Scientific Contextualization of the Public Policy and Entrepreneurship Nexus

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Abstract

Effective public policies and public administration support for entrepreneurship have proven effective in triggering economic development, competitiveness, and technological progress. This research aimed to identify and assess the most influential research trends and to set up a visual framework for the existing relationship between public policy and entrepreneurship. The methodological approach consisted of applying scientific data mapping analysis to EU sample of countries employing an R package, namely R-bibliometrix, through the Biblioshiny app. The dataset comprised 206 documents from the Web of Science (WoS) Core Collection database for the years 2010–2022. The results highlight significant contributions to the research field in terms of the most representative authors and documents, important collaboration networks, prolific countries, jointly with conceptual structure, and scientific production. Ultimately, the results also evidence through the historiographic map that the connection between documents regarding the relationship between public policy and entrepreneurship in EU countries is also extremely significant, being largely discussed by different clusters of authors.

Key words: public policy, entrepreneurship, Shiny app, R-bibliometrix, scientific map
J.E.L. classification: L26, O38, I31

1. Introduction

Nowadays, European Member States (MS) are facing major and complex challenges due to two key drivers for economic development and growth, respectively public policy, and entrepreneurship.

Entrepreneurial activity promotes well-being, economic wealth, and the improvement of living standards, thus stimulating competitiveness and innovation, being essential for each state's economy in terms of economic development. Public policy can exert an influence on entrepreneurship through various government regulations.

The fundamental objective is to analyze and build a scientific visual framework for the research on public policy and entrepreneurship. Moreover, we applied a bibliometric analysis of the relationship between public policy and entrepreneurship performed by employing an R tool, namely Bibliometrix, by selecting 206 documents retrieved from the Web of Science (WoS) considering the period between 2010 and 2022.

Through the bibliometric analysis provided by R software, respectively Shiny app, this paper aims to offer a rough overview of the main topics discussed in documents related to the relationship between public policy and entrepreneurship, and to evidence the main conceptual structures, the

annual scientific production, the historiographic map and the links between authors, citations, documents, networks, and countries.

The paper is structured into five main sections. The following section briefly describes the theoretical fundamentals of public policy and entrepreneurship, while the third section discusses the methodology and details the data. The fourth section presents the principal results obtained. The conclusions section brings to the fore the conclusive notes and the limitations of the research.

2. Literature review

The international political climate, in the current geopolitical context, is going through a delicate period nowadays. Within this context, the authorities, through the adopted government policies, try to disseminate the best measures to increase economic well-being in order to obtain economic development and growth.

The diversity of national political processes and the desire to design and implement new strategies of international organization in entrepreneurship determine discussions and challenges, which lead governments to the political inconsistency of the time, regardless of the commitments already made, and which have a substantial impact on entrepreneurs in different stages of their development.

Thus far, Leyden (2016) states that improving the entrepreneurial environment in the public sector is possible, although competing demands for democratic rules make this improvement more difficult.

Moreover, Vatavu et al. (2019) highlight that for both economic growth and human development government should provide a series of health benefits, infrastructure, social welfare, a favourable environment, and other fundamental public services.

However, policymakers should consider implementing efficient public policies that have a long-term impact and sustain the citizens' well-being and economic growth. Also, many entrepreneurial activities are developed by people who are more educated and healthier and have an average or above-average in terms of standard of living. In this light, Taran et al. (2022) studied the level of public health at the level of 27 European Member States and stated that the condition of people's health could be affected by many factors such as instability and effectiveness of the public policies, pandemic context, and different processes of digitalization. Within this context, we can affirm that both public policies and the COVID-19 pandemic affected the entrepreneurial environment.

Therefore, Lobont et al. (2022) studied, by applying a panel threshold regression model, the relation between public policy and entrepreneurial activity in the European Member States. Results present that moderate public policy is needed in order to concern the threshold effect of government effectiveness on entrepreneurial activity. Moreover, entrepreneurial activity is impeded by excessive policy intervention, being essential to maintaining economic growth at a stable level in order to stimulate a favourable entrepreneurial environment.

