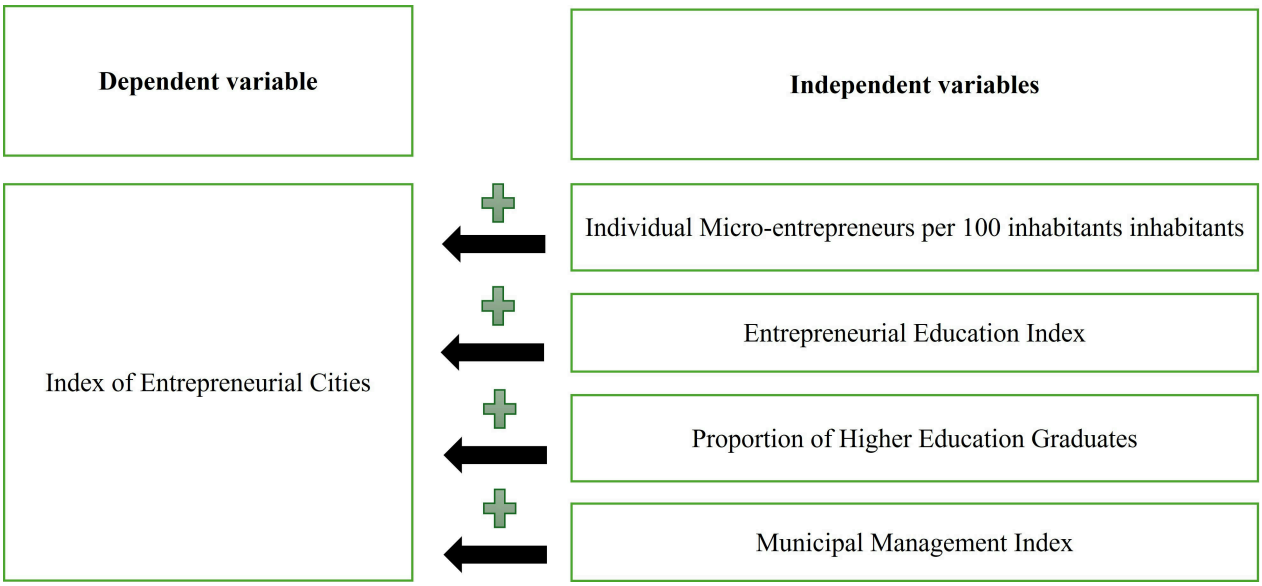

Figure 1: Model variables.

Measure Model

The estimated model is represented by Equation 1:

$$ECI_I = \beta_0 + \beta_1 MEI_I + \beta_2 ENT\_EDU_I + \beta_3 HIG\_LEV_I + \beta_4 MMI_I$$

In such equation, ECI represents the explained variable; MEI, ENT_EDU, HIG_LEV, and MMI represent the explanatory variables; the parameter β_0 refers to the linear coefficient; and the parameters β_1, β_2, β_3, and β_4 represent the regression's angular coefficients. The indicators with their respective expected signs and references are listed in Table 3.

Table 3: Independent variables of the model

Variable	*Proxy*	Description	Expected Signal	Source
Entrepreneurship	MEI	Percentage of individual micro-entrepreneurs in the municipality	+	Kuyumjian, Souza and Sant'Anna (2014); Stam (2015); Basco (2015); Malecki (2018)
	ENT_EDU	SEBRAETEC and the Future Entrepreneur Program	+	Harima *et al.* (2021); Martínez-Gregorio, Badenes-Ribera and Oliver (2021); Farinha *et al.* (2020); Kantis, Federico and García (2020)
Human Capital	HIG_LEV	Percentage of undergraduate students	+	Henrekson and Sanandaji (2020); Shwetzer, Maritz and Nguyen (2019); Vekić, Borocki and Fajsi (2019); Roundy and Burke-Smalley (2022); Krishna and Kummitha (2019); Nakamura (2020)
Municipal Management	MMI	Municipal Management Index	+	Malecki (2018); Miörner (2022); Chen *et al.* (2020); Kantis, Federico and García (2020)

Regarding the MEI indicator, a higher proportion of MEI in the municipality is expected to contribute to a higher-level position in the entrepreneurial city ranking. For the entrepreneurship education indicator, it is expected that a higher level of entrepreneurial qualification can contribute to a higher ranking of entrepreneurial cities. As for the Human Capital indicator, the expected impact on the entrepreneurial city index is also positive. In brief, municipalities with high levels of governance are expected to positively influence the ranking of entrepreneurial cities.

