Editorial

Uses and impacts of the GEM research for entrepreneurship

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Abstract

Objectives: (1) to describe the research conducted by the Global Entrepreneurship Monitor (GEM), (2) to map its use in Brazilian publications, and (3) to exemplify its application in public policies and other forms of support for entrepreneurship in different countries. **Methodology:** It is a bibliographic survey of Brazilian studies supplemented by examples of GEM use in other countries. **Main findings:** Some types of data and results usage from GEM prevail: citations in the theoretical framework or in the introduction/contextualization of published studies; inclusion in the final list of references, but not in the main text; and indirect reference through the citation of previous studies that used GEM. The finding of Gimenez and Inácio Júnior (2017) of a lower presence of GEM data usage for specific studies in the surveyed articles was replicated. **Relevance/originality:** The historical background of GEM implementation in Brazil is presented, along with the update of results in Brazilian entrepreneurship studies and examples of GEM's impact on the formulation of actions and public policies in various countries. **Theoretical-methodological contributions:** The scarcity of more sophisticated uses of GEM's database in Brazilian studies is indicated. Therefore, it is recommended to explore its longitudinal data and to increase the number of studies exploring GEM in addressing specific entrepreneurship topics, as well as to expand the use of GEM data to guide the formulation and monitoring of public policies.

Keywords: Entrepreneurship research. Bibliographical survey. Global Entrepreneurship Monitor. GEM. Uses and impacts. Public policies. Brazil.

Usos e impactos da pesquisa GEM para o empreendedorismo

Resumo

Objetivos: (1) descrever a pesquisa GEM (Global Entrepreneurship Monitor), (2) mapear seus usos em publicações brasileiras e (3) exemplificar seu uso em políticas públicas e outras formas de favorecimento do empreendedorismo em diferentes países. **Metodologia:** levantamento bibliográfico de estudos brasileiros complementado por exemplos do uso do GEM em outros países. **Principais resultados:** Alguns tipos de uso de dados e resultados do GEM predominam: suas citações no referencial teórico ou na introdução/contextualização dos estudos publicados; sua inclusão na lista final de referências, mas não no texto principal; e como referência indireta pela citação de estudos anteriores que utilizaram o GEM. Repetiu-se o achado de Gimenez e Inácio Júnior (2017) de menor presença de uso dos dados do GEM para estudos específicos nos artigos levantados. **Relevância/originalidade:** Apresenta-se o histórico da realização do GEM no Brasil, a atualização dos resultados nos estudos brasileiros de empreendedorismo e exemplos de impactos do GEM na formulação de ações e políticas públicas em diversos países. **Contribuições teórico-metodológicas:** Indica-se a escassez nos estudos brasileiros dos usos mais sofisticados da base de dados do GEM. Recomenda-se, então, a exploração de seus dados longitudinais e a multiplicação dos estudos explorando o GEM na abordagem de temas específicos de empreendedorismo, além de mais usos dos dados do GEM para nortear a formulação e o acompanhamento de políticas públicas.

Palavras-chave: Pesquisa em empreendedorismo. Levantamento bibliográfico. *Global Entrepreneurship Monitor*. GEM. Usos e impactos. Políticas públicas. Brasil.

INTRODUCTION

The start of interest in the study of entrepreneurship in Brazil, as recorded in national journal publications, dates back to pioneering articles published in the 1960s (Bresser Pereira, 1962, 1963, 1964). There was a greater dissemination of this interest in the 1980s and 1990s (Santos, 1984; Santos, 1985; Marcovitch et al., 1986; Ferro & Torkomian, 1988; Filion, 1991; 1993; 1999a; 1999b). In the new millennium, there was an even greater growth in interest in the study of the topic, as shown by various surveys cited by Lopes and Lima (2019).

Brazil's participation in the international research project Global Entrepreneurship Monitor (GEM) began in 2000, one year after the launch of GEM in May 1999[1] . The multinational research project resulted from the initial cooperation between researchers from Babson College and London Business School. Since then, other institutions have joined this partnership, and the importance and global scope of GEM have grown. In its 2022 edition, it counted on the participation of 49 countries (GEM Brasil, 2023).

GEM generates a vast collection of data on the intensity and characteristics of entrepreneurial activities, with a focus on the individual entrepreneur, providing an analysis of the relationship between entrepreneurship and the development of nations (GEM Global, 2023). By providing data from different participating countries, it allows for comparisons between them besides offering important insights for the formulation and improvement of actions, programs, and public policies aimed at strengthening entrepreneurship in countries.

Annually, teams of analysts and authors affiliated with each participating country collaborate with the global GEM team to publish the global report with the results of all participating countries. The report shows, for each participating country and comparatively for all, indicators of the intensity of entrepreneurial activity, as well as other relevant information about entrepreneurs, such as sociodemographic characteristics, attitudes, motivations, and entrepreneurial behaviors. It also presents characteristics of the entrepreneurial context in countries, including aspects that facilitate or hinder its occurrence.

Each year, the global GEM teams also publish studies on specific topics, and each national team publishes its own country report. In addition to the reports available to the public, databases accumulate, both from the global compilation (combining the data from all participating countries in each edition) and from each country separately. This accumulation forms a rich longitudinal repository accessible to researchers, to promote the advancement of knowledge about entrepreneurship and its connections with socioeconomic development worldwide and in the individual participating countries. Annually, the data become accessible to the respective GEM teams in each country and to the global team once they are organized into a database and can be statistically analyzed. For researchers outside these teams, the data become accessible two years after being organized into a database[2].