Hence, Dima et al. (2016) examined if the quality of public policies can influence entrepreneurial activities. The results reveal that a robust and positive impact on entrepreneurial climate can be produced through a significant and higher level of public policy, implying credibility and institutions' effectiveness.

Cicchiello (2016) explored the public policies to identify if they have an essential role in ensuring the new funding alternatives, even if the public policies can change, stimulates, or even affect entrepreneurship. The results reveal the need for public policies which have the potential to ensure competitiveness and innovation in the entrepreneurial environment. In addition, the results highlighted that the existence of less bureaucratic policies can increase the survival of successful businesses.

Vancea et al. (2021) in the concern about finding the key factors that underlie the success of companies in the context of global competition, focused on exports, offering a series of recommendations on policies to support this activity by states/governments. The results of their study highlighted the need to establish strong export support networks to coordinate local, regional, and central institutions, as well as to build a functional partnership with the business environment.

Another important aspect to consider is the outsourcing of certain services and the implementation of activities to support various activities under the supervision of public sector authorities (Aivaz, 2021).

Withal, several factors can affect entrepreneurial activities, while policymakers play the main role in identifying them. In this regard, Zikou et al. (2017) evidence the need to reduce the public sector to stimulate prosperity, entrepreneurship, and economic growth.

3. Research methodology

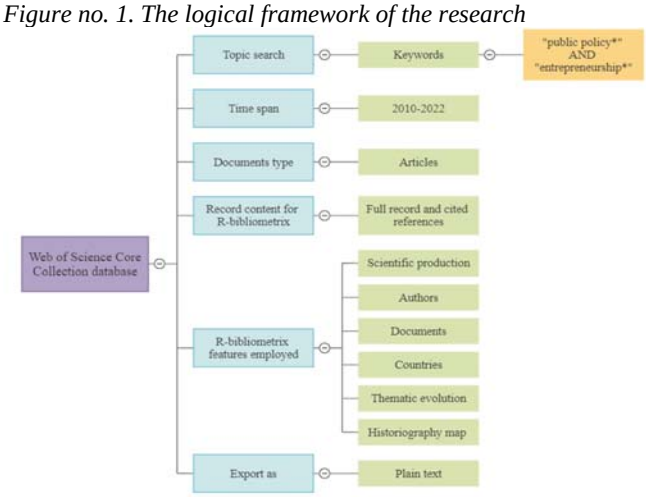
The bibliometric analysis is performed to evaluate scientific publications and to observe impact factors and citations, collaboration models, strategies for disseminating scientific publications and the report on the productivity of scientific documents.

Scientific mapping is complex because it involves several steps and often requires many different software tools. However, with the development of technology, many applications or software have been developed for data analysis, and some can be used for our analysis. One of these applications is the Bibliometrix tool, a package developed in the R language through the Shiny application.

In this sense, the bibliographic data for this paper were retrieved from the Web of Science database, over the period 2010-2022. Various keywords were used for the search, such as: "public policy*" AND "entrepreneurship*".

The logical framework of the research is highlighted in Figure 1.

Figure no. 1. The logical framework of the research



Source: Author's own compilation using SmartDraw

Furthermore, the search covered the time span between 2010 and 2022, including sources of information with a number of 206 scientific documents. Moreover, different characteristics specific to the Shiny application were used, by involving various analyzes from the Bibliometrix instrumentation, as follows: the most influential authors, relevant documents, the network of top collaborations, conceptual structures, the most prolific countries and their collaboration at the national and international level, the total annual production of the authors, and the historiographic map.

4. Findings

Different types of analysis were applied in R-Bibliometrix, respectively Shiny app and the data (206 documents from Web of Science) were processed to examine whether and to what extent the connection and relationship between public policy and entrepreneurship can offer a visual framework for the existing literature on this topic.