Analysis

This study applied a regression model to analyze the determinants of Brazilian entrepreneurial cities. Correlation analysis was used to estimate Pearson's correlation coefficient and evaluate the relationship between entrepreneurial cities and their factors. To identify the influence of the factors on the ranking of entrepreneurial cities, a multiple linear regression was performed using the ordinary least squares (OLS) method, to evaluate the influence and intensity of the influencing factors on ECI. It was estimated by the log-log model, to capture the elasticity relationship of causality between the influencing factors and entrepreneurial cities. This method allows for the evaluation of the model (Greene, 2003). To assess the quality of the model, multicollinearity, and heteroscedasticity, we performed variance inflation factor (VIF), Breusch-Pagan, and specification error tests.

Results

This section presents the descriptive statistics of the model variables. Subsequently, we show the test of the individual correlation of each variable with the ECI and the

results of the evaluation of the impact of the determinants on entrepreneurial cities. For descriptive statistics, we calculated the mean, minimum and maximum values, standard deviation, and coefficient of variation to verify the percentage of data dispersion for each variable. All model variables were verified, including the Index of Entrepreneurial Cities (ECI), percentage of individual microentrepreneurs (MEI), Entrepreneurship Education (ENT_EDU), percentage of undergraduates (HIG_LEV), and the Municipal Management Index (MMI) (Table 4).

Table 4: Descriptive statistics

Variables	Mean	Mínimum	Maximum	Standard deviation	Coefficient of variation (%)
ECI	6.00	3.75	9.29	1.00	16.67
MEI (%)	6.37	2.38	10.24	1.41	22.13
ENT_EDU	0.043	0.000	0.584	0.085	197.67
HIG_LEV (%)	50.37	8.13	141.88	25.18	49.99
MMI	6.42	3.83	8.48	0.88	13.71

On average, in 2020, the largest municipalities had an ECI score of 6.00. The municipality with the lowest city entrepreneurship index is Belford Roxo, Rio de Janeiro State, with a score of 3.75, and the municipality with the highest city entrepreneurship index is São Paulo, which is located in São Paulo state (9.29). In addition, the standard deviation and coefficient of variation revealed moderate data dispersion for ECI.

Regarding the descriptive statistics related to the type of enterprise, on average, in 2020, MEI represented 6.37% of the population. The municipality with the lowest proportion of MEI is Rio Branco, in Acre State, at 2.38%, and the municipality with the highest proportion is Florianópolis, in Santa Catarina State, at 10.24%. The statistics for the standard deviation and coefficient of variation showed a moderate dispersion of the data.

Concerning the entrepreneurial education index, on average, it is 0.04, within a range from 0.00 (São Gonçalo-Rio de Janeiro State, Marabá-Pará State, and Ribeirão das Neves-Minas Gerais State) to 0.58 (Campina Grande-Paraiba State). The statistics for the standard deviation and coefficient of variation suggest a high dispersion of the data for this indicator.

Regarding the human capital variable (HIG_LEV), the average undergraduate rate was 50.37% in 2020. The lowest rate was 8.13% (Caucaia, Ceará State) and the highest was 141.88% (Vitória, Espírito Santo State). This variable had a high standard deviation.

The MMI variable, on average, scored 6.42, ranging from 3.83 (Belém, Pará State) to 8.48 (Jundiaí, São Paulo State). As for the standard deviation and coefficient of variation statistics, it can be observed that this indicator had low data dispersion. Subsequently, we verified the correlation between the influencing factors and ECI. The results are presented in Table 5.

Table 5: Correlation of ECI with independent variables

Variables	Pearson Coefficient	P-value
MEI	0.346	0.000
ENT_EDU	0.232	0.020
HIG_LEV	0.577	0.000
MMI	0.204	0.040

The results show that the type of enterprise (MEI), entrepreneurial education (ENT_EDU), human capital (HIG_LEV), and municipal management (MMI) are significantly correlated with ECI. Among the significant correlations, higher human capital is followed by MEI.

The Variance Inflation Factor (VIF) test evidenced that there was no multicollinearity in the model. The Breusch-Pagan test revealed no heteroscedasticity in the error terms. Finally, to reinforce the quality of the model, a specification error test showed that no variables were omitted (Table 6).

Table 6: Multiple linear regression results

Variables	Coefficient	P-value	VIF
MEI	0.174	0.001	1.220
ENT_EDU	0.017	0.007	1.410
HIG_LEV	0.137	0.000	1.400
MMI	−0.036	0.688	1.210
Intercept	1.09	0.000	-
Sample (n)	101	-	-
R^2	0.516	-	-
Test Breusch-Pagan	0.330	0.565	-
Test Jarque-Bera	1.840	0.398	-
Specification error test	0.870	0.459	-

Our results confirmed the hypothesis that the type of enterprise, entrepreneurial education, and human capital influence Brazilian entrepreneurial cities. The type of entrepreneurship showed a positive impact; that is, the higher the percentage of MEI in the municipality, the higher was the entrepreneurial city index. With an increase of 1% in the percentage of MEI, the results suggest an increase of 0.17% in the ECI. Therefore, H1 was supported.

