

Funko, Ivana Sučić; Vlačić, Božidar; Dabić, Marina

Article

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Corporate entrepreneurship in public sector: A systematic literature review and research agenda[☆]



Ivana Sučić Funko^a, Božidar Vlačić^b, Marina Dabić^{a,c,*}

^a University of Zagreb, Faculty of Economics and Business, Croatia

^b Católica Porto Business School and CEGE, Universidade Católica Portuguesa, Portugal

^c University of Dubrovnik, Croatia

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ABSTRACT

After the financial crises of 2008, the contemporary public sector urged public managers, public administrators, and policymakers to consider alternatives to privatization in order to decrease government participation. This new approach to public management sought to enhance the government's performance and fulfil public needs resourcefully. The concept of corporate entrepreneurship (CE) in the public sector, i.e., public entrepreneurship (PE), was therefore introduced. This study aims to synthesize the literature on this topic and establish a research agenda on the PE field. By adapting hybrid approach based on a systematic and bibliometric literature review, the paper presents the results of four main bibliometric techniques: citation and co-citation analysis, bibliographic coupling, and co-word analysis, all of which were used by means of Vos-Viewer software and the *Bibliometrix* (including *Biblioshiny* application) package for statistical program language R. This theme-centric review of 84 publications published in flagship journals reveals the intellectual domain of CE in the public sector, highlighting key theoretical concepts, principal research topics, the methodologies employed, the geographical span of the domain, and proposed future research avenues. This paper offers a comprehensive review of CE in the intellectual domain of the public sector. It presents fruitful research avenues with regards to the ways in which public entrepreneurial success is related to adjustability to broader political and institutional perspectives; how territorial innovation theories deal with increased resource mobility; and how a lean government could enhance civil engagement and public involvement.

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Introduction

Corporate entrepreneurship (CE) has received a significant amount of academic attention since it initially became a separate field of research in the 1980s (Glinyanova et al., 2021). Mainly due to its antidote effects with regards to increasing competition in complex global markets, CE has been conceptualized as: “formal and informal activities aimed at creating new business in established companies through product and process innovations and market developments” (Zahra, 1991, p. 262). Entrepreneurial behaviour within existing organizations has grown in popularity owing to its positive implications for individual firms. These implications include increased profitability and better firm performance (Zahra, 1991); the establishment of sustained competitiveness (Antoncic & Hisrich, 2001); international success (Birkinshaw, 1997); and firms' internal renewal (Sathe,

1990), for the betterment of entire economies (Ireland et al., 2003). Following the global financial crises in 2008, questions concerning public leadership and entrepreneurial behaviour within the public sector became more prominent (Reinhart & Rogoff, 2009).¹

Considering the nascent stage of systematic reviews (Ali et al., 2019; Mohammed et al., 2021) and the absence of bibliometric analysis in the public sector CE domain, this paper aims to provide a fine-grained systematic and bibliometric analysis to fill the academic literature gap and provide a future research agenda. The gap in the literature will be addressed through the adaptation of a hybrid approach, grounded on the bibliometric and systematic review used in previous studies (Dabić et al., 2020, 2021; Fernandes et al., 2022). The theme-centric review (Linnenluecke et al., 2020) will focus on preceding

¹ A large body of literature has used various terms to refer to CE in the public sector: entrepreneurial government (Osborne & Gaebler, 1992); PE (Roberts & King, 1991); public management (Andrews & van de Walle, 2013); and public sector CE (Kearney et al., 2007). In this paper, the term 'PE' is being used interchangeably with the term 'CE in the public sector', based on the view that PE equals CE, as per existing studies (Dieffenbach, 2011; Zampetakis & Moustakis, 2010).

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* Corresponding author.

E-mail address: mdabic@efzg.hr (M. Dabić).

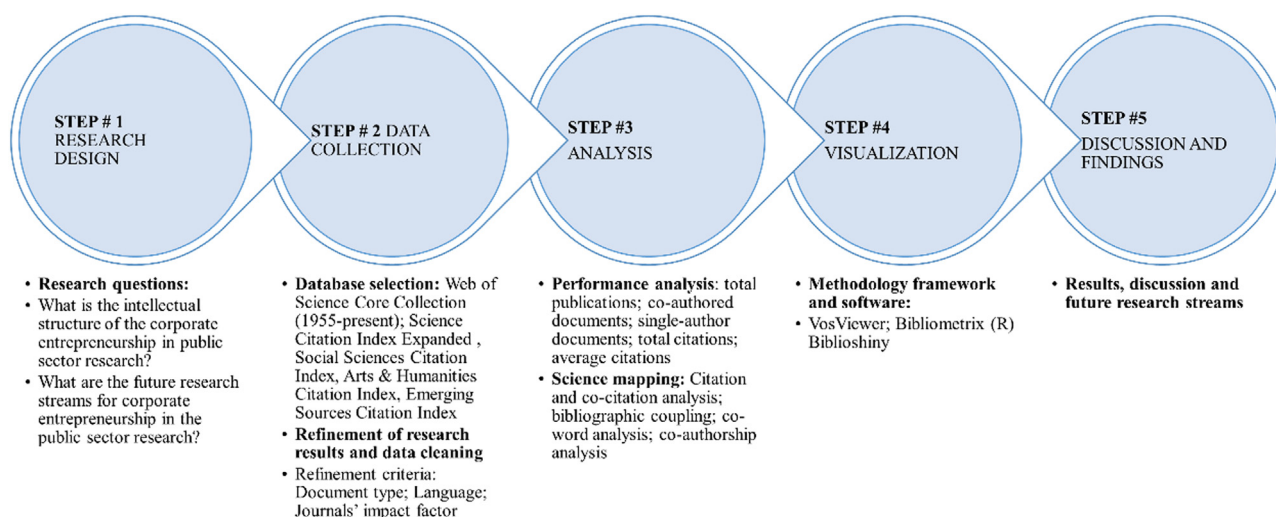


Fig. 1. The research process workflow.

publications, and will outline the key concepts and fields of interest within the public sector CE domain. The visualization and mapping of the systematic research results will be presented by means of different bibliometric tools and methods.

Following the procedure on conducting systematic reviews (Dabić et al., 2021) and bibliometric analyses (Zupić & Čater, 2015), the research workflow constructs the research questions; designs the research framework; explains the methodological protocols; establishes a strategy for searches, data extraction, and analysis; and interprets and synthesises the results. The paper seeks to provide an overview of the topic of PE, with an emphasis on answering the main research questions (RQs):

RQ1: What is the intellectual structure of research on CE in the public sector?

RQ2: What are the future research streams for research on CE in the public sector?

The paper contributes to the domain of PE research in several ways. Firstly, it provides a systematic literature review by revealing the sum of knowledge through a fine-grained overview of the research field. Former literature reviews on PE have reviewed the body of literature within a limited time span. Ali et al. (2019) conducted a systematic review on the PE field for a 26-year period (1990–2016). Two years later, Mohammed et al. (2021) reviewed more than 60 peer-reviewed manuscripts on PE, revealing the basic issues evident in the domain of public sector entrepreneurship over a ten-year period (2010–2019). This systematic literature review was supplemented by bibliometric analysis and offers a comprehensive review of the entirety of the available timespan, covering the period from 1958 to 2022. Drawing on the bibliometric analysis of CE literature, Glinyanova et al. (2021) proposed a literature review of a fifty-year period. Still, research was limited to the body of literature in the CE field, leaving space for better-timed future comprehensive analysis of the public sector entrepreneurship domain. Secondly, the structured overview – which was conducted by means of citation, co-citation analysis, and bibliometric coupling – establishes valuable foundations for the future study of PE. The research also supplements existing studies on CE within the public sector by tackling the theoretical approaches used in the literature, as well as key research topics, methodologies, geographical span, and an overview of industries. Lastly, this study offers several future research streams with regards to future research topics, such as the concept of lean government, drawn from a lean start-up model; the possibility of

collaboration between multiple parties; and the links to public servants' job satisfaction. The paper proposes further in-depth analysis of territorial innovation policy and contingency theory as potential paradigms for contemporary government. The authors also delineate potential research streams with respect to the COVID-19 crisis and its effect on PE, as well as its impact on proposals for methodological approaches and industries.

Many factors, such as the high average share of general government expenditure,² the significant share of public employment,³ and the notable role of state-owned enterprises (SOEs) as generators of 10% of world's gross domestic product (GDP), highlight the clear need for this research gap to be filled. The first steps towards resolving this deficit in literature is to provide a literature framework and to delineate examples of proven innovative and entrepreneurial practices within the public sector domain.

The remainder of the article is divided into five sections. The next section presents the research design, along with an explanation and a description of the methodology. Following the analysis, the results are presented and explained, supported by plots and diagrams. The final section contains the discussion, and future research streams are proposed.

Methodology

The methodology framework was established based on a hybrid approach, consisting of bibliometric analysis supplemented by in-depth reviews, as applied in previous studies (Dabić et al., 2021). A similar approach has been applied across other fields of research, including intellectual capital (Bellucci et al., 2021), knowledge management, and leadership (Pellegrini et al., 2020). The procedure was undertaken following the five-stages of workflow: (i) framing research design; (ii) data collection; (iii) analysis; (iv) visualization; and (v) discussion and findings, as presented in Fig. 1 (Zupić & Čater, 2015).

The set-up of the research design was conceptualized in such a way as to answer the research questions, select the appropriate methods, and establish a precise methodology protocol to facilitate the replicability of the systematic review (Linnenluecke et al., 2020). The research protocol outlines the step-by-step process, stipulating

² EU-28 state members' ten-year average government expenditure (2010–2019) was around 48% of Gross Domestic Product (GDP), (Eurostat, 2020)

³ EU-28 state members' average for public employment in 2018 was around 24% (Eurostat, 2018).