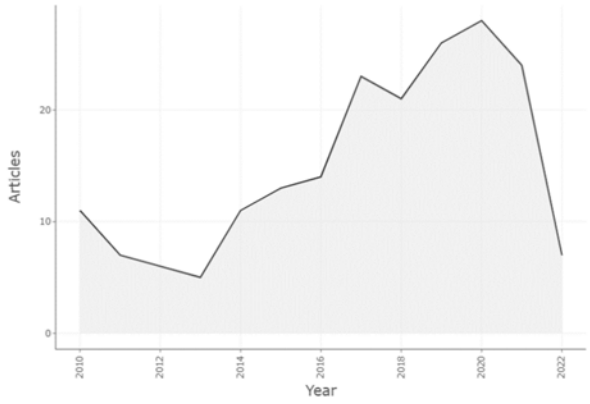
The results of the analysis are entailed below, being configured through scientific data mapping analysis with visual and graphical representation methods.

The main findings reinforce the identified literature findings and evidence of significant scientific collaboration networks and visual maps with different considered items regarding the relationship between public policy and entrepreneurship.

This section also includes detailed and comprehensive results by employing different representative units of bibliometric analysis, respectively: scientific production that covers the period between 2010 and 2022, the most relevant and cited sources, relevant documents, prolific countries, the most productive authors, specific conceptual structure, along with historiography map.

The visual framework of the scientific production regarding the relationship between public policy and entrepreneurship is highlighted in Figure 2.

Figure no. 2. Annual scientific production of documents related to the relationship between public policy and entrepreneurship, over the period 2010-2022

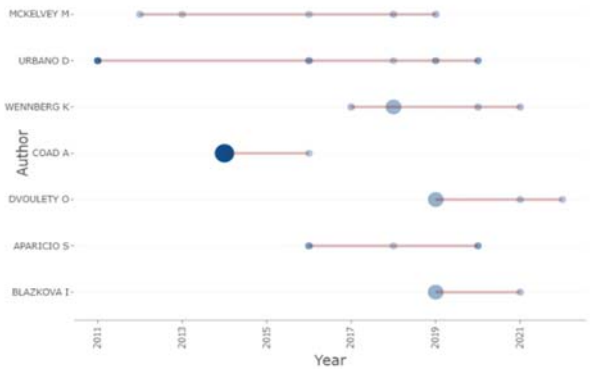


Source: Author's own compilation using R tool – Bibliometrix

The annual growth of publications related to public policy and entrepreneurship is presented in Figure 2. As can be observed, between 2010 and 2022, the scientific community produced a total of 196 publications. Additionally, it is important to mention that there was scientific production on our research topic in all the analysed years. Subsequently, the period between 2010 and 2013 highlighted a variation in the number of publications in terms of their increase and decrease. On the other hand, the years between 2014-2021 were the most prolific and significant in terms of documents, with a number of 114 publications. Moreover, across time, the year 2020 is associated with the highest number of publications (28), closely followed by 2019 with 26 documents.

Regarding the production of top authors, Figure 3 evidence the seven top authors with the highest number of published documents.