Entrepreneurial education and human capital also had a positive influence on the cities. An increase in the number of clients in SEBRAE's programs, Sebraetec and Empreendedor do Futuro, raised the Index of Entrepreneurial Cities. An increase of 1% in the entrepreneurial education indicator represented an increase of 0.017% in ECI, supporting H3. Human capital (HIG_LEV) also showed a positive relationship, supporting H2. The higher the rate of undergraduate education, the higher the entrepreneurial city index. An increase of 1% in the number of undergraduates contributed to an increase of 0.137% in the ECI.

On the other hand, public management did not influence the ECI; therefore, H4 was not supported.

Discussion

The conceptual evolution of entrepreneurial cities presents three distinct moments (Jokela, 2019). The first was the Fordism Crisis of the 1970s. According to the author, during this period, the main focus was on the need for a connection between public and private agents, aiming at economic regulation. The second stage was in the 1990s, with the idea of globalization and the intention to attract international investors, giving rise to technology parks and focusing on innovation. In the third moment, the author points out that the last 15 years configured the "entrepreneurialization of the Society and the self" (Jokela, 2019, p. 4). In this approach, citizens are active and flexible agents responsible for their own well-being. This study is inserted in the third moment.

In this approach, entrepreneurial cities are understood as institutional environments that promote entrepreneurship within a given region (Lange and Schmidt, 2021). This encompasses a temporal and spatial dimension, characterizing how cities promote entrepreneurship based on the actions of various actors and resources, including entrepreneurs, the government, investors, support organizations, and universities (Roundy and Burke-Smalley, 2022). Furthermore, it considers that entrepreneurial cities require infrastructure, technology, knowledge, and human capital (Kourtit, Nijkamp and Steenbruggen, 2017; Krishna and Kummitha, 2019; Ziyae, Rezvani and Eynolghozat, 2022). According to Ziyae, Rezvani and Eynolghozat (2022), three components are present in entrepreneurial cities: structural conditions, the social interaction of agents and the structure, and the emergence of complex and possible outcomes:

a) structural conditions include appropriate national and local policies, powerful and entrepreneurial local management, population and workforce, technology-based infrastructure, natural and ecological infrastructure, transportation infrastructure, and stable financial infrastructure. Concerning local management, our results evidenced that public management did not influence entrepreneurial cities. This is not in line with the literature, that pointed out the role of government in entrepreneurial cities (Audretsch, Heger and Veith, 2015; Roundy, Bradshaw and Brochen, 2018; Spigel and Harrison, 2018).

b) social interactions among agents and their structures. This relates to the presence of mechanisms that support entrepreneurs, entrepreneurial culture, and financial resources. Cities need to support and develop radical innovation and offer entrepreneurial skills education programs. Our results corroborate this topic, and evidenced that entrepreneurial skills obtained from entrepreneurial education are related to the entrepreneurial cities.

c) complex and possible outcomes. Local transformations are possible in entrepreneurial cities, for instance in employment, wealth generation, welfare increase, social happiness and dynamism, poverty reduction, and technology creation and development. However, our results show that the self-entrepreneurship modality, the individual micro-entrepreneur (MEI), is positively associated with the Index of Brazilian Entrepreneurial Cities. This indicates that the entrepreneurial ecosystem model outlined by the ECI is not +necessarily associated with wealth generation, well-being, or poverty reduction, because these entrepreneurs often lack resources. Next, we comment on the results separately for each of the independent variables.

Type of entrepreneurship

Concerning the type of entrepreneurship, the results of our model indicate the influence of MEI on entrepreneurial cities. The MEI, as a determinant of Brazilian entrepreneurial cities, indicates that the type of entrepreneurship related to the ranking of cities is the low-growth subsistence entrepreneurship type, with little effect on the development of localities when compared to dynamic and innovative ecosystems (Alvi and Ulrich, 2023). It is important to mention that this type of entrepreneurship covers forms of self-employment and informality that accommodate demands or temporarily solve problems associated with informality (Cenci, Machado and Carvalho, 2022). This type of entrepreneurship has a low economic impact on the local community (Henrekson and Sanandaji, 2020) and is predominantly composed of businesses that aim to ensure the survival of entrepreneurs (Morris, Neumeyer and Kuratko, 2015).

