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Is creativity a reality in Bulgaria cities? An empirical study in the pre-pandemic period

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Abstract

This study aims to obtain a composite index characterizing Bulgarian districts about their creativity by presenting results for the pre-pandemic. The composite index developed by Rodrigues and Franco (2019), use of quantitative method and multivariate statistical techniques have been used to answer this objective. From the data gathered primarily from NSI- The National Statistical Institute of Bulgaria, the results show that creativity is one of the pillars of economic growth, and financial resources and local and foreign investment for its development are still very limited. The government and cultural organisations supported initiatives to showcase the country's cultural diversity and historical significance. The creative sector, including design, arts, media, and technology started to be seen as a driving force for the country's economic growth. Startups and creative entrepreneurs are increasingly gaining weight, which has led to the creation of creative centers, and co-working spaces. Therefore, this study contributes to the intelligent application of creative cities' ideas in the creative industries and contemporary cities' management.

Keywords Creativity, Cities, Culture, Indicators, Bulgaria

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Introduction

In the last three decades in the post-communist countries, which includes Bulgaria, the development of urban territories is a complex result of interconnected and dynamic processes of significant economic transformations. The interrelationships between culture, creativity, and cities have different dimensions that complement each other, but the conceptual foundations of the established interactions are still debatable (Montalto et al. 2023). From a theoretical point of view, there is not yet convincing evidence that the local factors that define a city as "cultural" also categorize it as "creative" (European Commission 2015; Montalto et al. 2019). However, the problems that cities currently face can be overcome by fostering creativity that contributes to forming an attractive and vibrant city (Rodrigues and Franco 2019a, b). Creativity is a "*pillar of sustainable economic growth*" (Rodrigues and Franco 2019a, b, p. 5).

Creativity is perceived as an inexhaustible resource in quantitative and qualitative aspects (Sokół and Mempel-Śnieżyk 2022). The understanding of it is not limited to the individual gift or talent of man, demonstrated as artistic elements to satisfy specific spiritual needs. Researchers are broadening the scope by directing the academic debate to the social dimensions of creativity affecting socioeconomic development (Florida 2017; Ambrosino and Guillon 2018; Gill et al. 2019; Rodrigues and Franco 2019a, b; Bacsi 2020). Creative capital as part of the evolutionary process of territories is explored as a major factor contributing to the development of innovation and the well-being of society, which in turn promotes the utilization of individual creative abilities and skills (Vitálišová et al. 2019; Sokół and Mempel-Śnieżyk 2022).

In the modern globalized and intensively developing economy, culture and creativity are perceived as important prerequisites for gaining sustainable competitive advantages, and stimulating development, including of cities (Cerisola and Panzera 2021). Culture is a means of improving and promoting the viability and flexibility of regions, as well as a factor contributing to their sustainable development and economic prosperity (European Union 2019). Creativity as an element of the social environment is perceived as a driver of the local economy and the well-being of the population (Cerisola and Panzera 2021). In practice, cultural heritage and creativity are closely related. They intertwine and determine the evolutionary processes in a respective territory, in which the importance of local history and the role of communities stand out and stand out as key features of settlements. This means that sustainable development includes the triple domain of environmental, economic, and socio-cultural objectives

(the latter sometimes being separated into social and cultural) (Weaver 2006, 2022; Braga et al. 2022). Pereiro and Fernandes (2018, p. 446) equate cultural sustainability with "*respect for diversity and cultural difference*". In turn, Marujo and Carvalho (2010) focus on the need to seek answers at the local level through the potential of specific cultures, taking into account cultural identity and the local way of life, as well as the participation of the population in decision-making processes and the elaboration of development plans. Finally, Fong et al. (2017) also point out that promoting cultural sustainability ensures that the community's identity, namely its cultural heritage, and customs, are conserved and preserved.

The active use of the term "creative industries" in recent decades (after 2007) has helped to shape them as leaders in the economic policy of developed and developing countries and regions. The importance of creative industries for the sustainable development of cities is growing, which is recognized by the declaration of 2021 as the International Year of Creative Economy for Sustainable Development (Arcos-Pumarola et al. 2023). Cultural and creative industries integrate diverse sectors and activities, "*whose principal purpose is production or reproduction, promotion, distribution, or commercialization of goods, services, and activities of cultural, artistic, or heritage-related origins*" (Raufast et al. 2015, p. 11). The expansion of the territorial scope of creative industries and the exploitation of their favorable opportunities depends on the influences of two main factors: a local creative class and the potential capacity of the regional economy combined with its abilities to commercialize a creative product (Belevskikh et al. 2019).

The creative economy is a complex concept, for the study of which an interdisciplinary approach is applied, combining a scientific toolkit from socio-economic and humanitarian scientific fields: cultural science, sociology, economics, and others (Parshukova and Riazantseva 2021). There are enough studies and indices to measure the creativity of cities, but in Bulgaria, the concepts of the creative city and the creative class are relatively poorly researched. In specialized publications, the focus is on creativity and creative industries (Landry and Bianchini 1995). The concept of the creative city has in the focus of Bulgarian researchers in the last decade, and public authorities in major cities of the country such as Sofia, Plovdiv, Varna, and others are making attempts to implement a policy to create creativity. Nevertheless, there still exists a serious gap in the studies: most studies are theoretical, and so far, there are missing studies based on specific statistical data, to show significant trends in the Bulgarian creative cities' development. That is why this study aims to start to fill in this gap and

to contribute to the intelligent application of creative cities' ideas in the creative industries and contemporary cities' management. In addition, the data and the various possibilities for establishing different relationships between variables can be fruitful for *“researchers, decision-makers, creative workers, investors, creative travelers, and entrepreneurs, who can find insightful details about the city improvement, new business ventures, and opportunities”* (Mareque et al. 2021, p. 2).

The Composite Index (OECD 2008) is a tool developed to evaluate and compare the performance of cities in their different axes, in this case, that of creativity. It relates to the amenities provided by culture and the arts (e.g. museums, art galleries, cinema, festivals, and other cultural events); the effects of the creative economy on the economic development of cities returned by the creative sectors (e.g., cultural, design, advertising, media, information technology industries); with education and human capital allied to the arts and creativity in general; with the level of companies and other organizations focused on technology and innovation; with hard amenities (e.g. cultural and similar infrastructures and access to them); and with diversity and inclusion. On the other hand, this index is related to political and economic factors. This means that a city's political environment can significantly affect its creativity and cultural development, where government policies that promote cultural diversity, investment in cultural infrastructure, support for artists and creative entrepreneurs, and encourage cultural inclusion are facilitators of an environment that is more conducive to creativity. The economic environment of cities plays a crucial role in the development of their creative industries, since investments in research and development, the availability of funding for creative initiatives, tax incentives for cultural and creative businesses, as well as employment and entrepreneurship opportunities in the cultural field, are essential to boost creativity and innovation. In short, cities with stable political environments, policies favorable to culture and creativity, and a vibrant economic environment exhibit greater creative potential and cultural development, because creative cities are those that advocate sociocultural, economic and political changes (Romein and Trip 2009) they are characterized by diversity, openness, tolerance, the existence of a creative class and high cultural dynamism (Florida 2002, 2005a, b; Grant and Kronstal 2010).