In Brazil, researchers use the annual GEM reports to contextualize their studies, as well as the GEM databases to analyze data and produce research results in publications. Gimenez and Inácio Júnior (2017) indicate that citations of GEM reports in studies published in Brazil began in 2003 (Barini & Cardoso, 2003; Gomes, 2003), and that the citations are often used to justify the importance of entrepreneurship studies in the introduction of publications and to discuss the results of published studies.

Gimenez and Inácio Júnior's (2017) research surveyed the ways in which GEM results were mentioned in articles on entrepreneurship published from 1999 to 2016. After analyzing 1,324 articles, the authors identified 336 of them (25.38%) that made some kind of mention of GEM. The forms of mention were classified into four categories, reflecting an increasing degree of complexity in the use of GEM studies: introduction/contextualization (citation of GEM research to justify or contextualize the publication in question); theoretical framework (use of GEM in literature reviews or theoretical discussions); analysis/conclusion (use of GEM in the description and discussion of results to confirm or counter research findings); and use of GEM data in entrepreneurship studies (data compiled from GEM reports or obtained from databases accessed on the GEM website).

The use of GEM data for research and publication mitigates the scarcity of the use of secondary data in Brazilian publications on entrepreneurship. As described by Pagotto and Borges (2023), this persistent scarcity can be overcome by using secondary data from GEM, Brazilian Institute of Geography and Statistics - IBGE -, and/or the Brazilian Federal Revenue, among others, which can significantly contribute to a better understanding of entrepreneurship in Brazil and enhance quantitative research on the subject in the country. In subsequent years, other uses of GEM data were observed in the articles. In this regard, it is relevant to ascertain whether there has been a variation in the use of GEM data and an increased sophistication in its utilization since 2017, considering the survey conducted by Gimenez and Inácio Júnior (2017), Additionally, exploring the uses of GEM in the development of public policies and other forms of promoting entrepreneurship is of interest.

Therefore, the objectives of this editorial are threefold: (1) to provide a comprehensive description of the GEM research, disseminating detailed knowledge about its implementation; (2) to map its impacts on entrepreneurship studies in Brazil from 2017 to 2022, complementing the study conducted by Gimenez and Inácio Júnior (2017); and (3) to exemplify the use of GEM data and results in public policies or other forms of fostering entrepreneurship in different countries.

In order to achieve these objectives, the following sections will describe: the international GEM research and its historical context in Brazil; the approach and methodological procedures employed for the bibliographic survey of studies published in Brazilian journals from 2017 to 2022; the uses of GEM in Brazilian publications from 2017 to 2022; and the uses of GEM, both internationally and in Brazil, in the formulation of public policies or other means of promoting entrepreneurship. Among the contributions of this text, we aim to stimulate more sophisticated uses of GEM, including the exploration of longitudinal data, and to encourage the proliferation of studies that leverage GEM to address specific entrepreneurship topics.

THE GEM RESEARCH AND ITS SIGNIFICANCE

GEM, initiated in 1999, is a global research project on entrepreneurship. It was originally conceived and led by professors Michael Hay and William Bygrave, from Babson College and London Business School, respectively. The project aimed to produce reliable and comparable data, as well as robust results, to enable policymakers and other stakeholders to improve the decision-making process regarding encouraging actions and support for entrepreneurial activities, while also being able to assess the impact of their decisions.

The primary expected outcome was for policymakers to transform the research results into productive resources for decision-making, with the ultimate goal of fostering an increase in the number of entrepreneurs and the creation of wealth, thus contributing to social well-being and economic development. The starting point of the GEM project was the development of a conceptual model, which defined indicators and variables that, in turn, formed the basis for the data collection questionnaire, as well as the data collection, processing, and analysis procedures. Consequently, the reports and results produced facilitated comparisons among the different countries participating in the research.

GEM adopts a broad perspective on entrepreneurship and recognizes that the initiation of entrepreneurial activity occurs well before the actual establishment of a business. Thus, the fundamental concepts of GEM define entrepreneurship as any attempt to create and/or effectively establish an enterprise, whether formal or informal, autonomous or involving a collective effort (e.g. an enterprise), whether individual or collaborative, and it can also encompass the expansion of an existing venture.

Although improvements and updates have been incorporated over the years, the conceptual model and methodological approach of the research remain aligned with its original conceptions. Data collection continues to rely on primary sources, involving the approach of individuals of the adult population, encompassing the reality of both formal and informal entrepreneurial activities. Throughout its 24 years of existence, GEM has remained committed to its original proposal and objectives, yielding results that are regularly presented in reports and providing valuable information on how to better promote entrepreneurship, thereby fostering the growth and prosperity of nations.

The first annual GEM study, conducted in 1999, covered 10 countries. Since then, approximately 115 countries have participated in the research. Brazil has been praised in the international activities of GEM for its uninterrupted participation since the year 2000. Until 2004, GEM operated as a consortium of organizations, mainly academic, located in the participating countries. This consortium reported directly to the coordination of professionals affiliated with Babson College and London Business School. In 2005, the Global Entrepreneurship Research Association (GERA) was created, assuming the governance of GEM worldwide. GERA has a governance board that includes the executive director of the Global GEM and representatives who lead the research team in each one of the over 100 countries. There is also an international coordination team subordinated to GERA and led by the executive director.

Any country can participate in GEM if its application is approved through a selection process conducted by GERA, since an organization takes responsibility for the study nationally. Once a country is approved, an agreement is established between GERA and the organization responsible for the research in that country. The organization must designate a professional to coordinate the activities of the GEM team in the country (GEM national team leader) and maintain communication with GERA and the international coordination team (global team).