They do not generate jobs and are self-entrepreneurs in the majority. This type of entrepreneurship does not influence the development of territories with the intensity of businesses that focus on growth and innovation (Fischer and Nijkamp, 2021). However, MEI is important and inclusive (Shakiba, Delangizan and Mohamadifar, 2022). To favor the development of localities, entrepreneurial cities must encompass a diversity of innovative, minority, ethnic, family, and social types (Basco, 2015; Fernandes and Ferreira, 2022; Fischer and Nijkamp, 2021; Kuyumjian, Souza and Sant'Anna, 2014; 2014). Therefore, it is

important to have a representative coexistence of other types of businesses in the locality because the transformation of regions from the perspective of entrepreneurial cities results from a dynamic of knowledge development and diffusion, entrepreneurship, and the evolution of small businesses (Henning and Mckelvey, 2020).

Entrepreneurial cities can extend beyond Schumpeterian innovative entrepreneurship, encompassing other forms of minority and ethnic entrepreneurship (Fernandes and Ferreira, 2022; Fischer and Nijkamp, 2021). This is interesting because the negative externalities generated by neoliberal models produce undesirable consequences (Luo and Shen, 2022). Lauerman (2018) points out that these models are often based on exogenous economic models and do not consider the local context and the needs and potential of resources. In emerging countries, cities and their agents must cope with challenges such as unequal social participation, poverty, and unemployment (Kourtit, Nijkamp and Steenbruggen, 2017). The influence of MEI on the ECI index indicates the relevance of considering types of subsistence entrepreneurship when analyzing entrepreneurial ecosystems in the Latin American context.

Human capital

The second most important independent variable in our model was human capital. In Brazil, it is important to note that the education system offers a diversity of undergraduate courses that can range from two to six years (INEP), in addition to face-to-face and distance learning courses, configuring a heterogeneity of training in undergraduate education.

This finding corroborates Laspita *et al.* (2023), who stated that the effect of education on entrepreneurial ecosystems is diverse in different social contexts. Nevertheless, the effectiveness of translating human capital into economic growth depends on the creation of the necessary conditions for maintaining or increasing the consumption of goods and services in the municipality, as highlighted by Moutinho *et al.* (2015).

The results also highlight the influence of the entrepreneurial education variable. Our model suggests a positive influence of this variable on the ECI, that is, the cities that offered SEBRAE entrepreneurial education programs achieved the best positions in the ECI ranking. This result supports the relevance of entrepreneurial education in entrepreneurial ecosystems and cities (Farinha *et al.*, 2020; Kantis, Federico and García, 2020). Specifically, in the Brazilian context, this result evidences the influence of SEBRAE in entrepreneurial cities.

Public management

The remaining independent variable in our model is public management (MMI). It was expected that this variable would be related to the ECI because scholars have shown that government and public management play a strategic role in entrepreneurial cities (Antonialli and Kira, 2020; Chen *et al.*, 2020; Eynolghozat, Ziyae and Rezvani, 2023; Kantis, Federico and García, 2020). However, public management was not related to entrepreneurship in Brazilian cities, according to our results. This result can be explained by the lack of business policies in Brazil and the lack of relationships among municipal actors (Carvalho, 2023).

Ecosystems rely on articulation among actors (Malecki, 2018), including the government. According to Carvalho (2023), the North American model was driven by actors embedded in society, especially in the economy, while the European model of urban entrepreneurship was initiated and led by the state. When explaining the entrepreneurial city model of Rio de Janeiro, the author highlights the articulation between the State and the Market "sustained by the grammar of clientelism and patrimonialism" (Carvalho, 2023, p.1), which are ingrained in Brazilian culture. To some extent, this highlights a

unique aspect of Brazilian public management that cannot be overlooked in the debate on entrepreneurial cities.

Thus, the concept of "branding" as a strategy to characterize entrepreneurial cities based on a neoliberal urban policy (Jokela, 2019) does not reflect the various types of entrepreneurship present and does not clearly demonstrate the dynamics of networks, making it difficult to understand how the search for power symmetries in the territory occurs. The lack of government influence identified in this study differs from China's development, in which entrepreneurial cities are influenced by strategies and policies, including public management and corporations (Jiang and Waley, 2020). This result is in line with that of Kantis, Federico and García (2020), who mentioned that deficits in Latin American entrepreneurial systems can affect entrepreneurial fertility and dynamism. Farinha *et al.* (2020) also pointed out negative government policies in Latin American entrepreneurial systems.

Furthermore, Miörner (2022) emphasizes that a development trajectory in a territory is dependent on a) the idea of imaginary regions, based on cultural and cognitive development, where actors project a high level of abstraction through mental maps and shared beliefs; b) power relations that play an important role in coordinating assets and activities in ecosystems; and c) directionality: shared visions, strategies, and agendas that form shared collective priorities among actors. For the author, these elements, combined with agency, modify the structures and reconfigure the regions. Similarly, Ziyae, Rezvani and Eynolghozat (2022) emphasized the pivotal role of structural conditions that favor interactions between agency and structure.