In this regard, this study aims to obtain a composite index characterizing Bulgarian districts about their creativity by presenting results for the pre-pandemic. The composite index developed by Rodrigues and Franco (2019a, b), use of quantitative method and multivariate statistical techniques have been used to answer this

objective. The main contribution of this study lies in the fact that it is an unprecedented study in Bulgaria, the results obtained from which can direct decision-makers towards understanding how culture, the creative economy, and the enabling environment for them can be part of their development strategies and improving their economic growth.

After the Introduction, the Literature Review, Methodology, Discussion of Results, and Conclusions are presented.

Literature review

Culture is a very complex phenomenon and it is not easy to define. It can be globalized, part of a specific society, or part of the individual. Nevertheless, its role in a constantly evolving/changing urban environment is crucial for the development of cities. Every town has its own unique culture created from its historical heritage (Montalto et al. 2019) and it is further developed by the way people perceive it today.

For centuries, towns have been a platform for art scenes and cultural institutions. They in turn help for the growing prestige and attractiveness of these cities. (Montalto et al. 2023). It is important to note that towns with thriving artistic and cultural environments have stronger economic growth (Florida 2002a). This is mostly due to the creative class. Its presence is very important because it attracts new companies and investors and stimulates innovation (Alsayel et al. 2022). Therefore, culture should be seen not as a separate element of the urban environment, but as one of the leading factors for economic and social growth in the city. The policy of a creative town must consider the degree of integration of culture in it.

Creative cities are brands on their own and they are a mix of unique characters and personalities (Kuriakose and Philip 2021). The vision of such towns began to emerge strongly in the 1990s (O'Connor et al. 2020) and it rapidly evolved to its current form.

It is difficult to define and analyze creativity in an urban environment and determine if a city is indeed creative. A complex index consisting of several indicators can be used to achieve this goal. They must be able to be measured empirically by using widely available statistical data.

The creative economy is related to all industry areas where the creation of a product requires intellectual work. To create a more diverse and dynamic environment for studying, conducting research, and engaging in activities deemed to be "creative," it is considered that higher education plays a significant role in the shaping and performance of the creative economy (Moreton 2018). In both developing and developed nations, the

creative economy sector has been demonstrated to have a positive impact on GDP. In urban areas, the creative economy is frequently linked to the advancement of cutting-edge technology, making it unlikely that it will develop in rural areas (Agustina et al. 2020). The diversity in services industries boosts the urbanization economies and is defined as being the main source of agglomeration economies. At the same time, specialization is avoided because of the control over the company size, ownership, and industry concentration. Moreover, the ease of communication, as exemplified by digital access and convenient transportation, fosters knowledge spillovers and thus strengthens urbanization economies (Tao et al. 2019). Researches reveal that the rise of the creative industries is a result of the development of mass communication and globalism, as evidenced by the growth in the number of creative enterprises and the number of workers in the creative industries (Dronyuk et al. 2019).

Research by Woyo and Woyo (2018) points out that arts and culture should be successfully applied in the strategies for tourism development. Research on creative tourism is largely limited. Many developing countries are still not fully engaged in investing in the creative sector regardless of its benefits. Each country takes into account many factors and on that base decides how and to what extent to invest and develop a creative economy. A comparative analysis of two creative economies (of USA and the UK) shows that although both are highly urbanized, there are differences in their urban systems and in the way their industries are organized (Kemeny et al. 2020). Based on the discrepancy between the fast development of the need for quality and comfort of life, and the slow renovation and vitalization of the urban space and architectural environment, the creative modernization of abandoned urban places emerges as an important tool for enhancing the creative economy (Parshukova and Riazantseva 2021).

Enabling the environment in creative cities encourages innovative ideas and practices to be interlaced with their strategic development. Evidence of interest in culture at the core of urban change can be found in the rise of academic publications with a focus on the subject, as well as the interest from international organizations like the United Nations, the OECD, and the European Commission. Culture has been argued to be a constitutive part of local identity and life quality, and there has been a massive increase in interest in it over the last two decades (Montalto et al. 2019). To better recognize the role of cities in European policy-making, in 2016, the Pact of Amsterdam was signed by urban policy ministers of EU countries (Boeri et al. 2018). The Pact enables cities to play a greater part in decision-making. At the same time

together with the Pact, the Urban Agenda for the EU was launched and in 2021, it was reconfirmed to be one of the most valuable initiatives concerning three areas: better regulation; better funding; and better knowledge. Despite the importance of the two documents, some researchers (e.g., Boeri et al. 2018) point out the missing place of the culture in them. They insist that the culture should be re-inserted as fundamental to the primary political action for city governance for regenerating a city through the culturally built heritage. The creative environment is the focus of contemporary urban planning and design. The concept of the Anthropocene—the era in which humans can be seen as the primary factor in the transformation of environmental conditions on Earth—was initially debated, criticized, and re-sign edified within many fields of the natural sciences, but it was ultimately met with great success in the social sciences and, more generally, in humanities research (Lucci 2018).

The main reasons for the increased quantity of abandoned hospitals are the lack of urban resilience structures, the regular upgrading of the regulatory framework used to increase the quality standards of the National Health System, and the constant changes caused by medical discovery. The regeneration and reuse of abandoned healthcare facilities represent one of the most complex issues in the broader field of disused public architectural heritage and its valorization in the context of the creative environment (Gola et al. 2022). This means that urban entrepreneurship/urban creativity is beginning to play an important role in creative cities, through the positive relationship it has with the platforms built by cities to sustain their growth in endogenous terms (Martí-Costa and Pradel i Miquel 2012); so the supra-regional and regional levels of governance, i.e. inter-municipal communities and municipalities, are considered fundamental for the formation of local business and social networks, to attract and promote qualified human capital and investments, which allow the urban regeneration of their cities to be carried out through the successful requalification and occupation of existing spaces, to avoid the constraints associated with the decision to locate people and businesses, as well as the increased need for public and private funding (Rodrigues and Franco 2020).

Gustafsson and Ripp (2022) suggest the use of a proposed metamodel in post-crisis urban recovery. A setting is described as a potential solution, along with the grounded theory and design research methodology through which it was developed. The urban heritage is explored as well as the limitations of the metamodel are discussed and compared to other approaches, such as the historic urban landscape (HUL) approach (Gustafsson and Ripp 2022). These authors concluded that “*cultural*

heritage is much more than a collection of objects that need to be protected. A focus on processes and the entire system of urban heritage can change perceptions of it from something that needs to be protected to something that can also contribute to recovery. To encourage this perspective, heritage must be understood in a holistic, systemic way together with its values for local communities and other users. These values, which go far beyond classical preservation values, hold the key to unlocking the role of cultural heritage in recovery” (Gustafsson and Ripp 2022, p. 20–21).