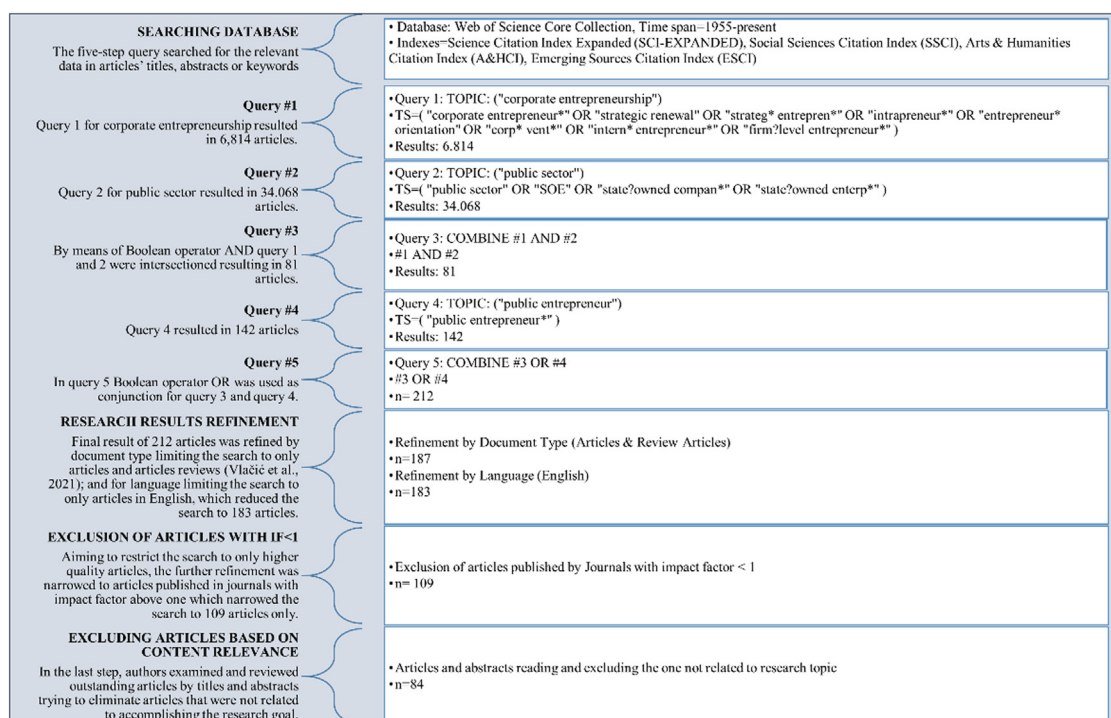


Fig. 2. The research protocol for collection and refinement.

the key milestones of the research: data collection procedure, selection of online database, citation indexes, articles and criteria to be refined, analysis undertaken, methods applied, and tools used.

As presented in Fig. 2, the research was conducted on articles collected from the Web of Science Core Collection (WoS) database by Clarivate Analytics, using the full timespan from 1955 until the present day. The rationale for selecting the WoS database was two-fold: owing to its valuable pool of high-impact data compilation (Dabić et al., 2021); and for its recognition as an authentic repository for bibliometric work (Falagas et al., 2008). The data was extracted from the Science Citation Index Expanded, Social Sciences Citation Index, Arts & Humanities Citation Index, and Emerging Sources Citation Index adopting the approach from Fernandes et al. (2022).

Following the database and citation indexes selection, manuscripts were extracted by applying the query aligned with previous studies around the topic of CE (Glinyanova et al., 2021) and CE in the public sector (e.g., Ali et al., 2019; Mohammed et al., 2021). The query was conducted on 27th May 2022, using five steps combining the phrases related to the CE concept and to the public sector in the articles' titles, abstracts, or keywords (see Fig. 2).

This literature review uses a science mapping-classification-visualization approach, based on quantitative bibliometric methods. It analyses relatedness amongst publications, authors, sources (i.e., journals), and keywords in terms of various factors (citation and shared references) in an attempt to create, develop, evaluate, and describe a body of research in a structured way. The two main purposes of bibliometric analysis are: (i) the assessment of authors' and institutions' research and publication output; and (ii) the detection of the structure and dynamics of the scientific field (Cobo et al., 2011). The first purpose is fulfilled by the performance analysis, while the second by means of the science mapping (Zupic & Čater, 2015).

The paper presents the results of the four main bibliometric techniques: citation and co-citation analysis, bibliographic coupling, and co-word analysis that were used by means of VosViewer software (Eck & Waltman, 2018) and Bibliometrix (including Biblioshiny application) package for statistical program language R (Aria & Cuccurullo,

2017). Following the citation and co-citation analysis, the intellectual structure of CE in the public sector field was established, and a future research agenda was proposed.

Mapping the field of CE in the public sector

Science mapping combines the taxonomy and visual appearance of the published research (Boyack & Klavans, 2010). Through the use of a quantitative approach to bibliometric methods, the published research is structured and classified, graphically representing divisions within the searched field (Zupic & Čater, 2015). This section concerns the descriptions and structures of the sampled papers while due to space constraints articles' analysis by publication and citation frequency are available in Supplementary materials. The results of the bibliographic analysis are presented, providing the conceptualization of the prevailing topics and authors.

Sample traits and citation analysis

As presented in Fig. 3, the first publication on the public sector CE topic occurred in 1986. However, significant interest on the topic begun to develop in the 2010s and has especially grown over the last seven years. This is when the majority of the articles were published. More than 50% of all of the articles (42 articles exactly) have been published since 2015. The 84 articles taken from 54 journals in the available time span – from 1955 until the present – counted for 4779 references and 2281 citations in total (2099 citations without self-citations). On average, this amounts to 27.48 citations per item. The total number of keywords was 239. For details, please see Table S1 in the supplementary materials.

The most relevant sources of publication were: Public Management Review, Public Administration Review, the International Journal of Entrepreneurial behaviour & Research, and Administration & Society. Further information can be found in Table S2 in the supplementary materials. The articles with highest number of citations were Larry (1998) and Klein et al. (2010), (Table S3 in supplementary

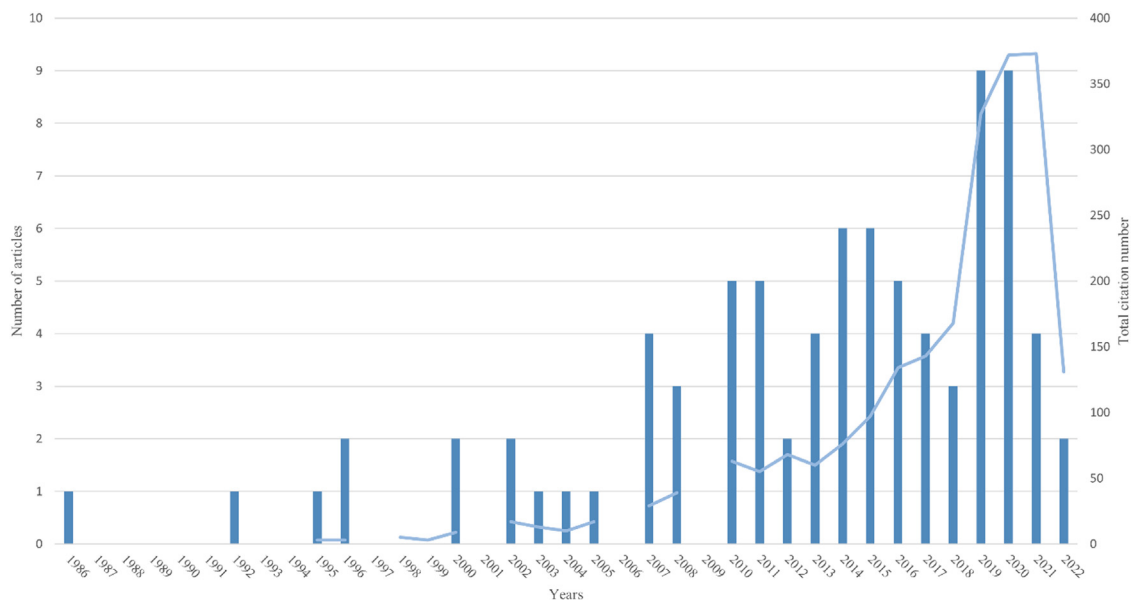


Fig. 3. Publication and citation evolution.

material). Considering the relative number of citations, Andrews et al. (2020) and Sørensen and Torfing (2017) scored the highest number of citations per year (Table S4 in supplementary material); while authors with the highest number of articles in the researched sample were Kearney and Zampetakis.⁴

Intellectual structure of PE

In an attempt to synthesize CE and the public sector research domain, a fine-grained content analysis was performed. The descriptors identified were organized into five key groups: theoretical perspectives, principal research topics, methodological perspectives, geographical footprint, and industries (Fig. 4).

Theoretical perspectives

PE theory

PE theory was the most frequently used theory in the researched articles. Researchers focused on comparisons between entrepreneurship in the private and public sectors (Hayter, 2015), entrepreneurial practices, and the exploration of organizational traits affecting and fostering entrepreneurial actions in the public sector domain (Kim, 2010). These efforts sought to reveal and clarify the role of entrepreneurship in public entities (Zerbinati & Souitaris, 2005). Contrary to the times in which the dominant views on public enterprise management pertained to privatization, and in spite of the decrease of governmental participation in service provisions, the PE concept offers a new stream of public management research which focuses on the enhancement of the government's performance and the fulfilment of public needs resourcefully and successfully (Kim, 2010).