The model proposed in this study demonstrates the influence of factors associated with the type of enterprise in the place, as well as higher education and entrepreneurial education on entrepreneurial cities. Thus, it covers social and contextual aspects that can reveal weaknesses in ecosystems. This is relevant because entrepreneurial cities depend on their ability to recombine structures and build new trajectories for regional development (Miörner, 2022).

Moreover, similar to previous studies that have focused on Latin American entrepreneurial systems (Farinha *et al.*, 2020; Kantis, Federico and García, 2020), our findings demonstrate that Brazilian entrepreneurial cities are related to a type of entrepreneurship similar to solo entrepreneurship and undergraduate human capital. Both variables are associated with low technological and economic potential. In addition, our findings indicate a weak role for local public agents in entrepreneurial cities.

To conclude, our study demonstrates the importance of analyzing contexts in entrepreneurial cities, given that entrepreneurship presents different nuances depending on the context (Zhang and Roelfsema, 2022). This implies the need to understand entrepreneurial ecosystems from a diversity perspective, as shown in previous studies (Farinha *et al.*, 2020; Kantis, Federico and García, 2020).

Conclusion and limitations

This study aimed to identify the drivers of entrepreneurial cities in Brazil by analyzing the ranking established by the National School of Public Administration (ENAP). We applied the Ordinary Least Squares (OLS) method, which is appropriate for this purpose. The robustness of the model was confirmed through tests for heteroscedasticity, multicollinearity, and specification errors.

The variable for the percentage of graduates (human capital) had the greatest influence among the determinants in our multiple linear regression model. Another variable that positively influenced ECI is entrepreneurial education, which was analyzed through programs offered by SEBRAE. Brazilian entrepreneurial cities were also influenced by

the proportion of MEI, a type of individual entrepreneur that does not favor innovation and economic growth but only balances the needs of allocation in the labor market.

It is important to highlight that the variable MMI did not influence entrepreneurial cities. This result demonstrates the weak role of municipal government agencies in the formation of entrepreneurial cities in Brazil. However, it should be noted that this result is associated with the indicator established by the CFA, whereas other indicators may present different results.

Our model contributes to expanding the understanding of entrepreneurial cities in Brazil. As a theoretical contribution, this study advances our understanding of entrepreneurial cities in emerging countries. Our findings demonstrate the important role of contextual variables in analyzing entrepreneurial cities.

As a practical contribution, this study presents elements for municipal managers and actors to understand the limits and potential of ranking entrepreneurial cities in the Brazilian context. Likewise, these findings can guide potential investors and entrepreneurs in seeking investment. By identifying the influencing and non-influencing factors in entrepreneurial cities, this study provides new elements for environmental analysis.

Our results demonstrate the impact of certain contextual elements (individual micro-entrepreneurs, graduate students, entrepreneurial education, and city management) on the ECI. The influence of individual micro-entrepreneurs on the ECI indicates the type of entrepreneurship that underpins entrepreneurial cities in Brazil, while the level of graduation and SEBRAE programs reflect the educational level and type of entrepreneurial education that influences the ECI. These findings highlight the need to implement actions within these contexts so that higher levels of entrepreneurship, education, and entrepreneurial education become determinants of entrepreneurial cities. Additionally, in our model, the quality of municipal management did not influence ECI. The MMI indicator refers to the index that evaluates public management, encompassing financial management, planning and resource mobilization, healthcare, infant mortality, education, among others. Our results revealed the lack of influence of municipal management on ECI, which could weaken the infrastructure of entrepreneurial cities, necessitating attention to this aspect.

A limitation of our study is that the ECI was created in 2014 and has undergone reformulation, presenting a new way of calculating in the 2020 edition, which did not allow for longitudinal evaluation. Future studies should conduct longitudinal evaluations in subsequent years. Finally, it is important to note that the determinants analyzed do not exhaust the possibility of determinants of entrepreneurial cities. Future studies could investigate the determinants of other types of enterprises. Furthermore, future qualitative studies could introduce new elements to evaluate the determinants of entrepreneurial cities in emerging countries.

Bibliography

AGASISTI, T.; BERTOLETTI, A. Higher education and economic growth: A longitudinal study of European regions 2000–2017. **Socio-Economic Planning Sciences**, v. 81, 2022.

ALVI, F.; ULRICH, K. Innovation finance ecosystems for entrepreneurial firms: A conceptual model and research propositions. **Journal of Business Research**, v. 156, Feb. 2023.

ANTONIALLI, D. M.; KIRA, B. Planejamento urbano do futuro, dados do presente: a proteção da privacidade no contexto das cidades inteligentes. **Revista Brasileira de Estudos Urbanos e Regionais**, v. 22, p. 1–25, 2020.