The international coordination team is responsible for coordinating, supervising, and guiding the research in all participating countries and carries out all the tasks of data compilation and initial processing, as well as the production and publication of the global report. Each country has its own national team. In their respective countries, the national teams are responsible for the annual data collection for the study and for sharing it with the international team, enabling the production of the global report. Subsequently, the national teams receive their respective processed national databases to produce their own analyses and national reports. In this sense, GEM operates based on a network of national teams from over 115 countries, composed of entrepreneurship researchers affiliated with renowned academic institutions.

GEM History in Brazil

GEM was initiated in Brazil in 2000, thanks to the initiative of professors Marcos Schlemm and Ramiro Wharaftig, who were, at the time, professors at PUC-PR and the Secretary of Science and Technology of the State of Paraná, respectively. Using their contacts, they secured a partnership with the Brazilian Institute for Quality and Productivity (IBQP), which became the Brazilian organization responsible for GEM in Brazil. At that time, IBQP had Mr. Sérgio

Prosdócimo as the chairman of the board, who supported the creation of the national team and the operational structure of the study.

In 2001, Sebrae Nacional expressed interest in financially supporting the project, with the work of the technical director, Vinicius Lummertz. Thus, the partnership between Sebrae Nacional and GEM was born, which continues to this day, ensuring that Brazil remains among the five countries -- along with Spain, the United States, the Netherlands, and the United Kingdom -- that participate in the international study every year since 2000. The current project manager at Sebrae Nacional is Mr. Marco Aurélio Bedê, who has been involved in the project for over a decade in the Sebrae's Strategic Management and Intelligence Unit (UGE). The role of the project manager and the work of Sebrae have guaranteed the quality and continuity of the project, as well as the dissemination and utilization of the generated results and reports within Sebrae itself and in public and private organizations.

Despite several members of the GEM Brazil team having changed over the years, a core group has ensured the maintenance of key knowledge, the evolution of learning, and the development of valuable experiences. The current team leader, Simara Greco, has been part of the team since its inception, while senior analyst Paulo Bastos has been with the team since 2003. Two other members have respectively completed 15 and 8 years of participation in the team.

Starting in 2022, under the management of Fernando Antonio Prado Gimenez (president) and Rose Mary Almeida Lopes (vice-president), ANEGEPE became the home of GEM in Brazil, signing an exclusive agreement with GERA. ANEGEPE was already involved with GEM through the participation of four of its members as data analysts and authors for reports. Some members also act as experts interviewed in the GEM's expert survey section (NES). ANEGEPE receives support from Sebrae, particularly because its directors and other members are professionally connected to entrepreneurship and small business research and education.

Since its inception, GEM has published 22 executive reports and 22 comprehensive reports on entrepreneurship in Brazil. It has also produced three comprehensive reports on entrepreneurship in each of the five Brazilian regions, six comprehensive reports and six executive reports on entrepreneurship in the state of São Paulo, four comprehensive reports on entrepreneurship in Rio Grande do Sul, including one with a specific focus on local productive arrangements in the state, two comprehensive reports on entrepreneurship in Minas Gerais, one comprehensive report on entrepreneurship in Paraná, and a specific report on entrepreneurship in the Western Paraná Region.

From the GEM data, six thematic cutouts were also produced on entrepreneurship in Brazil according to gender, five according to age groups, five according to race, and seven on the target audience of Sebrae. The same thematic cutouts, in similar quantities, were produced for the state of São Paulo.

Within the Sebrae system, a state-level Sebrae that commits to conducting a specific GEM study within its regional scope establishes a direct relationship with ANEGEPE, under the supervision of the national Sebrae. Thus, in the 2022 cycle, thematic cutouts have already been produced for Brazil and São Paulo, and ANEGEPE has already published the GEM Brazil reports and is finalizing those for GEM São Paulo. As for 2023, the GEM Brazil and GEM Rio Grande do Sul reports will be published, respectively, by national Sebrae and Sebrae from Rio Grande do Sul.

Traditionally, GEM has been widely disseminated by the national media and through events promoted by the organizations responsible for the research. It is a work that is gaining increasing prominence nationally and internationally. Additionally, GEM has had many positive results and impacts in the academic field, in the Sebrae system, and in other areas, as described ahead.

The Conceptual Model for GEM

In general terms, the current conceptual model and methodological approach of GEM remain faithful to the original design of the research. In GEM, entrepreneurship is defined as having a business, expanding an existing enterprise, and/or making any attempt to create (as well as effectively creating) a business, regardless of whether the activity is formal or informal, individually or with partners, autonomous, in the form of an enterprise or not.

GEM recognizes that not all entrepreneurial initiatives will be consolidated or successful. It is understood that many of them fail and that even so they can offer valuable learning experiences for entrepreneurs and others involved. Failure experiences can assist in reviewing decisions, processes, and strategies, contributing to the success of future initiatives.

Some important assumptions of GEM research are: boosting the level of entrepreneurial activity is essential in an economy to generate socio-economic development; and it is necessary to measure and monitor the rates of entrepreneurial activity in the economy, as well as the characteristics of businesses and entrepreneurs, in order to have baseline information for decisions and public policies for socio-economic development through entrepreneurship. Therefore, the GEM research teams are dedicated to measuring and characterizing, accurately and consistently over time, entrepreneurial activity, as well as the contexts and conditions for entrepreneurship, providing knowledge about the longitudinal evolution of entrepreneurship within a single economy and in comparison with other economies.

Such knowledge is made possible through a holistic understanding of entrepreneurial activity, taking into account the various aspects that influence and determine it. Entrepreneurship is understood as the result of a personal decision-making process of each entrepreneur, but it occurs under the influence of the relationships entrepreneurs have and the conditions they face in their socio-economic context.