Agency theory

Agency theory (often referred to as principal-agent theory) is a fundamental part of today's modern microeconomics (Linder & Foss, 2015). It draws its roots from Ross's economic theory of agency (Ross, 1973) and Mitnick's institutional theory of agency (Mitnick, 1975),

and is grounded on the ownership-controllability detachment problems (Al Mamun et al., 2013). The agency problem occurs in situations in which one party (Principal) enlists another party (Agent) to make decisions as a representative of the principal (Al Mamun et al., 2013).

Haque (1996) noted that the world-wide privatization trend, which praises the private market and criticizes public administration and bureaucracy, has generated challenging and demanding perspectives on the study of public administration. Contemplating the principal-agent theory, researchers have debated on which is the most appropriate approach for public value custody: reinventing the government, or the "conservatorship paradigm", whereby the risk of too strong a focus on bureaucracy efficiency is to ignore fundamental values; or vice versa – overdependence on values and procedures, which can deteriorate innovation capabilities (Kalu, 2003, p. 539).

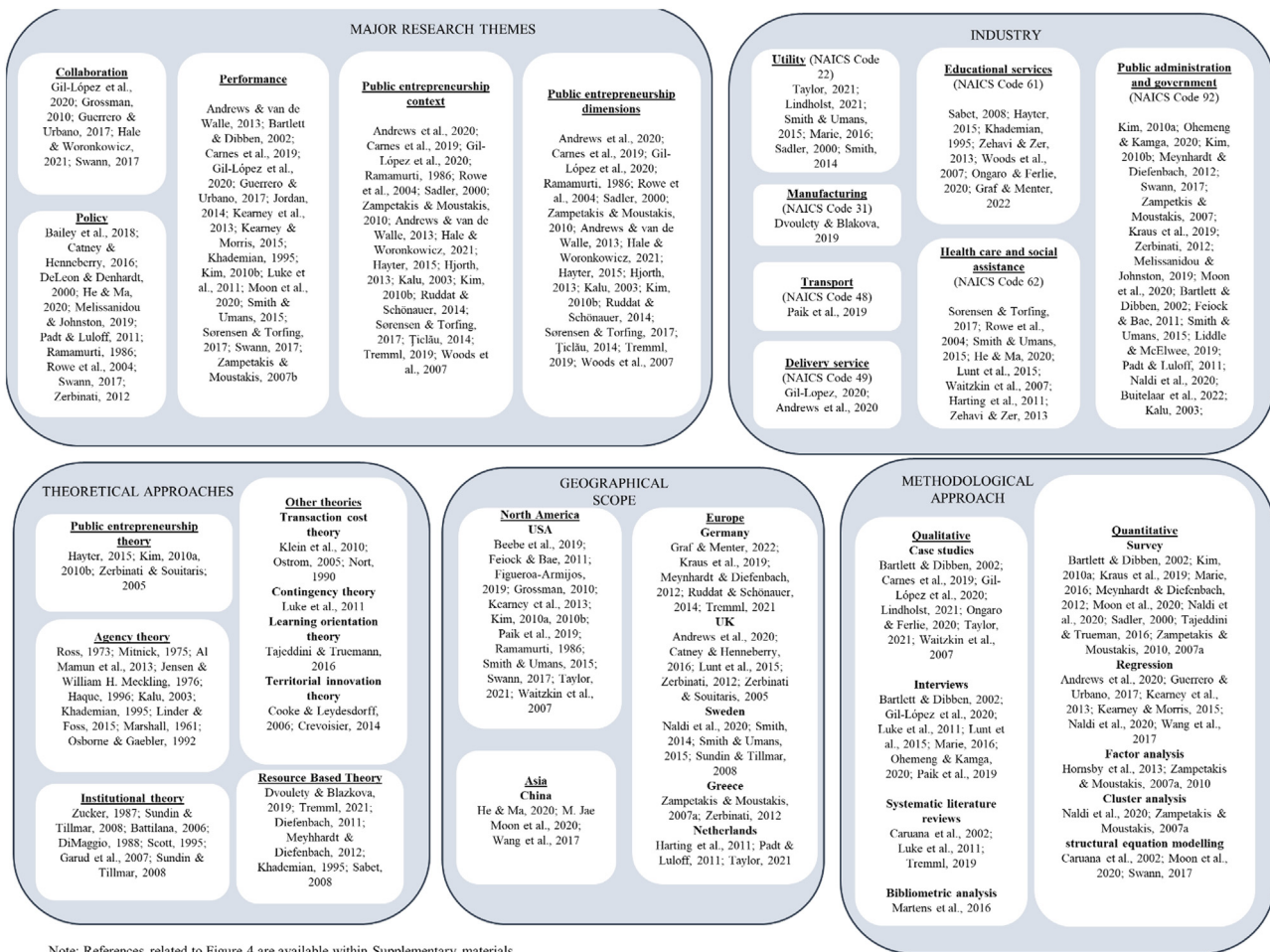
Resource-based theory

As per the resource-based theory – which is the prevailing concept in the field of entrepreneurship and management strategy (Newbert, 2007) – resources are vital forecasters of opportunity-based entrepreneurship and new venture development (Alvarez & Busenitz, 2001). Companies achieve sustainable competitiveness by means of establishing new businesses or renewing existing ones, implementing so called 'value creation strategies', such as CE (Umrani et al., 2018).

The resource-based theory outlines the principles needed to determine the essential resources required for a company to realise its sustained competitive advantage, using an internally driven approach from the 'mezzo-level' perspective. The prevailing paradigm behind resource-based theory implies that a company's internal factors (i.e., its resources and capabilities) dictate its profit (Utami & Alamanos, 2009). The resources concept has been used in several conceptualizations of different entrepreneurship research domains: CE (Zahra, 1993); EO, internal CE (Schollhammer, 1982); corporate venturing (Ellis & Taylor, 1987); internal/new business ventures, internal corporate venturing, strategic or organizational renewal (Stopford & Baden-Fuller, 1994), and innovation culture (Dabić et al., 2019).

For example, Tremml (2021) explored the barriers to PE and conducted a comparison of private versus public sector internal organization forecasters of PE. The study demonstrated that private and

⁴ Due to space constraints, we have adopted a parsimonious approach, and we highly encourage readers to further explore the results of co-citation analysis, bibliographic coupling and co-word analysis available in the supplementary material.



Note: References related to Figure 4 are available within Supplementary materials

Fig. 4. References framework regarding major research themes, theoretical and methodological approaches, geographical scope and industry.

public organizations share the same barrier – “insufficient human resources” (Tremml, 2021, p. 16). The slogan “do more with less” epitomized the tendency to use resources more efficiently (Khademian, 1995, p. 25), creating new ways to use resources that foster productivity.

Institutional theory

The idea of the ‘institutional entrepreneur’ conceptualizes the starring role of entrepreneurs as change agents, combining the two concepts: entrepreneurial and institutional (Sundin & Tillmar, 2008), whereby the institutional environment simultaneously restrains and supports the institutional entrepreneur in making changes. This is called the “paradox of embedded agency” (Battilana, 2006, p. 653). According to DiMaggio (1988, p. 14) novel institutions emerge when systematized players with abundant resources (i.e., institutional entrepreneurs) recognize an opportunity to benefit from these institutions. Researchers differentiate between new institutions and new organizational establishments. Institutions, in this sense, are given a wider definition that includes frameworks consisting of various regulative and procedural rules and undertakings that secure social behaviour (Scott, 1995).

PE has been considered a crucial perspective for changes in policy processing, especially seeing as it integrates the role of agency into institutional theory. In this context, embedded structures do not limit agency, but offer a policy or infrastructure framework for the development of entrepreneurial actions (Sundin & Tillmar, 2008).

Other theories

Theoretical foundations, such as transaction cost theory, contingency theory, learning orientation theory, and territorial innovation theory, were explored to a lesser extent.⁵

Principal research topics

The reviewed knowledge base delineates various perspectives and research themes, such as: collaboration, performance, policy streams, PE contexts and PE dimensions (Diefenbach, 2011; Miller & Friesen, 1983; Morris & Jones, 1999).

Collaboration

The exploration of the relationship between innovation achievement and access to know-how from research and development partnerships has concentrated on performance matters and research and development cooperation with competing companies, comparatively neglecting research on cooperation with non-direct competitors, such as universities (Guerrero & Urbano, 2017). Empirical studies on companies in emerging economies have revealed multi-type cooperation-tendencies between parent companies, other companies (e.g., with competition), universities, and development centres, which could, for high-growth orientated companies, result in positive innovation performance (Autio et al., 2014). Furthermore, CE in state-

⁵ Due to space limitations, parsimonious approach was applied and we highly encourage readers to further explore other theories available in the supplementary material.

owned enterprises can improve the quality and efficiency of business operations, strengthening market recognition and improving sustainability by means of the exploration and utilisation of coalitions (Gil-López et al., 2020). The positive implications of collaboration when it comes to resolving public sector difficulties and challenges has been formally assessed through studies based on experimental design. These studies have revealed that artist residencies in the public sector workplace, i.e., through collaboration between employees and artists, could demonstrate higher level of creativeness compared to employees not collaborating with artists. This could therefore support innovative actions and improve entrepreneurial behaviour within the public sector (Hale & Woronkiewicz, 2021).

Performance

The performance perspective of public sector entrepreneurship has been explored with regards to performance management (Andrews & van de Walle, 2013) and performance manifestation, i.e., efficiency, improved quality, and better market positioning (Moon et al., 2020). Governments strive to enhance innovation in the public sector in order to improve performance. Entrepreneurial management and competition are fundamental drivers of public sector transformation, whereas the newly conceptualized New Public Governance – see “metagovernance strategy” – collaboration between public and private sector participants seeks to improve performance and key reformation drivers (Sørensen & Torfing, 2017, p. 1). Bartlett and Dibben (2002) drew on information pertaining to the local government and proposed a viewpoint according to which performance management was not perceived to be a change generator. Rather, it was an instrument for the implementation and institutionalization of innovation. Furthermore, performance management positively impacts upon society's perception of public services (Andrews & van de Walle, 2013).