AUDRETSCH, D. B.; BELITSKI, M. Entrepreneurial ecosystems in cities: establishing the framework conditions. **Journal of Technology Transfer**, v. 42, p. 1030–1051, Oct. 2017.

AUDRETSCH, D. B.; HEGER, D.; VEITH, T. Infrastructure and entrepreneurship. **Small Business Economics**, v. 44, n. 2, p. 219–230, 2015.

BASCO, R. Family business and regional development: A theoretical model of regional familiness. **Journal of Family Business Strategy**, v. 6, n. 4, p. 259–271, 2015.

BERJANI, D.; BURG, E. V.; VERDUIJN, K. Discursive threads in entrepreneurship policy texts: A comparative analysis between The Netherlands and Kosovo. **Entrepreneurship & Regional Development**, v. 35, n. 3–4, p. 297–316, 2023.

CARVALHO, N. R. O fracasso do empreendedorismo urbano em terras patrimonialistas-o Rio de Janeiro dos megaeventos e os limites da neoliberalização periférica. **Revista Brasileira de Estudos Urbanos e Regionais**, v. 25, n. 1, 2023.

CASSOL, A. *et al*. Determinants of entrepreneurial intentions and the moderation of entrepreneurial education: A study of the Brazilian context. **The International Journal of Management Education**, v. 20, n. 3, 2022.

CENCI, J. J.; MACHADO, H. P. V.; CARVALHO, C. E. Microempreendedores Individuais que Querem Crescer Estão Alerta a Oportunidades?. **Brazilian Business Review**, v. 19, p. 546–564, 2022.

CHAN, R. C. K.; LI, L. Entrepreneurial city and the restructuring of urban space in Shanghai Expo. **Urban Geography**, v. 38, n. 5, p. 666–686, 2017.

CHEN, J. J. *et al*. External enablement of new venture creation: An exploratory, query-driven assessment of China's high-speed rail expansion. **Journal of Business Venturing**, v. 35, n. 6, 2020.

CONSELHO FEDERAL DE ADMINISTRAÇÃO. **IGM-CFA**. Disponível em: <https://igm.cfa.org.br/bi/>. Acesso em: 20 jan. 2023.

CRAVO, T.; GOURLAY, A.; BECKER, B. SMEs and regional economic growth in Brazil. **Small Business Economics**, v. 38, p. 217–230, 2012.

DAVIDSSON, P.; RECKER, J.; BRIEL, F. External enablement of new venture creation: A framework. **Academy of Management Perspectives**, v. 34, n. 3, p. 311–332, 2020.

DOUCET, B. Variations of the Entrepreneurial City: Goals, roles and visions in Rotterdam's Kop van Zuid and the Glasgow Harbour Megaprojects. **International Journal of Urban and Regional Research**, v. 37, n. 6, p. 2035–2051, 2013.

DUSCHL, M. Firm dynamics and regional resilience: an empirical evolutionary perspective. **Industrial and Corporate Change**, v. 25, n. 5, p. 867–883, Oct. 2016.

ENAP. **Escola Nacional de Administração Pública: Índice de Cidades Empreendedoras 2022**. Disponível em: <https://repositorio.enap.gov.br/bitstream/1/6880/1/ICE2022_Atualizado-com-errata.pdf>. Acesso em: 20 jan. 2023.

EYNOLGHOZAT, M.; ZIYAE, B.; REZVANI, M. IoT-based entrepreneurial city: a new model of urban governance to achieve economic sustainability. **Kybernetes**, 2023.

FARINHA, L. *et al*. Entrepreneurial dynamics and government policies to boost entrepreneurship performance. **Socio-Economic Planning Sciences**, v. 72, 2020.

FERNANDES, A. J.; FERREIRA, J. J. Entrepreneurial ecosystems and networks: a literature review and research agenda. **Review of Managerial Science**, v. 16, n. 1, p. 189–247, 2022.

FISCHER, M.; NIJKAMP, P. **Handbook of Regional Science**. 2. ed. Heidelberg: Springer-Verlag, 2021.

GARCÉS-VELÁSTEGUI, P. Development in Latin America: political economies as a matter of culture. **Revista Sociedade e Estado**, v. 37, n. 3, p. 931–954, 2022.

GREENE, W. H. **Econometric analysis**. Noida: Pearson Education India, 2003.

GUILHERME, R. C.; REIS, C. N. Plano Estratégico de Ação Social do MERCOSUL: a transferência de renda em contexto de ofensiva neoliberal. **Katálysis**, v. 21, n. 1, p. 108–124, 2018.

HARIMA, A. *et al*. Entrepreneurship? Let us do it later: procrastination in the intention–behavior gap of student entrepreneurship. **International Journal of Entrepreneurial Behavior & Research**, v. 27, n. 5, p. 1189–1213, 2021.