Figure no. 3. Production of top authors over the period 2010-2022

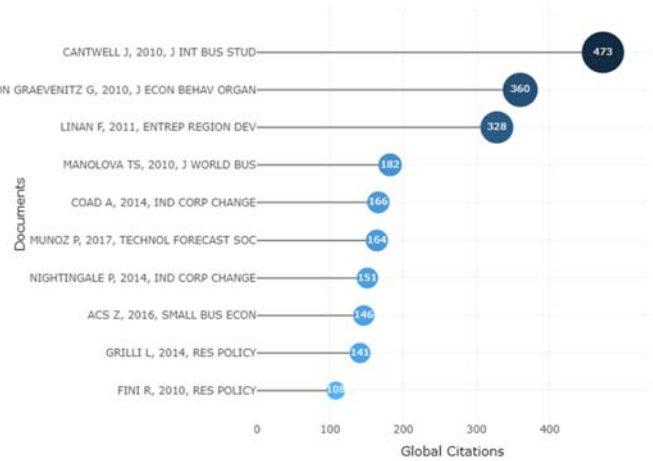


Source: Author's own compilation using R tool – Bibliometrix

Furthermore, with respect to the analysis of the author's production over time, the results reveal different coordinates of time in which the authors are involved with a significant number of articles and citations. Figure 3 highlights the authors with the highest number of articles and citations, as follows: Coad A (3 documents), Wennberg K (2 documents), Dvoulety O (2 documents), and Blazkova I (2 documents). Along the same lines, the most cited three articles discussed a series of specific aspects related to the relationship between public policy and entrepreneurship, as follows: Frankish et al. (2014) investigate if entrepreneurial activities constitute a path out of deprivation for the people that are living in some deprived areas; Nightingale and Coad (2013) appreciated that even if entrepreneurial activities are considered a key driver for the economy, the performance of an entrepreneurial firm regarding different terms such as innovation, productivity and economic growth, and job creation can have a positive interpretation when we move from analysis to public policy, thus creating a dependent link between policy and entrepreneurship; Coad et al. (2014) assigned significant direct implications of the HFCs in public policy, and reveal that even though HCFs are important in understanding public policy and the economy, they cannot be considered essential pillars for public policy.

Moreover, the most relevant documents by the number of citations are highlighted in Figure 4.

Figure no. 4. Authors' most significant documents and citations graph visualization (2010-2018)

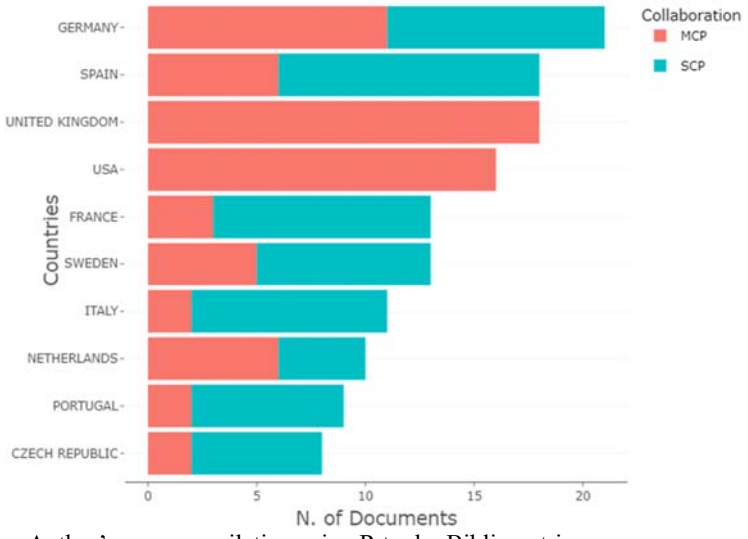


Source: Author's own compilation using R tool – Bibliometrix

The most relevant documents related to the relationship between public policy and entrepreneurship are identified based on the number of citations during the whole period between 2010 and 2022. Due to a large number of documents and authors, the threshold was set to only ten of the most relevant documents, with total citations as the unit of measure. The results in Figure 4 highlight a tight number of citations among the identified documents with the highest number of citations, as follows: the first place in the rank with 473 citations, where Cantwell et al. (2010) bring new co-evolutionary analysis in order to underline the importance of the interrelationship that exists between MNE activity and public policies; the second place with 360 citations, the research aims to identify if entrepreneurship education affects or not the intentions of students to be interested in becoming an entrepreneur, outlining a set of suggestions and recommendations for educators, especially for the public policy (von Graevenitz et al. 2010); the third place with 328 citations, where Linan et al. (2011) stated that entrepreneurial intentions differ depending on various factors that are possible to affect entrepreneurial activities in many regions of a country.