Research on entrepreneurship in the public sector has concentrated on entrepreneurial models in an attempt to reach higher levels of efficiency and better performance for companies operating in the public sector (Moon, 1999). Moon et al. (2020) shed light on the outcomes of entrepreneurial leadership and entrepreneurship in the public sector, revealing their significance with regard to organizational performance. Drawing on both private and public sector companies, in his former work, Moon (1999) revealed that organizational traits such as structure, culture, and environment are important to innovation promotion and performance improvement.

Policy stream

The policy entrepreneur concept stemmed from attempts to explain policy programme development to the United States' government (Zerbinati & Souitaris, 2005). Kingdon (1984) introduced the idea of the policy entrepreneur and described entrepreneurs as “advocates who are willing to invest their resources – time, energy, reputation, money – to promote a position in return for anticipated future gain in the form of material, purposive, or solidary benefits” (p. 179). The majority of research on policy entrepreneurship has focused either on the case studies of selected public entrepreneurs' examples, or on the implementation of various policies (Roberts, 1992).

The implementation of various policies examining public strategies and goals (Catney & Henneberry, 2016) that seek to create value for society through the exploration and exploitation of resources has been examined across different contexts. Melissanidou and Johnston (2019) explored how particular perspectives (the authors used fiscal austerity policy following the fiscal crises in Greece) impact upon PE outputs. According to Lindholst (2021), negative implications in terms of the public value of innovation-focused public policies could be bypassed for privatized companies as a result of remunicipalization. This pragmatically allows PE to facilitate local government restructuring.

PE context

Despite the concept of entrepreneurship being predominantly associated with the private sector, the need and demand for entrepreneurialism within the public sector is growing (Kearney et al., 2009). Nevertheless, public entrepreneurs are rare. This is mostly due to the fact that they inhabit a more challenging environment than that of the private sector (Ramamurti, 1986). Research on PE varies, from personal traits and motivation (Ramamurti, 1986) and goals and focus (Kearney et al., 2007) to resource availability (Figuerola-Armijos, 2019).

Private and public entrepreneurs share personal traits, such as their energetic nature; their dedication to their work; and their optimistic, enthusiastic, and committed approach to idea implementation. Still, they differentiate with regards to key drivers and goals. Profit is not a primary goal of the public sector, but rather the fulfilment of public needs and social rights (Lazzarini, 2013). Goals are often ambiguous and unclear (Sadler, 2000) and failures are penalised, while rewards (if any at all) are not related to success (Ramamurti, 1986).

The widely used term “corporatization” illustrates models of PE – i.e., the public sector (e.g., local government, municipalities) – and their strategic attempt to establish companies that provide public services (Andrews et al., 2020, p. 1). The analysis of more than a hundred local governments across England, over a six-year period, explored PE antecedents that foster local government's corporatization. The study proposed several findings. Firstly, the greater the reliance on debt and external funds, the higher the degree of involvement for local governments in establishing and managing companies. Secondly, managerial competences are strongly related to participation in profitable firms. For instance, local governments prefer to establish profitable firms, as opposed to non-profit companies, suggesting the relevance and applicability of new public management (Andrews et al., 2020).

PE dimensions

The dimensions of entrepreneurship in the public sector include risk taking, proactiveness, innovation (Diefenbach, 2011), autonomy, future orientation, and secrecy (Bellone & Goerl, 1992). Alongside proactiveness, innovation, and risk taking, Zerbinati and Souitaris (2005) included leadership and creativity as core dimensions of PE, while Moon's (1999) view pertained to three dimensions: product-based (improvement of clients' contentment), process-based (decreasing bureaucracy and administration), and behaviour-based (promotion of risk affinity).

Innovation is described as a process pertaining not only to the creation of new ideas and products, but also to their advancement and implementation (Walker, 2008). The ability to accept new opportunities beyond the security of their success is defined as risk-taking (Moon et al., 2020). Proactivity refers to taking initiatives before competitors and turning them into entrepreneurial opportunities (Kur-atko & Morris, 2018).

Public entrepreneurs ask for more autonomy- right to make decisions (specially budget-wise) on their own, particularly with reference to their accountability for the performance (Bellone & Goerl, 1992). In addition, except from autonomy, visionary, and risk taking, researchers refer to secrecy as one of the cornerstone dimensions of PE. Contrary to public sector requirements with regards to the disclosure of all relevant information that could enable the public to participate (at least through share of information) in policymaking, public entrepreneurs emphasize the importance of secrecy when it comes to facilitating success, especially in the case of public-private partnership (Bellone & Goerl, 1992).

Methodological perspectives

Both quantitative and qualitative methodological approaches were represented within the researched articles. With respect to

quantitative methods, data was mostly collected through surveys and analysed by means of regression, factor analysis, cluster analysis and structural equation modelling. The qualitative studies primarily used interviews as a source of data collection, while the analysis was focused on case studies, systematic literature reviews, and bibliometric analysis.

The majority of the empirical research conducted occurred at the mezzo level of analysis, i.e., the level of public organizations, local government (Melissanidou & Johnston, 2019), SOEs, municipalities, and academy schools (Woods et al., 2007). Regardless, research at the macro level, such as through the implementation and performance of government programs (Swann, 2017), funding processes (Zerbinati, 2012), and privatization policies in OECD countries (Schmitt, 2011), and on a micro level, such as municipalities and city employees (Kraus et al., 2019), were also represented.

Geographical footprint

Publications from Europe (32 publications) significantly outnumbered – with regards to the geographical footprint of the searched article in the PE field – those from North America (13), Latin America (5), Asia (8), Oceania (3), and Africa (1). However, for the frequency of publications by country, the United States are at the top of the list (13 publications), followed by two Western-European developed countries – Germany and the United Kingdom (5 publications each) – in second place, then Sweden and Greece (4 publications each) in joint third place.

Industry

The dominance of the research on PE has focused on state and federal levels (Mohammed et al., 2021). Our analysis has confirmed the supremacy of studies on state government levels and public administration. Owing to the prevailing number of the North American research papers on PE, the North American Industry Classification System (NAICS) was used to analyse the industry classification structure on PE empirical studies. Sheridan College defines NAICS as a “designed to provide common definitions of the industrial structure of the three countries and a common statistical framework to facilitate the analysis of the three economies (Statistics Canada, n.d., para 1)” (Sheridan College Residence, 2022).

Following the NAICS criterion, the majority of the researched articles were related to NAICS Sector 92: Public Administration & Government (20 articles), whereby the number of articles in the *government subsector* (16) was significantly dominant in comparison to the *public administration subsector* (4). Researchers have explored whether and how contemporary managerial styles manifested through PE can foster the community development of less developed rural areas (Padt & Luloff, 2011) and small- and medium-sized cities (Naldi et al., 2020). Additionally, Swann (2017) conducted empirical analysis that tested the influence of EO on organizational performance and public policy implementation.

Contrary to what the authors expected, the study of more than two hundred middle-level managers revealed only a limited impact of CE dimensions (e.g., management support, work discretion, and goal vagueness) on EO. However, the study revealed that middle managers' localism and the degree of abundance of opportunities both have the strongest influence on EO (Meynhardt & Diefenbach, 2012).

In a local government context, scholars have recognized the potential of the entrepreneurship concept in recognizing and exploring opportunities, exploiting resources, and establishing an entrepreneurial environment (Kraus et al., 2019; Melissanidou & Johnston, 2019) to execute a different public policy, such as those pertaining to energy efficiency and sustainability.

A significant amount of research has been conducted in the health care and social assistance industry; in the educational services industry; and in the utility sector.

Discussions and directions for future research

This study conducted a hybrid-approached theme-centric review built on CE in the public sector field of research. Contributions are hoped to be achieved theoretically and practically. Established research designs and frameworks, followed by subsequent analysis, allow the authors to identify research gaps that could offer avenues for further research developments in the field of PE (Table 1).

Future research avenues regarding theory

The majority of potential future research topics stem from theories that remain underrepresented in the articles searched, such as contingency theory, learning orientation theory, and territorial innovation theory. Contingency theory, derived from the study of “organizational bureaucracies” (Greenwood & Hinings, 2008, p. 159), advocates the significance of an organization's need to adapt to the internal and external conditions upon which different performance outcomes occur (Donaldson, 2001). Drawing from different strategic typologies, whose implementation depends on the business environment (Schuler, 2000), the contingency perspective introduces a “third variable” (e.g., moderator or mediator), which grants us a clearer understanding of the interaction between the variables and their relationships (Umrani et al., 2018, p. 62). Unlike former management concepts that emphasise the significance of direct connections between variables – which, according to some scholars, lack the explanatory power needed for comprehensive real-world cases (Dubey et al., 2020) – the contingency view sought to explain the relationship between variables by means of a third “contingent” variable (Zhang & Li, 2007). With respect to organizational structure, contingency theory rests upon the premise that effectiveness is mostly achieved by fitting the structure to the contingencies, either intra-organizational, such as size and technology, or external (i.e., environmental, such as technological development) (Donaldson, 1987). Managers should consider the significant role of contingencies in utilising resources to achieve competitiveness (Sirmon & Hitt, 2009), and should adapt to internal and external environment conditions in order to reach a better fit for organization-environmental contingencies. This could lead to high levels of organizational performance. The contingency theory suggests that the level of organizational performance depends on the “goodness of fit” between “situational circumstances and structural characteristics” (Greenwood & Hinings, 2008, p. 159).