GEM adopts the premise that entrepreneurship is a result shaped by these factors in the entrepreneurial process, which also reflects the attitudes of entrepreneurs and other characteristics such as knowledge, experience, values, motivation, and access to resources. The entrepreneurial process takes place within a context of social values -- which can promote or hinder entrepreneurship -- and in a specific locality, which can facilitate or restrict access to resources. For example, an entrepreneur's social environment may encourage or discourage risk-taking, or even prioritize collective effort over individual effort. This context can also influence access to tangible or intangible resources, such as expertise or financial capital. Furthermore, the context can also influence other aspects related to the venture, such as the industry sector, levels of innovation, and the potential impact of entrepreneurial activity. The combination of all these influencing factors ultimately affects not only the manifestation of entrepreneurship but also its impact on the economy, such as job creation and other benefits, such as wealth distribution.

Figure 1 summarizes these explanations of how GEM considers this set of relationships and influences that shape entrepreneurship and its impacts on economies.

ABOUT THE TWO SURVEYS THAT COMPOSE GEM

The GEM research consists of two surveys with data collected from two distinct samples: (1) the survey conducted with the adult population aged 18 to 64, Adult Population Survey (APS); and (2) the survey with national experts, which is the National Expert Survey (NES), consulting experts from various sectors with experiences and knowledge related to at least one of the studied entrepreneurial context conditions of each targeted country.

Figure 1
Conceptual model
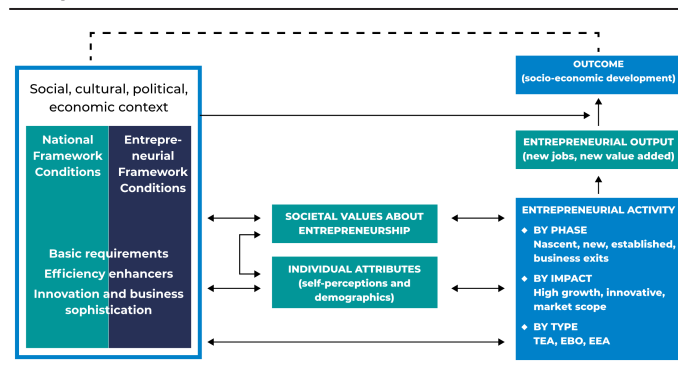
Note: GEM Brasil (2023).

In addition to the data from the two surveys, data obtained from secondary sources are also used. These are data from databases or national and foreign studies primarily used to better contextualize and analyze the results extracted from the APS and NES surveys.

All instruments and methodological procedures used in the GEM research are standardized for uniform use across different economies each year, with the exception of adapting the instruments (questionnaires and interviews) to the predominant language in each economy. For example, in Brazil, the instruments are used in the Brazilian variant of Portuguese; in the United States and England, they are used in English.

The Adult Population Survey (APS)

The APS is conducted with a probabilistic, representative, and stratified sample of the country's population aged 18 to 64. The minimum required sample size is 2,000 adults, ensuring results with 95% confidence level and a sampling error of 2%. To maintain comparability of the data with previous years in Brazil, the same clusters are used, meaning the state capitals (major municipalities) are kept, and medium and small municipalities are randomly selected. The sampling plan includes 14 states of the country and the Federal District, with the number of respondents being proportional to the population of each federative unit. This ensures representation of all Brazilian geographic regions, including strata of large, medium, and small cities. Thus, the representativeness of the Brazilian population is guaranteed.

Since the time of the pandemic, interviews with respondents have been conducted by telephone, as the randomness of access and the ability to locate adults according to the sampling plan are ensured by current technologies and the widespread access to cell phones by the Brazilian population, with telephone services having broad coverage in the country. Aggregate sampling by telephone -- phone cluster sampling -- is used, with random digit dialing (RDD) method[3], employed in conjunction with cluster (aggregate) stratified sampling.

Interviews last from 12 minutes (approximately 40% of the sample) to 40 minutes (60% of the sample). This variation occurs largely because there are different categories of respondents and, depending on the profile of each respondent, they will be invited to answer more or fewer questions according to one of the categories: potential entrepreneurs, nascent or new entrepreneurs, owners/managers of established businesses, entrepreneurs who discontinued their businesses, intrapreneurs, informal investors, or adults not involved in any entrepreneurial activity.

The standardized questionnaires for 2022 encompassed the following question blocks: introduction, nascent entrepreneurs, owners/managers of businesses, potential entrepreneurs and entrepreneurs who discontinued their businesses, informal investors, employment and entrepreneurial activity as an employee

(intrapreneurship), public policies, demographic profile, and fields to be filled in by the interviewer, who uses a tablet equipped with the SurveyToGo software for questionnaire administration and data recording.

Every year the general coordination of GEM, in interaction with the team leaders of the participating economies, decides on the inclusion of some questions addressing situations such as the COVID-19 pandemic or another topic, such as entrepreneurs' level of adherence to the United Nations Sustainable Development Goals (SDGs). Both topics were addressed in the 2022 questionnaire.

National Expert Survey (NES)

The NES survey is responded by national experts who assess the conditions that positively or negatively affect nine entrepreneurial framework conditions (EFCs) in each country, as listed in Table 1. These conditions are also known as entrepreneurial framework conditions, which affect entrepreneurship[4] :

Table 1

Description of conditions that affect entrepreneurship (EFCs) according to the GEM model

EFC 1:	**Financial Support**
EFC 2:	**Government Policies**
EFC 2.1:	Policy effectiveness
EFC 2.2:	Bureaucracy and taxes
EFC 3:	**Government Programs**
EFC 4:	**Education and Training**
EFC 4.1:	Primary and secondary education
EFC 4.2:	Higher education
EFC 5:	**Research and Development**
EFC 6:	**Commercial and Professional Infrastructure**
EFC 7:	**Market Access and Entry Barriers**
EFC 7.1:	Dynamics of the domestic market
EFC 7.2:	Barriers, costs, competition, and legislation in the domestic market
EFC 8:	**Access to Physical Infrastructure**
EFC 9:	**Cultural and Social Norms**

Note: GEM Brasil (2023, p. 144).