Some industries correlate closely to the creative environment of the creative cities. Arcos-Pumarola et al. (2023) point out that by offering goods that set the destination apart and are directly related to regional and local characteristics, the tourism industry actively participates in the development of creative cities and environment-friendly policies. Gosal et al. (2018) focus on the cultural ecosystem services by comparing the methods for a landscape scale assessment of the cultural ecosystem services, associated with different habitats. These findings demonstrate the value of CES comparative analyses in identifying reliable findings and paving the way for their incorporation into land management decision-making (Gosal et al. 2018).

The green part of the creative cities' enabling environment is also being studied (e.g., Howkins 2001). According to Polko and Kimic (2021), the creation of urban parks, specifically their infrastructure, should be purposefully used in planning, designing, and managing urban greenery to increase the users' sense of personal security. Another focus in the studies appears to be climate change, social exclusion, and international competition, as they are defined as current issues that all societies, including their tangible and intangible components, worldwide, must deal with (Gustafsson 2019). Studying the creative environment's impact on the economy, researchers are interested in determining how cultural and creative cities (CCCs) affect the regional economy (Cerisola and Panzera 2021). Instead of looking for an alternative smart city, Rosol and Blue (2022) contend that critical scholars should concentrate on more general issues of urban justice in the digital age. By reformulating and extending the existing critiques of the smart city, they make the case for moving the discussion away from the smart city as such. The research on creative cities and the creative environment in their context creates a research interest, pointing to the identification of the indicators/indices for evaluating the creative performance of current cities and the relative importance of each to that performance (Rodrigues and Franco 2019a, b). Concerning smart mobility and the smart climate, López-Pérez et al. (2023) reveal data that

identifies issues with smart mobility (e.g., pedestrian areas, e-vehicles, shared mobility, and the use of apps for mobility management) and smart climate (e.g., use of renewable energy and temperature control). The study is based on the Triple Helix Model scheme that could be extrapolated to other contexts (López-Pérez et al. 2023).

Foster and Saleh (2021) outline that cities are rising to the challenge of the circular economy (CE), a new urban environmental policy movement that seeks to alter how Europeans consume and produce materials and energy. They investigate whether cultural heritage and adaptive reuse of cultural heritage (ARCH) structures are included in the incipient CE programs in European cities (Foster and Saleh 2021). It is considered that megacities in developing countries have higher population densities and poorer environmental quality than those in developed countries as a result of rapid population growth and inadequate regional ecological planning (Fu 2022). Sarv and Soe (2021) study the middle-sized European capital city Tallinn, well known as a good example of a Smart City development, to explain the gap between an existing city and its future vision integrated into the strategy, with a focus on the transition path towards becoming a Smart City. The study of Kumar and Vuillomenet (2021) tries to determine whether the performance of the Cultural and Creative Cities Monitor (CCCM), a benchmarking project created by the Joint Research Centre of the European Commission, is correlated with the presence of green infrastructure (GI). On land, GI is present in both rural and urban settings. Connected, these strategically planned networks of green elements can provide several benefits, including supporting a green economy, enhancing the quality of life, safeguarding biodiversity, and enhancing ecosystems' capacity to provide services like disaster risk reduction, water purification, air quality, space for recreation, and climate change mitigation and adaptation. At the same time, quality of life is a concept that lacks empirical research, particularly in the developing digital environment of creative entrepreneurship, i.e. in tourism, despite sustainability being one of the other research dimensions of some studies in the creative industries (Varotsis 2022).

Underpinning the above, the postulates of Florida (2002) remain the pillars of creative cities, which argued that today's economy is mainly driven by creative workers such as artists, designers, technology professionals, and knowledge workers and these creative workers are vital components for the economic development and prosperity of cities. This means that cities need to create a welcoming and stimulating environment to attract and retain these creative talents, where he emphasized the importance of factors such

as diversity, tolerance, quality of life, access to culture, creative spaces, and collaboration to create attractive cities for creative workers (Florida 2002). Creative class theory emerged as a consequence of the resurgence of interest in regional and urban matters. This theory was formulated by Florida (2002, 2005a, b) and is directed to urban structures and economies supported by the creative class – formed of creative and talented individuals –, which is crucial for economic growth. This author argues that this class is intrinsically connected to urban growth and has been one of the most popular theories, particularly in the USA (northern cities), in terms of cities/regions' economic prosperity (Mcgranahan et al. 2017). Various authors have explored the extent of this theory. For example, Hoyman and Faricy (2009) propose that this theory represents a new urban class, an emerging sector in the economy; Romero-Padilla et al. (2016) defend that this is a contribution to the theory of economic growth and is supported by the creation of knowledge and the emergence of new ideas.

In this connection, Florida (2005a, b) developed a multi-disciplinary and holistic approach aiming to provide answers to the growing interest in regional and urban matters, being founded on the urban structure and economy and giving continuity to the arguments of Marshall (1920) about economic agglomerations, around which cities offer stronger labour markets and multiple knowledge sharing, contributing strongly to increased productivity. Florida (2005a, b) also claimed that the creative class and tolerance are characteristics of so-called creative cities, having been adopted by cities such as Berlin, Liverpool, Detroit, and Philadelphia, among others, which are undisputed contemporary references of urban productivity platforms in the economic, social, cultural and creative domains.

Also for Ratiu (2013), the vast literature on creative cities demonstrates that the creative class theory has become an emblematic reference for cities' urban development. This means that creativity has become an imperative in the face of economic, social, and cultural globalization, which has caused various problems originating in the phenomenon of growing urbanization, and so cities focus increasingly on creativity to combat depopulation and economic stagnation in some regions (Ratiu 2013; Kakiuchi 2016). This has led to the revitalization of many industrial cities (Ratten 2017), for example, Silicon Valley, Bavaria Valley (Bavaria), Silicon Glen (Scotland), and Silicon Saxony (Dresden) (Hospers and Pen 2008). Amin and Thrift (2007) consider that the icons of assertive creative cities are Barcelona, San Francisco, and Glasgow, while Romein and Trip (2009) conclude

that Rotterdam and Amsterdam are positive examples of long-term development since they took into consideration the interaction and balance of all their characteristics.

Nevertheless, an efficient response to this challenge depends on cities' capacity to attract, retain, and stimulate individual talents (Florida 2002), and so this author developed a model in which cities' attractiveness is influenced by the 3Ts model—Tolerance, Talent, and Technology. Fernandes and Gama (2008) described how tolerance is related to openness, social inclusion, and diversity; that talent reflects individuals' level of qualification and education, and that technology expresses the level of concentration of innovation and high technology.