Contingency perspectives in a PE context investigate the dynamic associations between entrepreneurial agents and institutional structures (Catney & Henneberry, 2016), whereby opportunity realization success varies significantly with regards to time and political contexts (Beeson & Stone, 2013).

Future research should explore how public entrepreneurial success is related to the capability to adjust to broader political and institutional perspectives. Furthermore, the study of contingent public managers' styles and organizational structures could offer insights into human resource management through the exploration of how those characteristics affect organizational culture, learning orientation, knowledge sharing, teamwork, and talent recruiting.

Territorial innovation theory rests upon territorial conditions and territorial values as drivers of competitive advantage, innovativeness, and economic transformation (Figuerola-Armijos, 2019). Some authors believe that its relevance goes beyond the regional dimension of the topic, suggesting that the approach be used as an alternative to “neo-marginalist approaches” (Crevoisier, 2014, p. 7). The authors go further by upholding time and territory as cornerstones of

Table 1

Future research avenues and research questions.

Future Research Avenues	Research Questions
<i>Future research avenues regarding theory</i>	How public entrepreneurship success is related to the public entrepreneurs' capability to adjust to broader political and institutional perspective? How traits of contingent public managers' styles and organizational structure affect organizational culture, learning orientation and knowledge sharing, teamwork and talent recruiting? How local actors respond to global challenges and how territorial innovation theory cope with today's increasing mobility of resource? Is territorial innovation concept only applicable with respect to developed territories where strong-performed companies can enhance local development, or it is doable in lower developed territories as well?
<i>Future research avenues regarding research topics</i>	Can governments adopt lean start-up model as public policy strategy for innovation promoting the lean government concept? How can government use lean start-up's principles (fewer resources, minimal viable product, metrics for testing) to increase its entrepreneurial activities and innovation implementation? Can lean start-up's principle of obtaining direct customers' (public) feedback increase society's (civil) engagement and sense of public involvement? How can Quadruple and Quintuple helices affect the adoption of green and sustainable policy in the public sector (entities)? What are the implications of Quadruple and Quintuple helices on internal organizational dimensions (leadership, strategy, culture, management, goals, marketing, operations, and structure)? To what extent can innovation model of Quadruple and Quintuple helices foster entrepreneurial behaviour in public sector institutions?
<i>Future research avenues regarding context, methodology and industry</i>	To what extent does country's characteristics with respect to economy openness affect public entrepreneurship policy adaption and mechanisms of policy diffusion? How the spatial interdependencies affect public entrepreneurship policy? Does adaptation of public entrepreneurship policies affect civil servants' job satisfaction?
<i>Future research avenues regarding Covid – 19, geoeconomics and geopolitical tensions</i>	What are the country's features that foster entrepreneurial resilience on external factors such as crises? How public policies could support entrepreneurial elasticity in public sector? What are the effects of pandemic and medical crises caused by COVID-19 on entrepreneurship in public sector and specific industries? How did the public enterprises cope with the urge to use digital platforms and switch to on-line businesses? How did public entities adjust to demand for remote work? In what way remote work affected civil servants job productivity and job satisfaction? What is the geoeconomic position of smaller emerging economies? What lessons can be learned from the case of China and applied to emerging economies with still relatively significant stake of government's ownership?

innovation, neglecting the economic perspective arising as a result of its specific situations and its environment (Colletis-Wahl et al., 2008). The public policy focused on fostering entrepreneurial activities. It supported certain industries and sectors in an attempt to understand inter-sector connections and servitization, which could be enhanced through territorial innovation (Figueroa-Armijos, 2019). Future research should explore how local actors respond to global challenges and how territorial innovation theories cope with today's increasing resource mobility. Furthermore, this territorial innovation concept is only applicable with respect to developed territories, wherein companies that are performing well can enhance local development. However, what about the less developed territories?

Co-citation analysis, bibliographic coupling and co-word analysis

Analysis of the interrelations between sources of publications, authors, and keywords can reveal valuable insights. Therefore, by means of Sankey diagram (Riehmann et al., 2005), the authors present a three-field plot portraying the interactions between the most relevant journals (left hand side), keywords (middle), and most relevant authors (right hand side) within the public sector corporate entrepreneurship field. The height of each colour block inside column denotes the frequency of the category. Public entrepreneurship, as the most frequent keyword, was mostly used in publications by Kim, Y. and Tremml, T. in the *Public Management Review* journal and the *International Journal of Entrepreneurial Behaviour and Research* (see Figure 5).

• *Co-citation analysis and Bibliographic Coupling*

Co-citation analysis and bibliographic coupling are ideal for use when structuring the research domain: co-citation builds intellectual

structure (Persson et al., 2009), i.e., a “knowledge base”, whereas bibliographic coupling creates a “research front” (Zupic & Šater, 2015, p. 12). The knowledge base (i.e., the intellectual structure) represents a list of publications with the highest citation indicators in terms of the existing studies. This includes research traditions and the disciplinary composition of the examined scientific field, as well as dominant and prominent topics and their interrelations (Shafique, 2013). The connections between authors, publications and/or sources (denoted by nodes) reveal the structure of the field, while boundaries can be interpreted in a different way depending on the network type, e.g., co-citation network among cited-reference publications and cited-sources, or chronological direct citations (Aria & Cuccurullo, 2017).

Bibliometrix offers historiography – a chronological network plot which generates a citation grid distribution over time (Aria & Cuccurullo, 2022). The plot has been created based on local and global citation scores. Generally, research concepts and relevant documents are represented by various colours. As shown in Figure 6, all nodes (represented by circles on the map) are of the same colour, revealing the homogeneity of the research concept. The node represents the publications included in the analysed collection, cited by other publications. The edge indicates direct citations, and the horizontal axis represents the year of publication (Aria & Cuccurullo, 2017).

The goal of bibliographic coupling is to map publications that are content-related, following joint reference criteria for relatedness (Kessler, 1963). Grounded on the cited publications' interconnections, bibliographic coupling allows us to see recent and new articles portraying the current state of the research domain, unlike co-citation analysis, which is orientated towards past-publications (Donthu et al., 2021).

The original sample of 84 articles, encompassing 4,779 cited references in total, was narrowed down to a network of 80

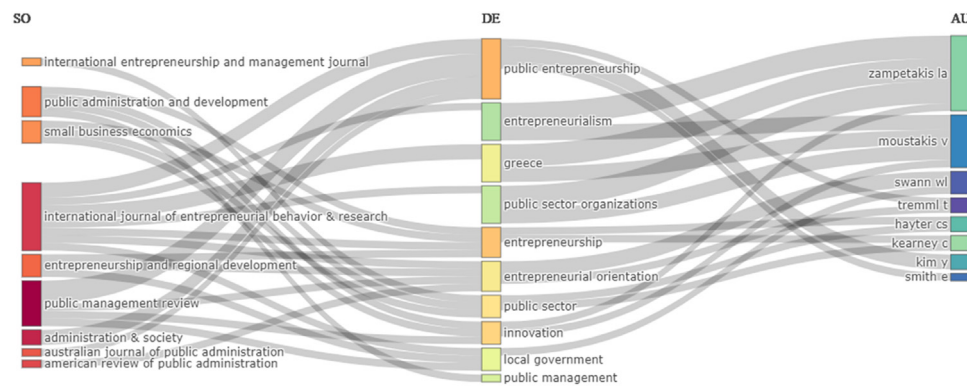


Fig. 5. Sankey's diagram - Three-field-plot on sources, authors, and keywords.

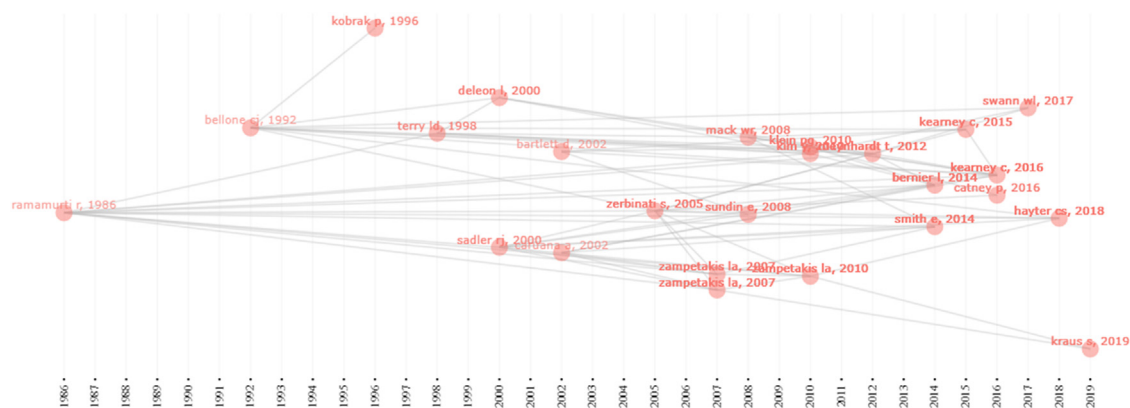


Fig. 6. Historiograph.

connected articles. These were structured into four clusters, which were allocated different colours. A network of bibliographic coupling results (Figure 7) reveals the links between publications, i.e., the frequency at which references are cited by two publications. The strength of the links differs in that higher values presume stronger links (Eck & Waltman, 2018). A list of the publications clustered by the bibliographic coupling is available in Table S1 of supplementary materials.