Due to the standardization followed by the participating economies, the averages of the scores in each EFC and the final weighted average, which represents the score in the National Entrepreneurship Context Index (NECI), allow for comparison among the participating countries in the NES survey. In the 2022 edition, a total of 51 economies conducted the NES, and the consulted experts also provide recommendations for public agents at different levels of government to formulate and propose actions, programs, or public policies to develop entrepreneurship conditions in each economy.

The GEM's standardization of methods specifies that, for each EFC, there should be at least four experts responding, totaling at least 36 experts fully responding to the NES questionnaires. The methods also establish that each year 25% of the experts who responded to the NES in the previous year should be maintained, in order to ensure consistency and minimize possible biases.

To invite experts to respond to the questionnaire, the national team turns to experts they know and their network of relationships, seeking to gather contacts of professionals who work and have experience related to each of all the considered EFCs. The list of NES survey respondents is sent to the international team for approval. Regardless of their specialty, each respondent is asked to answer the questionnaire in full.

The NES survey questionnaire consists of closed and open questions that refer to the GEM conceptual model, i.e. they are statements that involve the already mentioned EFC conditions and their developments (Table 1). In 2022, some themes were included that focused on the impacts of the Covid-19 pandemic and adherence to the SDGs.

The experts evaluate the statements with a Likert scale[5] with scores from 0 to 10 to portray their perception of each EFC in the context of entrepreneurship in the economy. The experts also have the option to indicate, for each statement, that it does not apply or they do not know how to respond about it. From the scores assigned by the experts, averages are obtained for each EFC and, from these, an overall average is calculated for the set of EFCs of the economy in question, which is compared to the global average of the economies participating in the considered year.

In the open part of the questionnaire, each expert freely responds, according to their own perception, what are the factors that most positively influence the context of entrepreneurship in the considered economy and present three recommendations to favor entrepreneurship in that economy.

APPROACH AND METHODOLOGICAL PROCEDURES OF THE PRESENT STUDY

The bibliographic research described earlier aimed to gather information and accumulated knowledge about the focused topic in publications over a given period of time (Gerhardt & Silveira, 2009). The parameters used for this research were: time period, languages of publications, article databases, and search terms. The time period was 2017 to 2022. The accepted languages were English and Portuguese because Brazilian journals publish in both languages. To maintain comparability with the survey by Gimenez and Inácio Júnior (2017), searches were conducted in the two national article databases used by those authors: Scientific Periodicals Electronic Library - SPELL (www.spell.org.br) and Scientific Electronic Library Online - SCIELO (www.scielo.br).

An additional search was conducted on the websites of Brazilian journals in the field of entrepreneurship that are not indexed in the two consulted databases. These journals were identified by querying the Qualis Capes to retain those that had the search terms "empreendedorismo" or "entrepreneurship" in their title. This procedure revealed 11 additional journals: *Cadernos de Empreendedorismo e Gestão*; *Empreendedorismo, Gestão e Negócios*; Entrepreneurship; *Revista Americana de Empreendedorismo e Inovação*; *Revista de Empreendedorismo e Gestão de Micro e Pequenas Empresas*; *Revista de Empreendedorismo e Inovação Sustentáveis*; *Revista de Empreendedorismo, Inovação e Tecnologia*; *Revista de Empreendedorismo, Negócios e Inovação*; *Revista de Micro e Pequenas Empresas e Empreendedorismo da Fatec Osasco*; and *Revista Livre de Sustentabilidade e Empreendedorismo*.

After including these journals in the scope of the searches, two additional search stages were conducted to ensure the inclusion of articles dealing with GEM and relevant to the ongoing research. In the first stage, articles containing the search terms "empreendedorismo", "entrepreneurship", "empreendedor", "entrepreneur", "startup", or "start-up" were retained. In the SPELL and SCIELO databases, the searches were conducted sequentially, using one term at a time. Just like in Gimenez and Inácio (2017), in the SPELL database, the terms were searched in the title, keywords, and abstract of the articles, with the document type restricted to articles. In the SCIELO database, the search fields used were title and abstract, without any document type restriction, as there is no selection for that in this database. The obtained texts were filtered to retain only those that were articles, excluding teaching cases, editorials, and reviews, as well as any duplicates, since some Brazilian journals are indexed in both databases. The same search procedures were also performed in the 11 journals added to the searches.

The second stage of the survey consisted of confirming the articles that mentioned GEM in their content. Replicating the procedure used by Gimenez and Inácio Júnior (2017), the content of each article was inspected using the "find" function in "PDF" (Portable Document Format) files for the terms "entrepreneurship monitor" or "GEM".

The article search procedures and the identification of GEM citations in their content were carried out at various times, from December 2022 to April 2023, aiming for the most comprehensive survey possible of articles published from 2017 to 2022. The last search was conducted on April 6, 2023, for the year 2022, as some journals have late publication of their volumes and/or issues from 2022.

IMPACTS OF GEM ON STUDIES ON ENTREPRENEURSHIP IN BRAZIL

In total, 1,316 articles containing the search terms were found, distributed over the period as shown in Figure 2.