Moreover, these 3Ts provide cultural and social diversity (Florida 2002, 2005a, b; Grant and Kronstal 2010) and total openness to entrepreneurial ideas and technology, which creates a creative economy and lets cities improve their economic performance, as argued by Florida (2002, 2005a, b). In other words, the core of this model is the creative class, which covers individuals who use their creativity in favour of economic growth, with a tendency to concentrate in attractive places, specifically in cities, as stated by Florida (2002). In addition, concentrating on the creative industries, whose main actors are new entrepreneurs in the area of technology, the media, and entertainment (Scott 2000), is fundamental for better understanding of the spatial dimension of creative work regarding the attractiveness of urban areas, as the existence of effective connectivity (partnerships/networks) is relevant for creative workers (Brennan-Horley 2010), namely social networks and open collaboration networks to spread knowledge (Przygodzki and Kina 2015).

Creative cities and the circular economy are related in many ways, mainly in terms of promoting innovation, sustainability, and creativity in production processes, consumption, and the use of recyclable resources, such as design and production, sharing and collaboration within business models, the creation of coworking spaces; also through cultural events, artistic projects, awareness campaigns, and education, creative cities can influence people's attitudes and behavior towards responsible consumption and the adoption of more sustainable practices (e.g., Girard 2013; Fleischmann 2018; Pratt 2022; Manioudis and Angelakis 2023). In short, creative cities play an important role in promoting the circular economy, encouraging innovation, collaboration, and awareness of sustainable production and consumption practices, where the integration of these principles can contribute to the development of more resilient, prosperous, and environmentally responsible

communities (e.g., Morel and Dorpalen 2023; Coca-Stefaniak et al. 2024).

Last but not least, the literature on the different axes of cities is vast and presents numerous conceptual models with different dimensions and indexes/indicators for measuring performance for different types of cities, such as creative cities (e.g., Landry 2000; Florida 2002; Romein and Trip 2009; Saisana and Montalto 2016; Stano and Węziak-Białowolska 2017b). In this context, Rodrigues and Franco (2019a) compiled the proxies commonly used in existing creativity indices to measure creativity, to support the composite index presented in the following sections, which are:

- Culture: Places of culture and facilities; Cultural participation and attractiveness, as defended by Giffinger et al. (2007; Durmaz et al. (2010); Hartley et al. (2012); Lombardi et al. (2012); García Suárez and Pulido Fernández (2015); Kakiuchi (2016); Bosch and Jongeneel (2017); European Union (2017).
- Creative economy: Creativity and employment; Intellectual property and innovation, by some authors (Giffinger et al. 2007; Caragliu and Milano 2011; Panal and Yáñez 2012; Hartley et al. 2012; Lombardi et al. 2012; Joss et al. 2013; Landry 2013; García Suárez and Pulido Fernández 2015; Kakiuchi 2016; Bosch et al. 2017; Skavronska 2017; European Union 2017).
- Favourable environment: Human capital and education; Openness, tolerance, and trust; Local and international connections; Governance, as postulated by previous researchers (Giffinger et al. 2007; Caragliu et al. 2011; Hartley et al. 2012; García Suárez and Pulido Fernández 2015; Dhingra and Chattopadhyay 2016; European Union 2017; Skavronska and Economic 2017).

Methodology

OECD (2008, p. 14) states that composite indexes “are much like mathematical or computational models. As such, their construction owes more to the craftsmanship of the modeller than to universally accept scientific rules for encoding.” So there are two ways to go: (1) establishing weightings based on opinions; or (2) establishing scientific weightings by applying the Exploratory Factor Analysis (EFA) and Principal Component Analysis (PCA) (OECD 2008).

Given the above, the path followed for data analysis was the 2nd, which includes a succession of phases: (a) Normalisation of all variables to a common scale (Danielis et al. 2018) through the application of *Zscores* (Marôco 2014); (b) Descriptive analysis (mean, standard deviation, coefficient of variation and minimum and

maximum values); however, normalizing the data turned the mean into zero and the standard deviation into one. (Marôco 2014; OECD 2008); (c) Application of Exploratory EFA and PCA, so that the grouping of data that could be interpreted similarly in the sample, as well as the determination of the principal components that should be retained and the robust treatment of the data, could be ascertained (Stevens 1986; Hair et al. 1995; Kubrusly 2001; Nardo et al. 2005; OECD 2008; Guimarães and Sarsfield Cabral 2010; Marôco 2014; Pestana and Gageiro 2014). This method aims to determine weights that reflect the importance of the variables measured by the maximum variance (Kubrusly 2001); (d) To check the acceptability of this technique, we applied the Kaiser–Meyer–Olkin (KMO) (Kaiser 1974; Marôco 2014) sample suitability measure and the Bartlett sphericity (Marôco 2014).

So, to distinguish the factors that determine the Bulgarian district’s creativity performance, a quantitative methodology is used. The data was gathered primarily from NSI- The National Statistical Institute of Bulgaria. The reference period for the variables under analysis is the year 2018, as the aim is to understand the creativity of Bulgarian districts before the pandemic. The units of measure also vary, therefore, the first step of the analysis consists of the normalization of all variables to a common scale (Stevens 1986; Hair et al. 1995; Kubrusly 2001; Nardo et al. 2005; OECD 2008; Guimarães and Sarsfield Cabral 2010; Marôco 2014; Pestana and Gageiro 2014). This is achieved by applying *Z-scores*. The next step is performing a standard descriptive analysis consisting of mean, standard deviation, variation coefficient, and minimum and maximum values. Even though the normalization of the data modifies the mean to zero and the standard deviation to one it is not included in this research paper. After that, an Exploratory Factor Analysis (EFA) and Principal Component Analysis (PCA) are used to construct the Composite Index. The strengths of this method are that it can outline a set of individual indicators “while preserving the maximum possible proportion of the total variation in the original data set” (OECD 2008, p. 26). Also explains that the “largest factor loadings are assigned to the individual indicators that have the largest variation across countries, a desirable property for cross-country comparisons, as individual indicators that are similar across countries are of little interest and cannot possibly explain differences in performance” (OECD 2008, p. 26). The applicability of this analysis is tested with Kaiser–Meyer–Olkin (KMO) (Kaiser 1974; Marôco 2014) and the Bartlett Sphericity test.

The composite index for creative cities used in this research was developed by Rodrigues and Franco (2019a,

b) and applied to all Portuguese cities and towns (308) before and after the pandemic. In which it was added to the data provided by the Bulgarian authorities. However, the data processing strictly followed what was defined by the authors and supported by the requirements of the OECD (2008). Under these circumstances, the indicators used were adapted to the Bulgarian context and are displayed in Tables 1, 2, and 3.

The country of Bulgaria is divided into 28 provinces. Each one has a town chosen for an administrative center. The sample of the following research corresponds to

these 28 well-developed cities/provinces (N=28). They are Vidin, Vratsa, Lovech, Montana, Pleven, Veliko Tarnovo, Gabrovo, Razgrad, Ruse, Silistra, Varna, Dobrich, Targovishte, Shumen, Burgas, Sliven, Stara Zagora, Yambol, Blagoevgrad, Kyustendil, Pernik, Sofia, Sofia (capital), Kardzhali, Pazardzhik, Plovdiv, Smolyan, Haskovo.