- Public Entrepreneurship Management and Policy: Corporatization and Remunicipalization (red cluster, n=31)

A significant role is played by middle managers who act as the cornerstone of an organization's innovation growth (Kanter, 2004), serving mediators within internal hierarchies and communicating new ideas from lower and non-management levels to executive management (Burgelman, 1983). These managers endorse entrepreneurial activities informally (Kanter, 2004) and carry out strategies (Bower, 1970). These traits have been recognized in both private and public sector managers (Diefenbach, 2011). Private sector management values have been presented through the lens of a public management concept, under the policy of New Public Management (Meynhardt & Diefenbach, 2012).

The study on public management evolved from Traditional Public Management to New Public Management, which then became Public Value Management (Stoker, 2006). The pillars of New Public Management draw on "strategic entrepreneurial leadership and public-private competition as key drivers of public innovation" (Sørensen & Torfing, 2017, p. 1), while the latest strategies coined under term New Public Governance place public-private-collaboration as the ultimate driver of innovation. The creation of a governance network is considered to promote public innovation strategy (Sørensen & Torfing, 2011).

Unlike New Public Management reforms, which have steered the reformation of the public sector towards privatization, the concept of remunicipalization offers a wider and more pragmatic path, allowing for the restructuring of local municipalities by means of public entrepreneurship in situations of failed privatization (Lindholm, 2021).

Drawing from evidence-based policies, various policies tend to be perceived as public entrepreneurship manifestation. However, policymakers can correspond to public entrepreneurs (Lucas, 2018). Analogously, place-based perspectives of regional policy presume location to be a critical factor in policymaking, thus enabling policy-makers to emphasize the significance of regions with regards to strategy implementation and the creation of regional ecosystems that secure value sustainability (Bailey et al., 2018).

- Reinventing Government and Traits for Public Entrepreneurship (green cluster, n=22)

"Reinventing Government" – the central discourse behind "reinvention movement" – is a term coined by Osborne & Gaebler (1992). It offers ten axioms for immense governmental reformation that should be undertaken by public entrepreneurs (DeLeon & Denhardt, 2000, p. 90). The reinventing movement draws on long-lasting traditional perspectives pertaining to public administration. These recommend private sector principles and practices for the public sector. However, they propose that the private sector concept should be widened to include systems of business values as well (e.g., competition, market principles, entrepreneurial orientation), (DeLeon & Denhardt, 2000). Public interest can be generated through individuals' interests. However, as the authors warn, such a viewpoint could be interpreted as rejecting the aspects of democratic governance (e.g., "democratic citizenship, civic engagement, and the public interest (more broadly

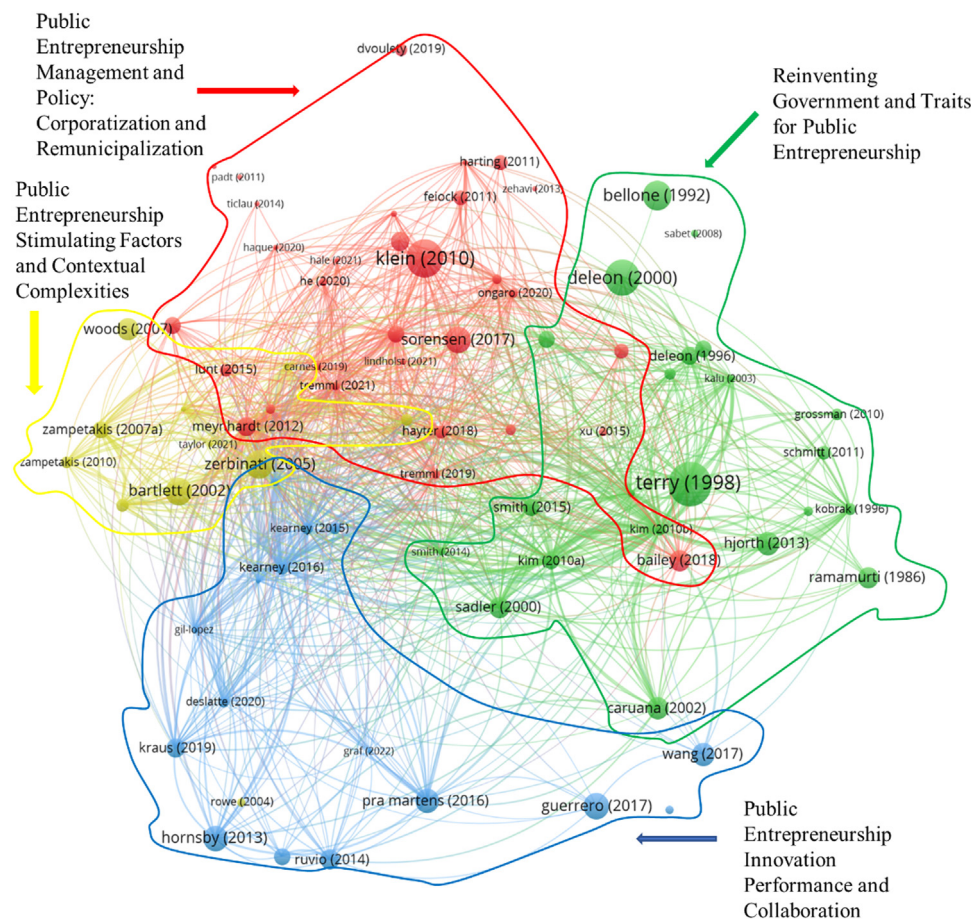


Fig. 7. Clusters based on bibliographic coupling.

conceived)" (DeLeon & Denhardt, 2000, p. 96). Reinventing the government delineates problems related to its efficiency (Kobrak, 1996) through the main slogan of "more 'steering' and less 'rowing'" (Khademian, 1995, p. 17).

The dilemma regarding the role of administrative leaders in acting as entrepreneurs or as "conservators" of the statutory values, especially in the heart of market-orientated versus value-orientated discussions, poses the question: "How do bureaucrats relate essentially to their public purpose?" (Kalu, 2003, p. 559). Potential solutions could be found by contracting bureaucrats as providers of a public service, whereby such contracting could offer compensatory incentives to bureaucrats and civil offer bureaucrats' accountability (Kalu, 2003).

The contrariety of public entrepreneurs' and public administrators' roles manifests in their goals and values: entrepreneurial requirements, such as autonomy, vision, secrecy, proactivity, and risk-taking, differ from democratic administration requirements conceptualized as "civic-regarding entrepreneurship", such as accountability, civil inclusion, openness of policymaking, and governing manners (Bellone & Goerl, 1992, p. 130). Public entrepreneurship critics argue that certain entrepreneurial characteristics are not compliant to democratic values. However, DeLeon (1996) advocates that entrepreneurial traits generally accepted as unfavourable (e.g., self-centredness, dominance, self-importance, opportunism) are functional for the fulfilment of entrepreneurial activities in the context of ambiguous, uncertain, and unknown goals.

The empirical studies exploring the links between organizational traits and entrepreneurship in the public sector revealed a positive relationship between risk-taking and innovation-orientated and

proactive behaviour within organizations and in business performance, whereby proactiveness tends to reveal higher levels of significance (Kim, 2010a, 2010b). Personal traits as predictors of the "entrepreneurialism" of individuals within society have been explored through empirical studies which reveal that individuals with strong social rank, local orientation, connections, and affiliation in health organizations tend to be classified as more entrepreneurial (Mack et al., 2008).

- Public Entrepreneurship Innovation Performance and Collaboration (blue cluster, n=16)

The blue cluster relates to publications dealing with various implications of public entrepreneurship collaboration (Guerrero & Urbano, 2017; Swann, 2017), connections (Wang et al., 2017), and alliances (Gil-López et al., 2020). The studies demonstrated a positive relationship between innovation practices and an organization's performance (Zott & Amit, 2007). As such, the significance of innovation for the companies' market survival is widely accepted (Ireland et al., 2009).

Exploration of innovation performance has traditionally been concentrated on the exploration of research and development activities and cooperation between different agents, depending on the final goal (e.g., scientific, commercial, i.e., entrepreneurial, or a mixture of both), (Belderbos et al., 2004; Huizingh, 2011). Despite the positive relationship confirmed between research and development cooperation and innovation performance (Klomp & Van Leeuwen, 2001), some empirical studies have provided vague results (Hall & Lerner, 2010).

Guerrero and Urbano (2017) explored the relationship between companies and other participants in the Triple Helix model (i.e., other

companies, academy and state) and the impact of those relationships on knowledge and technology transfer, financing resources, and government incentives. The idea behind the Triple Helix concept draws on a knowledge-based economy that delineates between dynamic interfaces in academia (i.e., universities), industry (i.e., companies), and the government, with the joint goal of enhancing entrepreneurial activities, innovations, and growth (Cai & Amaral, 2021; Etzkowitz & Leydesdorff, 2000). Triple Helix collaboration has demonstrated a positive influence on innovation performance, which was strengthened in the case of high-growth companies' orientation (Audretsch, 2012). The analysed companies preferred choosing internal rather than external financing sources, while the positive impact of state incentives on innovation was manifested only in collaboration between companies and universities (Czarnitzki et al., 2007). Furthermore, the positive effect of entrepreneurial orientation on performance was revealed to be indirectly boosted by knowledge exchange, internal collaboration, and the use of performance data (Swann, 2017).

Public research entities, e.g., universities that impact the economy both directly and indirectly, particularly at a local level (Culkin, 2004), can serve as knowledge hubs and innovation generation centres, from which knowledge and innovation outputs are transferred to private sector businesses by means of public entrepreneurship (Graf & Menter, 2022). Despite evidence revealing positive relationships between public research and industry innovation, this study did not demonstrate that entrepreneurial-orientated public sector changes the quality of innovation (Graf & Menter, 2022).