Figure 2

Articles on entrepreneurship published in Brazilian journals
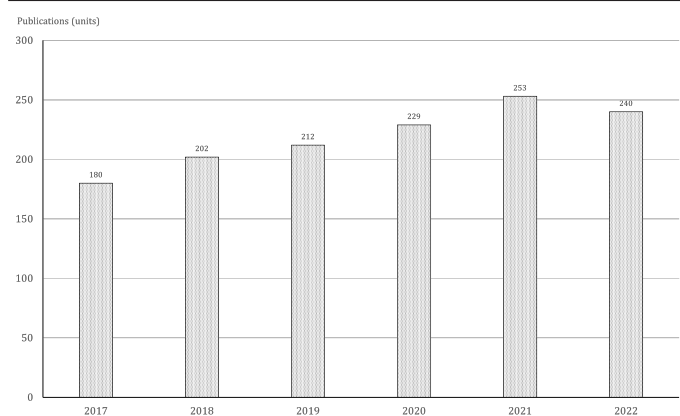
Note: Authors' research (2023).

A total of 360 articles cited GEM, corresponding to 27.36% of the total articles found, only two percentage points higher than the percentage found by Gimenez and Inácio Júnior (2017). There was also some stability in the number of publications per year, around 60 each year, as shown in Table 2.

Table 2

Number of articles citing GEM studies (2017-2022)

Ano	Artigos	GEM	%
2017	180	50	27.78
2018	202	58	28.71
2019	212	62	29.25
2020	229	56	24.45
2021	253	70	27.67
2022	240	64	26.67
Total	1,316	360	27.36

Note: Authors' research (2023).

Regarding the way GEM research is used in the articles, there was a predominance of citation in the theoretical framework, followed by mentioning GEM in the introduction and/or contextualization of the conducted studies. Just like previously noted by Gimenez and Inácio Júnior (2017), the category with the lowest number of articles (19) was the use of GEM data for specific studies.

On the other hand, two new categories emerged in the articles published from 2017 to 2022. In five of these articles, the citation of GEM reports was in the list of references at the end of the text, but it was not used in the body of the articles -- something considered as an inappropriate use of references in academia. Eight articles did not directly cite GEM studies but referred to previous studies that had used GEM data. The participation of each of these categories is shown in Table 3, compared to the previous survey conducted for the period 2003-2016.

Table 3

Category of GEM studies' usage in articles on entrepreneurship published in Brazil

	2003-2016		2017-2022	
Category	N	%	N	%
Theoretical framework	154	45.83	172	47.78
Introduction/contextualization	96	28.57	102	28.33
Analysis/conclusion	67	19.94	54	15.00
Use of data for specific study	19	5.65	19	5.28
Citation of a study that used GEM data			8	2.22
With reference not used in the body of the text			5	1.39
Total	336	100.00	360	100.00

Note: Gimenez and Inácio Júnior (2017) and authors' research (2023).

The category that reflects a more complex use of GEM data presented the same number of 19 articles in both observed periods, with percentages just above 5%. However, the second period was much shorter than the first, suggesting an intensification in the use of GEM for research and publications. For this category, the themes addressed by the articles were examined. Thus, for the period from 2003 to 2016, the articles in this category focused on four themes: entrepreneurship and development (7 articles), female entrepreneurship (3 articles), entrepreneurship, science, technology, and innovation (3 articles), and environmental determinants of entrepreneurship (2 articles). Another four studies addressed only one theme each.

In turn, the survey from 2017 to 2022 also examined the themes addressed by the articles and found a greater number of research themes in this category (16), with only the theme of social entrepreneurship and social businesses, present in the previous period, not being shown in the last six years. Table 4, summarizes the number of articles per theme, and the ones highlighted in italic were also present in the previous study.

Table 4

2017 to 2022: research themes and number of articles

Research theme	articles
Environmental determinants of entrepreneurship	*5*
Entrepreneurship and development	*3*
Female entrepreneurship	*3*
Youth entrepreneurship	*2*
Entrepreneurial process	2
Affective, emotional, well-being, and health aspects in entrepreneurship	1
Entrepreneur attributes and typologies	*1*
Competences, learning, and entrepreneurial practices	1
Entrepreneurial ecosystems and innovation	1
Education for entrepreneurship	1
Entrepreneurship and tourism	1
Informal entrepreneurship, minorities, or disadvantaged conditions	1
Rural entrepreneurship and agribusiness	1
Entrepreneurship, science, technology, and innovation	*1*
Entrepreneurship promotion and public policies	*1*
Intrapreneurship and corporate entrepreneurship	1

Note: Authors' research (2023).

Thus, it can be observed that the intensification of using GEM data for specific studies was accompanied by a greater diversity of research themes among the articles published in Brazilian journals. These two movements, together, suggest that the GEM's raw data results are useful in conducting empirical research on entrepreneurship from various perspectives.

USES AND IMPACTS OF GEM RESULTS

A recurring question from academics and others interested in GEM is about its impacts. This section presents examples of GEM's impacts over the years, both in Brazil and in other countries around the world.

The study by Herrington (2018) consulted GEM experts from various countries and produced the report "The Influence of GEM on Public Policy". The impacts in some countries described by the study are highlighted below:

- In Luxembourg, the GEM report about the impact of Covid-19 on entrepreneurship was mentioned in the competitiveness report on the Ministry of Economy's website.

- GEM reports are used and cited by many different government agencies in China, including the National Development and Reform Commission.

- In Croatia, the GEM team works closely with the Ministry of Economy, Labor, and Entrepreneurship and participated in an annual assessment that highlighted Croatia's progress in meeting the requirements of the EU Charter on Small Businesses.

- GEM data revealed that entrepreneurship education was underdeveloped in Bulgaria. Based on this finding, legislation was created for entrepreneurship education in the country, leading to many positive results.