HENNING, M.; MCKELVEY, M. Knowledge, entrepreneurship and regional transformation: contributing to the Schumpeterian and evolutionary perspective on the relationships between them. **Small Business Economics**, v. 54, p. 495–501, 2020.

HENREKSON, M.; SANANDAJI, T. Measuring entrepreneurship: Do established metrics capture Schumpeterian entrepreneurship?. **Entrepreneurship Theory and Practice**, v. 44, n. 4, p. 733–760, 2020.

INSTITUTO DE ESTUDOS SUPERIORES DA EMPRESA. **Cities in Motion Index 2015**. Disponível em: <https://media.iese.edu/research/pdfs/ST-0366-E.pdf>. Acesso em: 30 jan. 2023.

ISENBERG, D. J. How to start an Entrepreneurial Revolution. **Harvard Business Review**, v. 88, n. 6, p. 40–50, 2010.

JIANG, Y.; WALEY, P. Who builds cities in China? How Urban Investment and Development Companies Have Transformed Shanghai. **International Journal of Urban and Regional Research**, v. 44, n. 4, p. 636–651, 2020.

JOKELA, S. Transformative city branding and the evolution of the entrepreneurial city: The case of "Brand New Helsinki". **Urban Studies Journal**, v. 57, n. 10, p. 2031–2046, 2019.

JUSTEN, A.; BRAGA, W. P.; GURGEL, C. Reprimarização, política pública do trabalho e superexploração no Brasil: revisitando Ruy Mauro Marini. **Katálisis**, v. 26, n. 3, p. 405–415, 2023.

KANTIS, H.; FEDERICO, J. S.; GARCÍA, S. I. Entrepreneurship policy and systemic conditions: Evidence-based implications and recommendations for emerging countries. **Socio-Economic Planning Sciences**, v. 72, 2020.

KOURTIT, K.; NIJKAMP, P.; STEENBRUGGEN, J. The significance of digital data systems for smart city policy. **Socio-Economic Planning Sciences**, v. 58, p. 13–21, 2017.

KRISHNA, R.; KUMMITHA, R. Smart cities and entrepreneurship: An agenda for future research. **Technological Forecasting & Social Change**, v. 149, 2019.

KUYUMJIAN, R.; SOUZA, E. M. D.; SANT'ANNA, S. R. D. Uma análise a respeito do desenvolvimento local: o empreendedorismo social no Morro do Jaburu-Vitória (ES), Brasil. **Revista de Administração Pública**, v. 48, p. 1503–1524, 2014.

KVILVANG, N.; BJURSTRÖM, E.; ALMQVIST, R. Making sense of complexity in governance: the case of local public management in the City of Stockholm. **Policy Studies**, v. 41, n. 6, p. 623–640, 2020.

LANGE, B.; SCHMIDT, S. Entrepreneurial ecosystems as a bridging concept? A conceptual contribution to the debate on entrepreneurship and regional development. **Growth and Change**, v. 52, n. 2, p. 790–807, 2021.

LASPITA, S. *et al*. Founder or employee? The effect of social factors and the role of entrepreneurship education. **Journal of Business Research**, v. 155, 2023.

LAUERMAN, J. Municipal statecraft: Revisiting the geographies of the entrepreneurial city. **Progress in Human Geography**, v. 42, n. 2, p. 205–224, 2018.

LUO, Y.; SHEN, J. Urban entrepreneurialism, meta governance, and "space of innovation". Evidence from buildings for innovative industries in Shenzen, China. **Cities**, v. 131, 2022.

MACHADO, H. P. V. *et al*. Ecossistemas Empreendedores: dinâmica e Avaliação. **Revista Tecnologia e Sociedade**, v. 19, n. 58, p. 124–143, 2023.

MALECKI, E. J. Entrepreneurship and entrepreneurial ecosystems. **Geography Compass**, v. 12, n. 3, 2018.

MAROUFKHANI, P.; WAGNER, R.; ISMAIL, W. K. W. Entrepreneurial ecosystems: A systematic review. **Journal of Enterprising Communities: People and Places in the Global Economy**, v. 12, n. 4, p. 545–564, 2018.

MARTÍNEZ-GREGORIO, S.; BADENES-RIBERA, L.; OLIVER, A. Effect of entrepreneurship education on entrepreneurship intention and related outcomes in educational contexts: A meta-analysis. **The International Journal of Management Education**, v. 19, n. 3, 2021.

MASON, C.; BROWN, R. **Entrepreneurial Ecosystems and growth-oriented entrepreneurship**. Paris: OECD, 2014.

MIÖRNER, J. Contextualizing agency in new path development: How system selectivity shapes regional reconfiguration capacity. **Regional Studies**, v. 56, n. 4, p. 592–604, 2022.