Wang et al. (2017) asked whether or not investments in entrepreneurial initiatives could be used within the public sector to increase innovation and financially improve companies. The study confirmed that companies with noticeable qualities and political connections that were applying for grants would be more likely to obtain financial funds. However, the demonstration of a correlation between grant receipt and the enhancement of inventions and venture funding was missing (Wang et al., 2017).

- Public Entrepreneurship Stimulating Factors and Contextual Complexities (Yellow cluster, n=11)

Zerbinati and Souitaris (2005) challenge the conservative standpoint that relates entrepreneurship to the private sector, seeking to explore a wider perspective that presumes entrepreneurialism in the public sector as well. Based on the empirical study on novel public initiatives, the research not only confirmed that public managers and policymakers could act entrepreneurially. It also depicted five different kinds of entrepreneurial "actors": "professional politicians"; "spin-off creators"; "business entrepreneurs in politics"; "career driven public officers", and "politically ambitious public officer" (Zerbinati & Souitaris, 2005, p. 43).

Following a new trend in entrepreneurship studies, which redirects entrepreneurial streams from individual to organizational entrepreneurship and from the private to the non-private sector, scholars have tried to establish a context for manifesting public sector entrepreneurship (Zampetakis & Moustakis, 2010). Two key roles identified in the entrepreneurial government concept were the role of the "champion" of the innovation referred to by senior management or chief executives; and the role of the champion's "sponsors", related to politicians trying to promote an innovative idea (Bartlett & Dibben, 2002, p. 112). The nucleus of the innovation process within the public sector has been recognized in terms of its human capital, i.e., champions and generators of change and corporate renewal, organizational culture, newcomers' expectations when entering an organization, and the mobility of people within an organization (Bartlett & Dibben, 2002).

The findings of the study on public sector front line staff demonstrated that a supportive environment manifested the promotion of

innovative ideas and increased access to managerial information, fostering and enhancing entrepreneurialism among public sector employees (Zampetakis & Moustakis, 2007a). Even though previous studies have revealed that rewards and reinforcement systems are significant when it comes to organizational entrepreneurship in the private sector (Hornsby et al., 1990), the results for the public sector showed that public servants placed greater importance on job security, training, and job rotation, while rewards and high levels of pay were considered less important (Zampetakis & Moustakis, 2010).

Melissanidou and Johnston (2019) tried to explain how certain complexities and peculiarities of the public sector setting can affect systematic entrepreneurial actions and various innovation outputs in policy, administration, and technology. Based on an empirical study of the Greek public sector, the results revealed that public sector peculiarities frame proactive behaviour and autonomy in transforming opportunities into achievements, which could provide significant implications in establishing effective entrepreneurial strategies.

• Co-word analysis

Extending findings from citation, co-citation, and bibliographic coupling techniques that use publications for science mapping, co-word analyses use words, meaning that analysis is conducted based on an article's content (Donthu et al., 2021). To enhance this analysis, a network of keywords was established, based on keyword co-occurrence in the articles searched. Analogous to the co-citation technique, the co-word principle presumes that words that appear together frequently share similar themes and are related (Donthu et al., 2020, 2021).

Following a minimum of two keyword co-occurrences (Fernandes et al., 2022) within titles, authors' keywords, and abstracts, co-word analysis reveals the conceptual elements that establish a conceptual structure. This is reflected through a "semantic map of the field" (Zupic & Čater, 2015, p. 11) based on certain keywords. Following the cluster analysis, after including only interconnected keywords, the final keyword network resulted in five clusters. These were differentiated by colours for the purpose of visually classifying the co-occurring keywords. Co-occurrence analysis connects articles that share citations within the same article. The links between articles increase depending on the number of shared citations in the same paper, implying that the more connections and the more intensive the connections, the higher the possibility that the publication will cover the same research area (Fernandes et al., 2022). Five clusters of closely related keywords detected using co-word cluster analysis confirmed the thematic areas determined through bibliographic coupling, implying the validity and reliability of the bibliographic clusters.

The conceptual organization of a research field can be portrayed through a thematic analysis and a bibliometric approach. This excerpts and tags the different topics within a search sphere (Cobo et al., 2011), allowing for a visual representation of key themes (Aria et al., 2022). Thematic analysis strategically and visually plots (Figure 8) and structures key topics in terms of their position within a diagram. Keywords positioned in the upper right-hand side quadrant have higher centrality and density, representing well-established and significant themes, i.e., "hot topics". In the opposite (bottom left-hand side) quadrant, there are topics with lower levels of centrality and density, representing themes with lower levels of development or less interest, i.e., "peripheral topics" (Aria et al., 2022, pp. 4-5). The quadrant with higher centrality and lower density relates to "basic topics", while the opposite quadrant with lower centrality and higher density relates to "niche topics" – themes that are highly developed, yet "marginal for the domain under investigation" (Aria et al., 2022, p. 5).

As represented in Figure 8, "motor themes" (Bibliometrix, 2022) in the public sector corporate entrepreneurship domain are

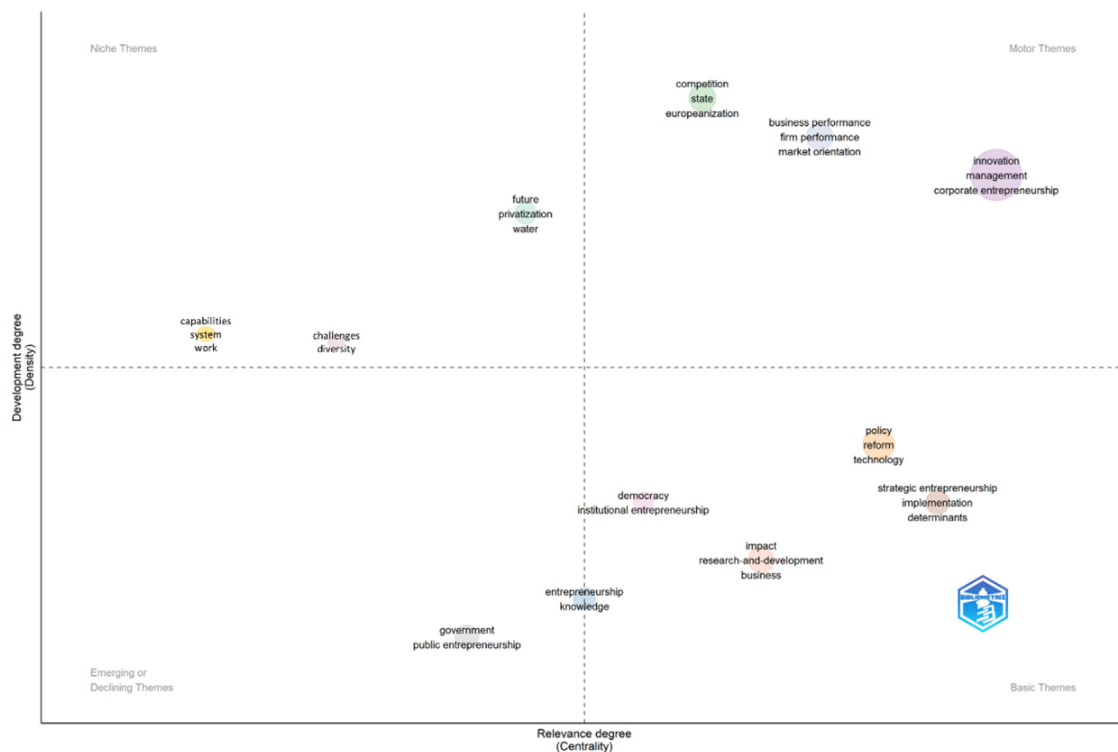


Fig. 8. Thematic map of keywords.

“innovation”, “management”, “corporate entrepreneurship”, “business performance”, “firm performance”, “market orientation”, “competition”, and “state entrepreneurship”. Keywords such as “government” and “public entrepreneurship” arise due to lower degrees of density and relevance, positioned within the peripheral topics quadrant of the chart, thus classified as “emerging or disappearing themes”, which can signify future avenues of research.

Future research avenues regarding research topics

The concept of entrepreneurial state, proposed by Mazzucato (2013), reveals the new aspect of public policy in the economy. Unlike the former “fixing market failures” approach, the new concept suggests direction-aimed public policies focused on “shaping and creating markets” (p. 1). Drawing influence from Apple’s smart appliances, such as the iPhone, iPod, and iPad, which use smart technologies initially invented and developed by the state and its agencies, Mazzucato (2013) emphasised the urge for governments to think wide and big (Mazzucato, 2015). In today’s environment, where the government’s role has been simplified to facilitate the private sector and remedy market failures, this is rather challenging. The thinking-big road is more than simply funding specific activities with public funds. It requires a novel framework that underpins the government’s proactive role in facilitating dynamic changes.

A question that could pave the road for future research concerns whether or not governments are able to adopt lean start-up model as a strategy for innovation, aka a *lean government*. Lean start-ups in the public sector have been introduced in state agencies in an attempt to improve customer service. Examples of government lean start-ups include the cases of the City of Paolo Alto, and The Food and Drug Administration and Consumer Financial Protection Bureau (for details on the projects, please see Jones (2012)). Future researchers should explore how the government could use the principles of a lean start-up approach (e.g., minimal viable product, metrics for testing) to increase its entrepreneurial activities and innovation implementation? Furthermore, lean start-up’s principles (which advocate for the

development and enhancement of existing products) could be further analysed in order to ascertain whether and how public feedback could increase civils engagement and degrees of public involvement.