More recently, the GEM Global Report 2022-2023 explicitly mentioned other examples of uses, influences, and impacts of the data obtained by GEM:

- Mark Hart, Deputy Director of the Enterprise Research Center at Aston Business School and leader of the GEM team in the UK, stated that GEM has influenced policy discussions on entrepreneurship in the UK and that, over the years, GEM data has been consistently used by civil servants in Scotland, Wales, Northern Ireland, and England. According to Hart, in several countries, the results of discussions with authorities and civil servants are used as the basis for policy suggestions across government, political parties, and relevant organizations (p. 250).

- In the United States, White House officials have used GEM results in their activities, and the GEM USA research team has provided testimony to the Small Business Committee of the Chamber of Representatives. Among other benefits, the leader of GEM USA highlights that policymakers concerned with racial equity can make good use of the findings from the latest GEM USA report, which presents analyses on the differences between white, black, and Hispanic entrepreneurs (p. 251).

- The leader of GEM Guatemala stated that GEM results helped provide the basis for a new entrepreneurship law in their country (p. 251).

According to a post on the GEM Consortium website in September 2023, GEM researcher Sreevas Sahasranamam co-chaired the sustainability task force at the G20 Startup Summit in Gurugram, India (GEM Brasil, 2023). The highlight of the event was the release of a political statement on the startup ecosystem for G20 nations, shared by all task force chairs from different countries in the presence of Piyush Goyal, India's Minister of Commerce and Industry. The document that served as the basis for the statement, released during the event, is a political document on sustainability and entrepreneurship with insights from the GEM Global Report 2022/2023 (GEM Consortium, 2023).

Professor Ehud Menipaz from Ben Gurion University, leader of GEM Israel and a member of the GEM Council, states in another post on the GEM Consortium website (2023): "We strongly believe that GEM has contributed to the well-being of our citizens, to GDP growth, and to major changes in judicial and tax systems for the benefit of companies and new ventures" (GEM Israel, 2023). The post also cites examples of how GEM studies influenced policy changes, including:

- They proposed to the government, and it accepted, a regulation stating that unintentional errors committed by entrepreneurs at the beginning of their businesses due to lack of knowledge (such as not complying with certain laws, rules, or regulations) would be subject to fines, but not exceeding 10% of their annual profit.

- They advocated for a specific regulation stating that if an angel investor wants to invest, for example, $1 million over a 10-year period in a company, this investor could amortize the entire cash amount in the first year of the business operation, even if she/he intended to invest the money over a longer period, which has implications for sustaining the business for a longer time.

In Brazil, there are multiple positive impacts of GEM. One of them is the strong and positive impact of spontaneous media coverage associating the GEM research with the institutions involved, the high number of accesses to the reports produced and made available online, and the widespread use of the generated knowledge by the Sebrae System.

For policies in the country, it is worth mentioning that the GEM research contributes to stimulating the debate on entrepreneurship, job creation, and income distribution in society. Sebrae, the financial supporter of GEM and the main Brazilian institution for supporting and promoting entrepreneurs and small businesses, has an internal unit called the Strategic Management Unit (UGE), which supports or conducts many research projects, with GEM being one of the most important. Thus, the results of GEM are made available to all members of Sebrae, especially its board of directors, and are frequently used in decisions and activities to support entrepreneurship and the management of micro and small businesses in Brazil.

The main creators of services and products at Sebrae use the results of GEM to develop them. This includes providing the foundation for important programs of the institution, such as Female Entrepreneurship/Sebrae Delas/Plural; using them to support content, discussions, and activities during the Global Entrepreneurship Week; and numerous lectures promoted by Sebrae over two decades.

It is difficult to identify the specific impact that GEM has had on public policies, but certain GEM indicators, such as opportunity/necessity, women's participation, youth and elderly entrepreneurship, and Total early-stage Entrepreneurial Activity (TEA), are often cited to support them. With the support of Sebrae, the use of information provided by GEM has also contributed to the development of public policies. Examples of this include Sebrae's support for the approval of the General Law for Micro and Small Enterprises, the creation of laws that established the Individual Microentrepreneur (MEI), and the expansion of the limits of Super Simples, an important tax classification legislation benefiting small and medium-sized enterprises (Lei complementar n° 155 de 2016; Herrington, 2018).

GEM reports are disseminated and made available in a way that their contents are used at the federal level by various government ministries, including those dealing with planning and development, as well as by the Special Secretariat for Micro and Small Enterprises, which has now been transformed into the Ministry of Entrepreneurship, Microenterprise, and Small Business in the Brazilian federal government.

Other positive impacts of GEM are likely to emerge from the implementation of the recommendations listed in its publications, including:

- Better preparation of entrepreneurs in risk management techniques and cost mitigation for failure through changes in bankruptcy-related regulations or the dissemination of success stories; initiatives like these can minimize the fear of being an entrepreneur among those who perceive opportunities on the horizon of three years but fear failure (GEM Brasil, 2023, p. 47).

- Although entrepreneurs perceive more opportunities to start businesses, mainly in low-income economies such as Brazil, after the pandemic, they anticipate more difficulties than in the previous year; therefore, programs and policies to stimulate entrepreneurs would be important (GEM Brasil, 2023).

- There is a recent trend of concentration of enterprises in the consumer services sector, which increases competitiveness and minimizes the possibilities for growth and profit margin expansion, reducing the chances for these businesses to mature and establish themselves; therefore, policies that encourage new entrepreneurs to explore opportunities beyond sectors with lower barriers for entrance have the potential to create more promising businesses (GEM Brasil, 2023).