This choice corresponds to the specifics of the country, and its historical and economic development. The presented composite index created by Rodrigues and Franco (2019a, b) is used to measure the Bulgarian cities'

Table 1 Indicators of creativity: subdimension culture

General	Specific indicator	Proxies	Acronym	Database	Year	Measure	
Places of culture and facilities	Places of historical interest	1) Places of historical, cultural, and artistic interest, such as buildings, religious structures, monuments and statues, churches and cathedrals, bridges, towers, and others	LIC1	Tripadvisor	2019	Number	
	Museums and similar	1) Art galleries: buildings	MA1	NSI	2017	Number	
		2) Art galleries: exhibitions	MA2				
		3) Number of museums open to the public	MA3				
		4) Number of Exhibits in museums- stock units (movable cultural values)	MA4				
	Cinema	1) Number	CIN1				
		2) Places	CIN2				
	Concerts and Shows		1) Number of cultural locations and Community centers	CE1		2017	
			2) Capacity of cultural locations	CE2			
	Theatres		1) Theatres	TEA1		2018	
Restaurants and accommodation		1) Number of hotel establishments + resorts	RAL1	Tripadvisor	2019	Number	
		2) Number of rooms in hotel establishments + resorts	RAL2				
		3) Restaurants	RAL3				
Cultural participation and attractiveness	Tourist nights	1) Total Nights spent—number	DORT1	NSI	2018		
		2) Proportion of foreign guests	DORT2				
		3) Total income from hotel establishments	DORT3				
		4) Arrivals in accommodation establishments—number	DORT4				
	Museum visitors		1) Total visitors	VISM1			
			2) Total foreign visitors	VISM2			
			3) Employees with higher education	VISM3			
			4) Total employees	VISM4			
5) Organized events in museums			VISM5				
Cinema attendance		1) N° of spectators	ATENC1				
		2) Ticket sales	ATENC2				
		3) Number of projections	ATENC3				
		4) Number of film exhibits	ATENC4				
Concerts and shows		1) N° of members of Community centers	DCE1				
		3) Community centers providing computers with Internet access for use by users	DCE2				
		4) Community centers with functioning library	DCE3				
		5) Other cultural venues	DCE4				

Source: adapted from some research (Giffinger et al. 2007; Durmaz et al. 2010; Hartley et al. 2012; Lombardi et al. 2012; García Suárez and Pulido Fernández 2015; Kakiuchi 2016; Bosch and Jongeneel 2017; European Union 2017)

Table 2 Indicators of Creativity: Subdimension Creative Economy

General	Specific indicator	Proxies	Acronym	Database	Year	Measure	
Creative Industries	Creative jobs	1) Jobs in creative and cultural activities	EAE1	NSI	2018	Number	
		Research & Development	1) Firms with the most expenditure on R&D activities			ID1	Thousands €
			2) R&D personnel	ID2		Number	
			3) R&D expenditure of state	ID3		Thousands €	
			4) Total resources allocated by state R&D areas	ID4		Number	
			Knowledge transfer	1) Total researchers in higher education	TC1	NSI	2018
		2) Higher education establishments	TC2				
		3) Lecturers in higher education	TC3				
	Impact of Creative Industries on GDP		1) Expenditure on acquisition (arts and information)	ICPIB1			
			2) Assets acquired	ICPIB2			
			3) total expenditure on recreation, culture, and arts	ICPIB3			Number
			4) Gross added value, at market prices, of cultural and creative industries	ICPIB4			Million €
			5) GDP, of cultural and creative industries	ICPIB5			

Source: adapted from previous studies (Giffinger et al. 2007; Caragliu et al. 2011; Hartley et al. 2012; Lombardi et al. 2012; Panal and Yáñez 2012; Joss et al. 2013; García Suárez and Pulido Fernández 2015; Kakiuchi 2016; Bosch et al. 2017b; European Union 2017; Skavronska 2017)

creative performance. The creativity indicator is adapted to the characteristics of the study unit (Bulgaria) and it is dependent on the availability of the needed data. In this case, it is presented by 3 sub-dimensions consisting of 7 general indicators and 19 specific ones.

The gathered data for the Bulgarian cities are in absolute value. It is later modified in relative values equal to proxy/resident population per*1000 city inhabitants. This transformation is needed to compare cities regardless of their size. Therefore, all variables presented are in relative values. The following tables (Tables 1, 2, 3) present the general and specific indicators, the proxies, the databases, the reference period (years), and the unit of measurement according to the postulate by Florida (Florida 2002; Florida et al. 2015) who is considered the father of the creative class (3Ts), whose pillars are culture, the creative economy and the favorable environment.

Concerning the Bulgaria profile, according to the administrative-territorial division, the Republic of Bulgaria is divided into 28 regions with administrative centers—their largest cities. According to the Law of the Administrative-Territorial Organization of the State, each district consists of one or more neighboring municipalities, the territory of which is also the territory of the district. When a region is formed, several things are taken into consideration. They include the physical and geographical features of the territory, the presence of a city that is a traditional cultural and economic center with built-in social and technical infrastructure, and transport accessibility.

There are 265 municipalities and 3177 town halls in Bulgaria. The municipality of Sofia (capital) and the large cities of Plovdiv and Varna are divided administratively and territorially into districts: Sofia (capital) consists of 24 districts; Plovdiv has 6 districts and Varna has 5 districts. The population settlements in the Republic of Bulgaria are 5,257 (257 cities and 5000 villages). There are 163 settlements, including 8 with national importance, with the status of resort complexes, and 155 with local importance. The Republic of Bulgaria is also divided territorially into statistical regions, forming 3 levels by the requirements of the general Classification of Territorial Units for Statistical Purposes (NUTS), applied in the European Union:

- NUTS I—2 statistical zones: North and South-Eastern Bulgaria; Southwest and South Central Bulgaria;
- NUTS II- 6 statistical regions: North-West, North-Central, North-East, South-East, South-West, South-Central;
- NUTS III—28 regions.

The first two levels: NUTS I—statistical zones, and NUTS II—statistical regions, do not represent administrative-territorial units, while the third level NUTS III—districts, are administrative-territorial units and cover the territory of the 28 districts of the same name, into which the country is divided.