The process of knowledge creation positively impacts upon a company’s innovation, as the process mediates the relationship between market sensing capabilities and a company’s innovation. In such circumstances, strategic EO moderates the positive relationship between knowledge creation and the company’s innovation. This moderation effect manifests itself in that high strategic EO weakens said positive relationship (Alshanty & Emeagwali, 2019). Empirical research has shown that entrepreneurship policies can support and elevate innovation capabilities (Huang et al., 2022). If management cannot clearly communicate their entrepreneurial vision, then lack of time, knowledge, and rewards could become hurdles with regards to employee motivation and encouragement for innovation (Marques et al., 2022). With this in mind, future researchers should explore the ways in which public policies could enhance entrepreneurship in the public sector by supporting knowledge creation. As a result of high levels of dispersion across various journals, future researchers should also focus on journals whose scope encompasses all three research areas (i.e., innovation, knowledge, entrepreneurship).

Another potential stream for future studies would be to analyse the collaboration of multiple parties (e.g., Quadruple and Quintuple helices) in a public sector context. The triple helix model of collaboration in the public sector demonstrated the economic benefits for the agents included (Guerrero & Urbano, 2017). While the triple helix was based on a knowledge economy, the quadruple helix focused on knowledge society and democracy and the quintuple helix focused on social ecology and the environment, representing a key cornerstone for today’s democracy and climate crises (Carayannis et al., 2021).

Job rotation has been detected as a significant factor for public servants’ job satisfaction (Zerbinati & Souitaris, 2005). Potential future researchers could seek to form a roadmap for intersectional research on the collaboration and job rotation of public servants in organizations participating in quadruple and quintuple helices. The

implications on internal performance and the increase of implemented innovation could also be discussed.

Future research avenues regarding context, methodology, and industry

Despite the fact that the existing literature opus provides insights into the antecedents and implications of different contexts on CE, studies have mainly focused on private sector companies (De Massis et al., 2020), calling for further research on the public sector. As most PE research was carried out at the mezzo level (e.g., companies, local governments, and public organizations), upcoming research should conduct an empirical analysis on both the macro and micro level.

Diffusion mechanisms were shown to be significant to privatization policies, respective of the openness of the economy: countries with more open economies were more responsive to the diffusion of mechanisms compared to closed economies (Schmitt, 2011). The comparative analysis of countries' public policies, such as PE policy, would be useful in enabling researchers to discover how countries' characteristics (e.g., economy openness versus closedness) affect PE policy adaption and mechanisms of policy diffusion. Likewise, future research could explore how the spatial interdependencies, shown to foster the privatization policy (Schmitt, 2011), could affect PE policy. Drawing on results pertaining to public servants' job satisfaction (Zampetakis & Moustakis, 2007); especially those who considered high pay to be less significant. Future studies could analyse how the adaptation of PE policies could affect civil servants' job satisfaction.

Building upon the review of the intellectual domain, it is worth noting that the majority of the studies have used a quantitative approach and a survey for data collection. Thus, in the future, scholars could use case studies and interviews to enhance these empirical studies by means of the employment of qualitative methods. The interviews presume to use open-ended questions, which can prove to be valuable tools for gathering in-depth first-hand information (e.g., views, behaviour, and practice) on a topic.

Research on PE is mostly related to public administration and the government sector, health care and social assistance, and educational services (mostly universities). Thus, further research on manufacturing, information technologies, and the agricultural sector would be welcomed.

Future research avenues regarding COVID – 19, geoeconomics, and geopolitical tensions

The beginning of the 2020s was challenging in various ways. Firstly, the worldwide coronavirus pandemic (COVID-19) struck the world globally and, at the time of writing, continues to resonate. The consequences of global lockdowns and economy closures are still manifesting in 2022. Secondly, the geopolitical situation across the globe escalated as a result of Russia's attack on Ukraine, which led to energy crises. This had a wider adverse impact on food and supply-chains (Friedman, 2020). The COVID-19, geoeconomics, and geopolitical crises shocked the global market, leaving consequences with repercussions that we are yet to experience.

External factors, such as crises and economic shocks, have traditionally been topics of focus in academic discourse due to their complexities and multifaceted far-reaching effects, including their power to influence the intensity and organization of entrepreneurial activity (Dvouletý, 2021). An empirical study on the quantification of the results of worldwide crises upon entrepreneurial development has been conducted with regards to the context of the Czech Republic (Dvouletý, 2021). Although the authors highlighted the research limitations and encouraged a restrained interpretation of the results, the research findings are still noteworthy. The level of entrepreneurial activity in first year post-COVID-19 exceeded pre-COVID-19 levels. While this could be related to the research limitations, it could also be the result of public policy measures seeking to alleviate the

negative consequences of the pandemic on the country's business. Public policy measures, such as financing (e.g., grants, loans, and guarantees), tax reliefs, and some cost/levies alleviations, were focused on job security, investment, research and development, and innovation activities, particularly in the most threatened industries, such as leisure, hospitality, sport, and culture.

It would be useful to examine whether or not the impact of COVID-19 on entrepreneurial activities could be seen in other countries as well, amended by a comparative analysis between countries. This would detect any contextual explanations pertaining to what features and public policies fostered more entrepreneurial resilience with regard to external factors, such as crises and pandemics. Future researchers could explore the effect of the pandemic on the structure of PE, with respect to industry classification and business resilience. How did public enterprises cope with the urge to use digital platforms and switch to online businesses? How did public entities adjust to the demand for remote working, and how did this affect civil servants' job productivity and job satisfaction?

Geoeconomics is defined as "the study of spatial, cultural, and strategic aspects of resources, with the aim of gaining a sustainable competitive advantage" (Solberg Søilen, 2012, p. 8). Geopolitics is associated with globalization and, as such, it is often related to countries and multinational enterprises (Thoene & Kneubuehler, 2017). In the 2000s, many countries realized that the competitive advantage and control achieved through the transfer of resources into "science, education, production, and trade" (Solberg Søilen, 2012, p. 11) shifted focus "from the military power to the economic power" (Thoene & Kneubuehler, 2017, p. 2). Drawing on resources as power, decisions at a national level are made in relation to gains or losses of resources. The rise of China as a new super-power, and its business expansion into raw goods in Africa, exemplifies the use of (business) intelligence as a substitute to study of economics with, especially in light of the countries' competitive advantage (Solberg Søilen, 2012). Unlike some Western countries, that became dependant on multinational enterprises, in China the government is the owner of the majority of the more crucial businesses, setting and adhering to its own rules and regulations. Economic forecasts predict that China will become a new global leader over the next two decades. However, the continuation of such trends could lead to the dominance of other more rigid and controlling states (Solberg Søilen, 2012). The confronting approaches between Western and Asian values demonstrate the slow shift from geopolitics to geoeconomics.

Future research streams should explore the geoeconomic position of smaller emerging economies. Upholding the high state's control in companies, we need to establish what lessons we can learn from China, and how we can apply these teachings to emerging economies that still have a relatively significant stake of government ownership in enterprises.

Practical and social implications

Significant interest with regards to PE research began to develop in the 2010s, following the financial crises of 2008 (Reinhart & Rogoff, 2009). The positive impact that CE had on companies' performance in the private sector encouraged public managers and policymakers to try to transfer (adjust) private sector practices into the public sector (Meynhardt & Diefenbach, 2012).

This study contributed to assisting public managers, public administrators, and policymakers by outlining the systematic overview of the body of literature on PE to date. In this vein, empirical research was used to demonstrate the positive implications of multi-type cooperation tendencies on innovation performance (Audretsch, 2012). The empirical analysis of SOEs revealed that CE can enhance a company's efficiency, its market position, and its sustainability by means of practicing partnerships (Gil-López et al., 2020), whereas the cooperation between civil servants and artists could foster innovative

and entrepreneurial behaviour in the public sector (Hale & Woronko-wicz, 2021). The market traits of entrepreneurship, already proven in the private sector, were certainly a stimulus for the expected effects on the public sector as well, especially with regard to state-owned enterprises. Creating social value and social capital, improving public services, and changing institutional procedures were the social goals of the concept of public entrepreneurship, all of which were orientated towards the development of social benefits (Ali et al., 2019).

In addition to this, the study on corporatization and remunicipalization provided a different perspective on public sector companies' reformation, offering valuable insights into PE in situations in which privatization has been unsuccessful (Lindholm, 2021).

Conclusions

Considering the significant size of the public sector, the relatively high share of public employment in total employment and the size and relevance of state-owned enterprises, it is no wonder that PE as a topic entered the sphere of interest for researchers after the financial crises of 2008. Scholars, public managers, public administrators, and policy makers have sought to uncover the best ways of establishing a framework to enable the public sector to practice entrepreneurial behaviour. This has involved collating the best practices from the private sector and adapting the public sector's peculiarities.

This study outlines research to date on CE in the public sector in an attempt to conceptualize the intellectual structure and research front of the field. PE theory, agency theory, and the resource-based theory provide the foundations of this research field. The knowledge-based view, as an addendum of the resource-based view, figures knowledge as the most significant resource and a key source of firm's competitive advantage (Obradović et al., 2021).

As with many other manuscripts, this paper has some limitations. Firstly, the analysis was limited only to articles and article reviews, excluding proceedings, conference papers, and books. Secondly, the bibliometric analysis was conducted using only the WoS database, owing to the fact that it is accessible through most universities' online libraries and its citation records include cited references (Linnenluecke et al., 2020). Finally, the research excluded all languages except English, potentially omitting valuable literature in other prolific languages. These limitations could serve as potential future research avenues. Future researchers could extend this research to cover other publications – such as books and publications in other languages – and could increase the number of databases used.⁶

Supplementary materials

Supplementary material associated with this article can be found in the online version at doi:10.1016/j.jik.2023.100343.

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⁶ The reference list includes the references used in main text. It does not pertain all articles contained in our literature review. The comprehensive set of articles covered by our literature review is provided within Supplementary materials.

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