FINAL CONSIDERATIONS

A historical series of 24 uninterrupted editions of the GEM study in Brazil, spanning from the year 2000 to 2023, provides a wealth of data that allows for a comprehensive understanding of the changes and advancements in entrepreneurship over time. This historical perspective is invaluable in identifying trends, patterns, and shifts in the entrepreneurial landscape of the country. By analyzing the data from different years, researchers and policymakers can gain insights into the effectiveness of various entrepreneurship support initiatives and policies implemented over the years. This longitudinal perspective is important in assessing the long-term impact of these interventions and identifying areas for improvement.

Furthermore, the availability of this historical data enables meaningful comparisons between different years and facilitates benchmarking with other countries. By examining how Brazil's entrepreneurial ecosystem has evolved in comparison to other nations, policymakers can gain valuable insights into best practices and successful strategies employed by countries with positive indicators in the GEM study. This benchmarking process can inform the development and refinement of policies and initiatives aimed at promoting entrepreneurship.

The description of GEM's history in both the global and Brazilian contexts, combined with the survey of GEM uses in articles published in Brazilian journals, highlights the extensive potential for GEM to contribute to entrepreneurship at the national and state levels. The findings demonstrate that GEM has been widely utilized as a valuable resource in research and policymaking related to entrepreneurship in Brazil and other countries. This utilization spans various dimensions, including informing the development of

public policies, supporting the creation of legislation beneficial to micro and small businesses, and providing insights to government ministries and institutions responsible for planning and development.

The continued partnership between ANEGEPE as the executor of GEM in Brazil and Sebrae Nacional signifies a commitment to maintaining and expanding the generation of benefits derived from GEM. This collaboration ensures the ongoing availability and accessibility of GEM data for research and practical applications focused on entrepreneurship. By leveraging the insights and knowledge generated through GEM, researchers, policymakers, and practitioners can make informed decisions, develop evidence-based policies, and implement effective strategies to foster entrepreneurship, job creation, and economic growth in the country.

Building upon the historical series and the extensive utilization of GEM data in Brazil, it is crucial for studies on entrepreneurship in the country not to only present theoretical and practical implications but also provide recommendations for public policies that can further support and promote entrepreneurship. The integration of policy suggestions in research publications can bridge the gap between academia and policymaking, ensuring that the knowledge generated through GEM and other entrepreneurship studies translates into actionable measures that positively impact the entrepreneurial ecosystem.

One of the key advantages of the GEM study in Brazil is its ability to provide a comprehensive understanding of the entrepreneurial ecosystem at the national level, and when executed by a State Sebrae, also in this level. This granularity allows policymakers to tailor their interventions and initiatives to specific regional contexts, considering the unique challenges and opportunities faced by different areas of the country. By leveraging the insights provided by GEM, policymakers can develop targeted policies that address the specific needs of different regions, promoting balanced and sustainable entrepreneurship across each country.

Moreover, the GEM study offers valuable insights into the various factors that contribute to entrepreneurial success. By examining the characteristics and behaviors of successful entrepreneurs, policymakers can identify the key drivers of entrepreneurship and design programs and interventions that foster the development of these critical attributes. Those initiatives can be used to develop training programs, mentorship initiatives, and support networks that enhance the entrepreneurial skills and capabilities of individuals, ultimately leading to a more vibrant and dynamic entrepreneurial ecosystem.

Through its comprehensive analysis and in-depth insights, GEM showcases the potential of entrepreneurship as a catalyst for economic growth, job creation, and social development. This, in turn, fosters an environment that celebrates innovation, risk-taking, and entrepreneurial spirit, creating a virtuous cycle that fuels further entrepreneurial activity in the countries.

Furthermore, the availability of GEM data and research findings contributes to the overall knowledge base on entrepreneurship. Researchers and academics can utilize this data to conduct further studies, delve into specific areas of interest, and contribute to the advancement of knowledge in the field. This continuous research and exploration not only deepen our understanding of entrepreneurship but also provide a solid foundation for evidence-based policymaking and strategic decision-making in both the public and private sectors.

Endnotes:

1 *GEM was launched at the 19th Annual Babson College - Kauffman Foundation Entrepreneurship Research Conference, held at the University of South Carolina. The first author of this editorial was present at this event.*

2 *In Brazil, ANEGEPE, which represents GEM in the country, will still define the conditions to release data to researchers outside such teams.*

3 *Method by which telephone numbers are randomly generated, also including numbers that would not be in telephone directories. This method makes it possible to ensure that people are randomly accessed to answer telephone interviews in probabilistic surveys.*

4 *This conceptual model has remained unchanged in the latest editions of GEM.*

5 *This scale is so named because it was created by Rensis Likert in 1932. On the scale, respondents can indicate the degree to which they agree or disagree with a statement. To this end, in addition to the maximum points of agreement or disagreement, a number linked to the direction and degree that expresses the subject's attitude towards each statement is indicated at each point on the scale. Source: Mattar (1997).*

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Conflit of interest statement

The authors declare that there is no conflict of interest.

Authors' statement of individual contributions

Roles	Contributions				
	Lopes R. M. A.	Lima E. O.	Greco S. M. S. S.	Gimenez F. A. P.	Bedê M. A.
Conceptualization	■	■		■	
Methodology	■	■		■	
Software			N. A.		
Validation	■	■	■	■	■
Formal analysis	■	■	■	■	■
Investigation	■	■	■	■	■
Resources			N. A.		
Data Curation			■		
Writing - Original Draf	■	■	■	■	■
Writing - Review & Editing	■	■	■		
Visualization	■		■		
Supervision	■		■		
Project administration	■				
Funding acquisition			N. A.		

Note: Acc. CRediT (Contributor Roles Taxonomy): https://credit.niso.org/

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