The collaboration between countries and the most prolific countries exploring the core literature regarding the topic of public policy and entrepreneurship over the period 2010-2022 is highlighted in Figure 5.

Figure no. 5. Scientific production and collaboration of countries

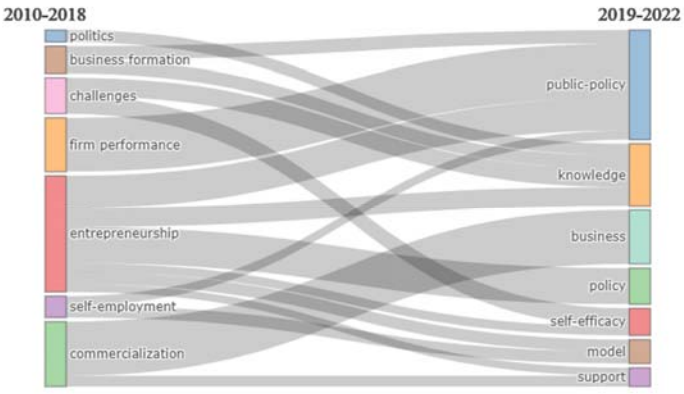


Source: Author's own compilation using R tool – Bibliometrix

With respect to the scientific production by country, Figure 5 presents the most prolific countries, such as Germany, Spain, the United Kingdom, the USA, France, and Sweden, countries that registered the highest scientific production in the field of public policy and entrepreneurship, respectively with a total of 21, 18, 18, 16, 13, and 13 articles published. The results obtained reveal the number of publications from a single country and those referring to collaborations that take place at the national level (SCP) - Spain, Germany, France, Italy, and Sweden, and publications with multiple countries or in collaboration at the international level where at least one of the co-authors is from a different country (MCP) - Germany, United Kingdom, USA, and the Netherlands. Within the same frame, the collaboration between countries can be observed worldwide, especially at the level of European countries. Therefore, many countries contribute to scientific development within the framework of the relationship between public policy and entrepreneurship.

Regarding the conceptual structure with thematic evolution in terms of keywords plus, the results are highlighted in Figure 6.

Figure no. 6. Thematic evolution in terms of keywords plus



Source: Author's own compilation using R tool – Bibliometrix

Chen et al. (2008) affirms that in order to determine de thematic evolutions the most relevant items are the keywords plus. Moreover, the process of performing the thematic evolution involved some parameters of the analysis, such as the number of words (250 words) the minimum cluster frequency (5 frequency), and the clustering algorithm (walktrap). Thematic evolution is presented in Figure 6. Likewise, the evolution of the keywords plus between the two periods (2010-2018 and 2019-2022) can be observed. Moreover, the diagram results highlight the transition of many keywords plus along the analyzed period. In this light, we can observe that "challenges", "business formation", "entrepreneurship", and "self-employment" are keyword plus related to the first period of analysis (2010-2018) that are strongly connected with "public-policy" in the second period (2019-2022).

Regarding the historiography map related to the relationship between public policy and entrepreneurship, Figure 7 evidence four different clusters of authors.

Figure no. 7. Historiography map

Source: Author's own compilation using R tool – Bibliometrix

Figure 7 highlights the historiographical structure based on the network of direct citations, where the circles represent nodes (scientific articles together with information about the first author and the year of publication of the scientific document), and the lines identify the direct citation within the formed clusters. Based on direct citations, the intellectual connections are drawn in historical order; each historical path represents a research topic and contains the most relevant documents, being presented in different colors (light blue for cluster 1, green for cluster 2, pink for cluster 3, and purple for cluster 4). Next, the results reveal that the first route highlights aspects related to hybrid entrepreneurship and public policy, also including some aspects related to entrepreneurial billionaires, with a particular focus on experimental learning theory and hybrid entrepreneurship (Ferreira et al., 2020; Schulz et al., 2016; Bogenhold et al., 2019). Furthermore, route two emphasizes the direct relationship between entrepreneurship and economic growth, referring to public policies that can positively impact and promote entrepreneurship (Urbano et al., 2016; Martinez-Rodriguez et al., 2020; Urbano et al., 2020; Asc et al., 2016; Dvoulety et al., 2019, Thurik et al., 2013; Terjesen et al., 2016; Messeghem et al.,2018; Nightingale et al., 2014; Coad et al., 2014). Route three discusses the entrepreneurship policy and evidences the institutional perspective of public policies (Murdock et al., 2012; Doblinger et al., 2016). Last but not least, route four identifies the public policy for academic entrepreneurs (Fini et al., 2010; Lejpras et al., 2014; Sandstrom et al., 2018).