Table 3 Indicators of Creativity: Subdimension Favourable Environment

General	Specific indicator	Proxies	Acronym	Database	Year	Measure	
Openness and diversity	Creative class (talent)	1) Number of students enrolled in arts and humanities courses	CC1	NSI	2018	Number	
		2) Schools in arts and humanities	CC2				
		3) Number of teachers enrolled in arts and humanities courses	CC3				
		4) Graduates in arts and humanities courses	CC4				
		5) Higher education graduates	CC5				
		6) Number of students in higher education	CC6				
		7) Employed population with average/high qualifications (secondary, post-secondary, and higher)	CC7				Number
		8) Libraries	CC8				Number
		9) Library fund	CC9				Thousands €
		10) Library readers	CC10				Number
		11) Borrowed library fund	CC11				Thousands €
		12) Books titles	CC12				Number
		13) Books circulation	CC13				Thousands €
		14) Radio operators in numbers	CC14				Number
		15) Radio operator's programmes	CC15				Hours
		Tolerance, social classes, and young people	Openness and diversity				1) Legally resident foreign population: total
2) Socio-cultural heterogeneity (social classes)—employees' basic average annual salary	TOL2					€	
3) Young population (resident population, estimated on 31 December: 0–25 years)	TOL3					Number	
Local and international connections	International connections	1) Airports	LI1			Number	
		2) Passenger arrivals by airport	LI2				
	National connections	1) Destinations	LI3			Kilometres	
		2) Airline companies	LI4				
Urban regeneration	Endogenous factors	3) National roads	LN1			Number	
		4) National roads	LN2				
		1) Building permits issued for construction of new buildings (urban regeneration): residences	FE1			Number	
		2) Building permits issued for construction of new buildings (urban regeneration): Administrative	FE2			Number	
		3) Construction of new buildings started: residences (urban regeneration)	FE3			Number	
4) Construction of new buildings started: administrative (urban regeneration)	FE4			Number			
5) Annual population variation (global attractiveness for new residents)	FE5			Proportion			

Source: adapted from other studies (Giffinger et al. 2007; Caragliu et al. 2011; Hartley et al. 2012; García Suárez and Pulido Fernández 2015; Dhingra and Chattopadhyay 2016; European Union 2017; Skavronska and Economic 2017)

According to the NSI (National Statistical Institute) as of December 2018, the population of Bulgaria is 7000039 people, and over the last ten years, it has decreased by 606512 people, or by 7,97% (see Table 1). 5 159 129 people or 73,7% live in cities, and 1 840 910 people and 26.3% of the country's population lives in villages (Table 4).

Results and discussion

The results shown here are the outputs obtained by the statistical treatment of the data using the SPSS software, using EFA and PCA. After checking the validity of the observations, the inclusion of the mean value (zero) for the missing data so as not to eliminate important information and the normalization of the data due to the multiple units of measurement and reference periods (Stevens 1986; Hair et al. 1995; Kubrusly 2001; Nardo et al. 2005; OECD 2008; Guimarães and Sarsfield Cabral 2010; Marôco 2014; Pestana and Gageiro 2014), descriptive analysis was performed (mean, standard deviation, coefficient of variation and minimum and maximum values). However, the normalization of the data (Z-score) transformed the mean into zero and the standard deviation into 1, so the same is not presented in Marôco (2014) and OECD (2008). Next, EFA and PCA were applied to determine the "weights from the matrix of factor loadings after rotation, given that the square of factor loadings represents the proportion of the total unit variance of the indicator which is explained by the factor." (Kubrusly 2001; OECD 2008, p. 90). In this context, the values of the KMO test (Kaiser 1974) shown in Tables 5, 6, and 7 present average quality values for

applying exploratory factor analysis (Marôco 2014) in the culture subdimension (0.610), favourable environment (0.604), while the favourable environment exhibits good quality (0.777). However, in the sub-dimensions culture favourable environment, there was a linear dependence between some of the variables used in this study, i.e., with a correlation coefficient of 0.777. i.e., with Pearson correlation coefficient of 1 or very close to 1 (Marôco 2014), so the following variables were excluded to be feasible to assess the quality of the data by KMO: (a) culture—RAL3, WORT1, WORT2, WORT3, WORT4, ATENC2, ATENC4, DCE1, DCE3, DCE4; (b) favorable environment—CC3, CC4, CC6, CC9, CC10, CC11, CC12, CC13, CC17, PRI1, LI3, LI4, FE2, and FE4.

Tables 5, 6, and 7 show that the communalities are higher than the minimum required of 32% (Tabachnick and Fidell 1996; Costello and Osborne 2005) verifying that they explain 37% of the variance in the culture subdimension, 55% in the creative economy subdimension and 42% in the favourable environment subdimension. In addition, the loadings of the variables are always greater than or equal to the minimum required of 40%, by Marôco (2014). The same tables also show the associations of the factors with the variables for each subdimension, the weights for each variable resulting from the product between the squared normalized loadings, and the value of the variance explained for each factor. In this context, the techniques used (EFA, PCA) returned 14 main factors in the creativity dimension, whose denomination is shown in Table 8.

From analysing Table 8 it is argued that:

- I. Subdimension culture:
- II. In Bulgaria, the capital Sofia is a center of cultural and creative activities, hosting numerous art galleries, theatres, and cultural centers where various exhibitions, shows, and events take place. The National Palace of Culture (NDK) is one of the most prominent venues, where concerts, festivals, and exhibitions take place. Also in the other districts of this country, these activities are a reality, for example in 2018, Plovdiv was preparing for its role as the European Capital of Culture 2019, which led to the city having an increase in cultural activities, with an emphasis on promoting local artists and preserving the city's rich heritage; Varna, a coastal city, has a vibrant cultural scene, hosting concerts, dance performances and various cultural festivals; Bansko, a city in south-western Bulgaria, is known for hosting the Bansko Jazz Festival, which attracts jazz enthusiasts from all over the country and abroad, with local and foreign musicians. Bulgaria also hosts several

Table 4 The population of the Republic of Bulgaria by districts (31.12.2018)

Districts	Population	Districts	Population
1. Blagoevgrad	305123	15. Pleven	240380
2. Burgas	410331	16. Plovdiv	668334
3. Varna	471252	17. Razgrad	112229
4. Veliko Tarnovo	235708	18. Ruse	218556
5. Vidin	84865	19. Silistra	109271
6. Vratsa	162549	20. Sliven	186495
7. Gabrovo	108404	21. Smolyan	105421
8. Dobrich	173831	22. Sofia (capital)	229041
9. Kardzhali	152873	23. Sofia	1328120
10. Kyustendil	119041	24. Stara Zagora	316356
11. Lovech	124873	25. Targovishte	111597
12. Montana	129637	26. Haskovo	228141
13. Pazardzhik	255479	27. Shumen	172355
14. Pernik	120880	28. Yambol	118897