MORRIS, M. H.; NEUMEYER, X.; KURATKO, D. F. A portfolio perspective on entrepreneurship and economic development. **Small Business Economics**, v. 45, p. 713–728, 2015.

MOUTINHO, R. *et al*. Beyond the "Innovation's Black-Box": Translating R&D outlays into employment and economic growth. **Socio-Economic Planning Sciences**, v. 50, p. 45–58, 2015.

NAKAMURA, H. Evaluating the value of an entrepreneurial city with a spatial hedonic approach: A case study of London. **Socio-Economic Planning Sciences**, v. 71, 2020.

RIOS, V.; GIANMOENA, L. The link between quality of government and regional resilience in Europe. **Journal of Policy Modeling**, v. 42, n. 5, p. 1064–1084, 2020.

RIZZI, P.; GRAZIANO, P.; DALLARA, A. A capacity approach to territorial resilience: the case of European regions. **Annals of Regional Science**, v. 60, n. 2, p. 285–328, 2018.

ROUNDY, P. T.; BURKE-SMALLEY, L. Leveraging entrepreneurial ecosystems as human resource systems: A theory of meta-organizational human resource management. **Human Resource Management Review**, v. 32, n. 4, 2022.

ROUNDY, P.; BRADSHAW, B.; BROCHEN, B. The emergence of entrepreneurial ecosystems: A complex adaptive systems Approach. **Journal of Business Research**, v. 86, p. 1–10, 2018.

SERVIÇO BRASILEIRO DE APOIO ÀS MICRO E PEQUENAS EMPRESAS. **Índice Sebrae de Desenvolvimento Econômico Local - Acervo**. Disponível em: <https://www.isdel-sebrae.com/>. Acesso em: 30 jan. 2023.

SHAKIBA, H.; DELANGIZAN, S.; MOHAMADIFAR, Y. Inclusive urban entrepreneurial ecosystem policies: An application of the meta-synthesis approach. **Poverty & Public Policy**, v. 14, n. 4, p. 342–380, 2022.

SHANE, S. Why encouraging more people to become entrepreneurs is bad public policy. **Small Business Economics**, v. 33, p. 141–149, 2009.

SHWETZER, C.; MARITZ, A.; NGUYEN, Q. Entrepreneurial ecosystems: a holistic and dynamic approach. **Journal of Industry-University Collaboration**, v. 1, n. 2, p. 79–95, 2019.

SPIGEL, B. The relational organization of entrepreneurial ecosystems. **Entrepreneurship Theory and Practice**, v. 41, n. 1, p. 49–72, 2017.

SPIGEL, B.; HARRISON, R. Towards a Process Theory of Entrepreneurial Ecosystems. **Strategic Entrepreneurship Journal**, v. 12, n. 1, p. 151–168, 2018.

STAM, E. Entrepreneurial ecosystems and regional policy: a sympathetic critique. **European Planning Studies**, v. 23, n. 9, p. 1759–1769, 2015.

STAM, E.; VEN, A. VAN DE. Entrepreneurial ecosystem elements. **Small Business Economics**, v. 56, n. 2, p. 809–832, Feb. 2021. DOI: 10.1007/s11187-019-00270-6. Disponível em: <https://doi.org/10.1007/s11187-019-00270-6>

SVOBODA, O.; KLEMENTOVA, T. Correlation analysis and model of the regional economic resilience. **WSEAS Transactions on Business and Economics**, v. 11, p. 765–777, 2014.

VEKIĆ, A.; BOROCKI, J.; FAJSI, A. Development of entrepreneurial ecosystem through university's new companies. **Management Journal of Sustainable Business and Management Solutions in Emerging Economies**, v. 24, n. 3, p. 33–47, 2019.

WU, F. The (Post-) Socialist Entrepreneurial City as a State Project: Shanghai's Reglobalisation in Question. **Urban Studies**, v. 40, n. 9, p. 1673–1698, 2003.

XIAO, Y.; DRUCKER, J. Does economic diversity enhance regional disaster resilience?. **Journal of the American Planning Association**, v. 79, n. 2, p. 148–160, 2013. DOI: 10.1080/01944363.2013.882125.

ZHANG, Y.; ROELFSEMA, H. Entrepreneurial Ecosystems, New Business Formation, and Scale-up Activity: Evidence from 286 Chinese Cities. **Entrepreneurship Research Journal**, v. 12, n. 4, p. 559–595, 2022.

ZHENG, J. Creative Industry Clusters' and the 'Entrepreneurial City' of Shanghai. **Urban Studies**, v. 48, n. 16, p. 3561–3582, 2011.

ZIYAE, B.; REZVANI, M.; EYNOLGHOZAT, M. Co-opetition in entrepreneurial city: An approach to complexity theory. **Cities**, v. 121, 2022.