5. Conclusions

This scientific research aimed to present a rough overview of the main topics discussed in documents related to the relationship between public policy and entrepreneurship and visually map this framework by observing 206 documents indexed in the Web of Science over the period 2010-2022.

The analysis performed in this context followed a comprehensive approach, namely bibliometric analysis by employing a revolutionary research methodology that refers to an R tool, namely Bibliometrix and pursued the development of complex innovative features such as conceptual structure, collaboration networks, scientific production over time, historiographic and visual graph representation.

Within this frame of annual scientific publication, the results identified the lowest number of documents in the years 2012, 2011 and 2022. Along the same lines, 114 documents of the total scientific output belong to the last decade, which underlines the fact that the highest production volume was in the last period. It is pertinent to emphasize that the scientific research since the emergence of COVID-19 (2019-present) has increased, representing a significant part of the total production, maintaining a growth trend.

Furthermore, the results of the analysis regarding the annual scientific production of authors reveal that exists a period of activity and inactivity regarding the scientific production of each author. Thus far, the authors Urbano and Mckelvey provide the longest and most continuous period of scientific publication. Therefore, it can be attested that Coad A is the most significant author with the highest production of scientific documents (with a number of 3 articles and 332 citations in 2014), closely followed by Wennberg K (with a number of 2 articles, and 33 citations in 2014), Blazkova I (with a number of 2 articles, and 30 citations in 2019), and Dvoulety O (with a number of 2 articles, and 30 in 2019).

Within the context, considering the production of documents and the index of total citations, the analysis focused on those articles that have received the most significant number of citations. In this case, the results highlight ten documents with the highest number of citations in descending order, and at the top of the ranking with the most relevant documents we can observe the authors Cantwell J (473 citations), Von Graevenitz G (360 citations), and Linan F (328 citations).

Furthermore, the results highlight countries such as Germany, the United Kingdom, the USA, and the Netherlands as the countries with the highest number of articles, where one country is in collaboration with multiple countries and where at least one of the co-authors is from a different country. Conversely, the results have pointed out the countries with the lowest level of international collaboration (France, Italy, Portugal, and the Czech Republic).

Moreover, regarding the number of publications from a single country and the collaborations at the national level, the results have identified many countries, such as Spain, Germany, France, Italy, and Sweden. At the end of the spectrum, the results underlined that some countries are not involved in national collaboration, namely: the United Kingdom, the USA, the Netherlands, and the Czech Republic.

The thematic analysis results highlighted the transition of many keywords plus along the analyzed period. Thereby, according to the obtained results, keywords plus such as "challenges", "business formation", "entrepreneurship", and "self-employment" are related to the first period of analysis (2010-2018) that are strongly connected with "public-policy" in the second period (2019-2022).

At the same time, based on the historiographic map, four scientific research pathways have been identified, being presented in different colours, each path referring to a concept and its historical development.

Nevertheless, by constructing bibliometric networks, graphs and clusters were possible to observe the latest trends regarding the research topic and predict the potential challenges and changes in the field, thus adding value to the existing literature related to the relationship between public policy and entrepreneurship.

The main limitation of this study relies on the considered period (2010-2022), and the database included, respectively Web of Science. However, the database and the analysis period can be constantly updated by including other influential databases or extending the analysis period.

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