Source: NSI National statistical institue

Table 5 Culture

Variable	h ²	Results of exploratory factor analysis					Squared factor loading (scaled to unit sum)					Weights—coefficients of variables				
		Factor					Factor					Factor				
		1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
MA1	0,919	0,941				0,126					5,302					
DCE2	0,858	0,918				0,120					5,046					
CE2	0,883	0,908				0,117					4,937					
CE1	0,939	0,907				0,117					4,926					
MA2	0,792	0,859				0,105					4,418					
LIC1	0,755		0,395					0,079					0,934			
ATENC1	0,903		0,606					0,185					2,199			
MA4	0,905	0,922				0,161					5,090					
VIMS4	0,918	0,895				0,152					4,796					
MA3	0,83	0,841				0,134					4,235					
VISM3	0,826	0,804				0,122					3,871					
TEA1	0,703	0,791				0,119					3,746					
VISM1	0,849	0,773				0,113					3,578					
CIN1	0,889	0,679				0,087					2,761					
ATENC3	0,736		0,807					0,328					3,899			
CIN2	0,777		0,678					0,232					2,752			
RAL1	0,887			0,940					0,366					5,291		
RAL2	0,89			0,890					0,328					4,743		
VISM2	0,836				0,830					0,285					1,759	
Eigenvalue		5,682	5,091	2,172	3,757	1,853									1,053	
% Explained Variance		28,410	25,455	10,859	9,520	9,263										
Total explained variance		83,507					0,421	0,316	0,119	0,145	0,062					

Varimax Rotation; N = 28; KMO = 0,610; Bartlett Sphericity Test = 541.904; gl = 190; p < 0,000

art and culture festivals throughout the year, for example, the Sofia International Film Festival, Sofia Design Week, and the Burgas International Folklore Festival, among others in 2018. In addition, there has been an increase in creative centres and co-working spaces in major Bulgarian cities providing platforms for artists, designers, and entrepreneurs to collaborate and showcase their work. The country has a rich tradition of celebrating various cultural and folklore festivals, such as the Kukeri Festival (a pagan ritual to scare away evil spirits) and the Rose Festival (which celebrates the rose harvest) offering visitors a glimpse into Bulgarian customs and traditions. Finally, there has been a growth in street art and graffiti, which contributes to the country's vibrant cultural scene. This means that Factor 1—Cultural and creative spaces and activities are exponentially vibrant and tolerant (weight = 25), where major cities, such as Sofia, Plovdiv, Varna and Burgas, have numerous art galleries and museums exhibiting contemporary and traditional

Bulgarian art, offering visitors the opportunity to explore a wide range of exhibits, including paintings, sculptures, photographs and multimedia installations; also most Bulgarian districts host a wide variety of musical events, catering for different tastes and genres. From classical music concerts in historic venues to contemporary music festivals with pop, rock, and electronic shows, music enthusiasts have plenty of options to choose from.

- III. Urban culture and performing arts (Factor 2/ Weigh = 28): Bulgaria's major cities, especially Sofia and Plovdiv, are centers of urban culture and performing arts. These cities have hosted a wide range of cultural events, including theatre shows, dance performances, music concerts, art exhibitions, and street festivals. Creative centers and co-working spaces allowed artists and performers to collaborate and showcase their work, contributing to the dynamic urban cultural scene.
- IV. Film cultural heritage (Factor 3/Weight = 10): Bulgaria has a rich film heritage, with a history of

Table 6 Creative economy

Variable	h ²	Results of exploratory factor analysis			Squared factor loading (scaled to unit sum)			Weights—coefficients of variables		
		Factor			Factor			Factor		
		1	2	3	1	2	3	1	2	3
ICPIB4	0,965	0,982			0,134			8,511		
ICPIB1	0,949	0,974			0,132			8,376		
ECAE1	0,947	0,973			0,132			8,353		
ICPIB2	0,943	0,971			0,131			8,321		
ID1	0,885	0,940			0,123			7,796		
ICPIB5	0,874	0,934			0,121			7,705		
ID2	0,848	0,909			0,115			7,299		
TC4	0,885		0,882			0,251			6,864	
ID3	0,861		0,732			0,173			4,728	
ID4	0,845		0,723			0,169			4,613	
TC2	0,694		0,613			0,122			3,322	
ICPIB3	0,744		0,610			0,120			3,289	
TC3	0,890			0,930			0,833			7,632
Eigenvalue		7,184	2,615	1,528						
% Explained Variance		55,265	20,119	11,757						
Total explained variance	87,142				0,635	0,273	0,092			

Varimax Rotation; N = 28; KMO = 0,777; Bartlett Sphericity Test = 579.987gI = 78; p < 0,000

film production dating back to the early twentieth century. The country has produced influential filmmakers and notable films. In 2018, several film festivals, such as the Sofia International Film Festival, celebrated Bulgarian and international cinema, showing the cultural significance of film in the country.

- V. Comprehensive hospitality (Factor 4/Weight = 10): Bulgaria's hospitality industry has been an essential part of its culture and identity. In 2018, the country's tourism sector focused on providing holistic hospitality experiences to visitors. From traditional guesthouses in small villages to luxury hotels in urban centers, Bulgaria offers a diverse range of accommodation options to meet the needs of domestic and international tourists.
- VI. International attractiveness (Factor 5/Weight = 3): Bulgaria's cultural heritage, scenic landscapes, and accessible travel opportunities made it an attractive destination for international visitors. The country's rich history, archaeological sites, and preserved traditions fascinated travelers looking for authentic experiences. In addition, the many cultural events and festivals in the main cities have contributed to Bulgaria's international appeal.
- VII. Subdimension creative economy:
- VIII. Overall, in 2018, Bulgaria saw positive developments in its cultural and economic vitality,

with a thriving creative and academic ecosystem that encouraged innovation, collaboration, and growth. The country's investment in research and development, coupled with the emphasis on entrepreneurship, helped create a dynamic environment for cultural and economic advancement.

- IX. Cultural and Economic Vitality (Factor 1/Weight = 56): Bulgaria's cultural and economic vitality was on the rise in 2018. The country's cultural scene was becoming more dynamic, with an increasing number of cultural events, festivals, and exhibitions taking place across major cities. This cultural vibrancy played a role in attracting tourists and bolstering the tourism sector, contributing to the country's economic growth. The economic vitality in Bulgaria contributed to the emergence of a vibrant start-up culture. Young entrepreneurs were encouraged to pursue their ideas and turn them into successful businesses. Events like hackathons and innovation competitions further nurtured the entrepreneurial spirit in the country.
- X. Creative and Academic Ecosystem (Factor 2/Weight = 23): Bulgaria's creative ecosystem was flourishing, with various initiatives supporting artists, designers, and entrepreneurs. Creative hubs, co-working spaces, and start-up incubators

Table 7 Favourable environment

Variable	h ²	Results of exploratory factors analysis						Squared factor loading (scaled to unit sum)						Weights—coefficients of variables					
		Factor						Factor						Factor					
		1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6
CC12	0,877	0,845					0,109												4,480
CC7	0,924	0,825					0,103												4,264
CC5	0,817	0,783					0,093												3,845
CC16	0,651	0,773					0,091												3,742
TOL3	0,802		0,859				0,206												4,622
FE5	0,901		0,819				0,187												4,202
TOL1	0,883		0,759				0,161												3,614
TOL2	0,794		0,686				0,131												2,946
LN1	0,821		0,635				0,113												2,527
LI1	0,949			0,911				0,449											5,201
FE4	0,783			0,808				0,353											4,090
LI2	0,760			0,802				0,348											4,030
CC14	0,892				0,915				0,559										5,244
CC15	0,934				0,897				0,538										5,045
LN2	0,827				0,517				0,179										1,677
FE1	0,791					-0,815								0,515					4,160
CC8	0,784					0,770								0,460					3,716
CC2	0,888																		
CC1	0,878																		
Eigenvalue		3,946	3,551	2,850	2,260	1,703	1,645												5,251
% Explained Variance		20,770	16,692	15,000	11,896	8,965	8,660												3,913
Total explained variance		83,982						0,413	0,224	0,116	0,094	0,081	0,073						

Varimax Rotation; N = 28; KMO = 0,604; Bartlett Sphericity Test = 459,755; gl = 171; p < 0,000

Table 8 Key factors affecting creativity

Factors	Name	Σ Weights – coefficients of variables
Culture		
Factor 1	Cultural and creative spaces and activities	25
Factor 2	Urban culture & performing arts	28
Factor 3	Cinematographic cultural heritage	10
Factor 4	Integral hospitality	10
Factor 5	International attractiveness	3
Creative economy		
Factor 1	Cultural and economic vitality	56
Factor 2	Creative and academic ecosystem	23
Factor 3	Academic environment	8
Favorable environment		
Factor 1	Media culture and higher education	16
Factor 2	Demography and sociocultural dynamics	18
Factor 3	Air connectivity and urban regeneration	13
Factor 4	Multi-modal connectivity	12
Factor 5	Literary culture and urban regeneration	8
Factor 6	Artistic and humanistic education	9

Source: Own elaboration

were on the rise, providing a nurturing environment for creative minds to collaborate, innovate, and develop their ideas into viable businesses. Therefore, the creative and academic ecosystem in Bulgaria was fostering increased collaboration between academia and industry. This partnership helped bridge the gap between theoretical knowledge and practical applications, leading to the development of innovative projects and solutions with real-world relevance.

- XI. Academic Environment (Factor 3/Weight=8): Bulgaria had a well-established academic environment in 2018. The country is known for its quality education and research institutions. Bulgarian universities offer a diverse range of academic programs, attracting both domestic and international students. The academic environment played a crucial role in producing skilled graduates and contributing to the country's human capital. There was a growing focus on research and development in Bulgaria in 2018. The government and private sector were increasingly investing in research projects and initiatives, especially in areas with potential for technological advancement and innovation. Bulgarian academic and creative institutions were actively engaged in international collaborations and exchange programs. This allowed for knowledge sharing,

cultural interactions, and exposure to diverse perspectives, enriching both the academic and creative landscapes in Bulgaria.

- XII. Subdimension favorable environment:

XIII. In 2018, Bulgaria was actively addressing various cultural, educational, and demographic challenges while promoting its cultural heritage and creative industries. The country's efforts in urban regeneration, multi-modal connectivity, and artistic education contributed to creating a more dynamic and sustainable cultural landscape;

XIV. Media Culture and Higher Education (Factor 1/Weight=16): media culture in Bulgaria was transforming due to technological advancements and changes in media consumption habits. Online media platforms and digital content were gaining popularity, impacting traditional media outlets; additionally, higher education institutions in Bulgaria were adapting to meet the demands of the digital age, incorporating technology in teaching methods and research activities.

XV. Demography and Sociocultural Dynamics (Factor 2/Weight=18): Bulgaria's demography was marked by a declining population and an aging workforce in 2018. This demographic trend posed challenges for the labor market and social welfare systems; sociocultural dynamics were also affected by migration trends and urbanization, leading to

changes in the cultural landscape of both urban and rural areas.

XVI. Air Connectivity and Urban Regeneration (Factor 3/Weight=13): In 2018, Bulgaria was working to improve its air connectivity to boost tourism and economic growth; so developed several airports, especially Sofia Airport, were upgraded and expanded to accommodate increasing passenger numbers; Alongside this, urban regeneration projects aimed to revitalize city centers, preserve historical heritage, and create attractive spaces for both residents and visitors.

XVII. Multi-Modal Connectivity (Factor 4/Weight=12): Bulgaria was investing in multi-modal transportation infrastructure in 2018, with a focus on integrating different modes of transportation like trains, buses, and trams to enhance connectivity within cities and between regions, to create a more efficient and sustainable transportation network.

XVIII. Literary Culture and Urban Regeneration (Factor 5/Weight=8): Literary culture remained an integral part of Bulgaria's cultural heritage in 2018. The country celebrated its rich literary tradition with book fairs, literary festivals, and events that promoted Bulgarian literature and supported local authors; in some urban regeneration initiatives, abandoned buildings were transformed into cultural centers or libraries, preserving the literary heritage while revitalizing neglected urban spaces.

XIX. Artistic and Humanistic Education (Factor 6/Weight=9): Bulgaria continued to emphasize artistic and humanistic education, fine arts schools, music academies, and humanities departments in universities provided students with opportunities to develop their artistic talents and cultivate critical thinking and creativity.

After analysing the factors determined by the sub-dimension, it is essential to perceive the weight of each of them in the creativity dimension (Table 9).

Table 9 shows that there is a balance between the three sub-dimensions, which shows that the country's commitment to creativity is supported by sustained strategies that allow it to contribute to the creation of more jobs, wealth generation, and sustained economic growth in the long term. On the other hand, it offers citizens quality of life and well-being, through the chance to have access to a panoply of vibrant and varied cultural activities, through the opportunity given to talented creatives to live in a tolerant and innovative environment (technologies). In other words, Bulgarian districts try to provide access to technological infrastructure and

Table 9 EFA of the creativity dimension and weights

Subdimensions	h^2	Factor—creativity	Weights
Culture	0,640	0,800	30%
Creative Economy	0,692	0,832	34%
Favorable Environment	0,706	0,840	35%
Eigenvalue		1,035	
% Explained variance		90,617	
Total explained variance		90,617	

Varimax Rotation; N = 28; KMO = 0,697; Bartlett Sphericity Test = 492,984. $gl = 3$; $p < 0,000$; $h^2 > 0,32$; loadings $> 0,40$

research centers, are attractive for the retention of talented human capital, and foster diversity by promoting an inclusive and tolerant culture to attract the creative class and enhance creativity and innovation. Finally, the results presented here corroborate previous research, which showed that the relationship between culture and creativity is a topic that continues to be debated in academia and by decision-makers in countries (Montalto et al. 2023), where creative cities have environments and provide more sustainable growth (Rodrigues and Franco 2019a, b), as creativity is an inexhaustible resource (Sokol et al. 2022) and creative places are a brand (Kuriakose and Philip 2021). It has also been confirmed that culture is a driver for local economies and people's well-being (Cerisola and Panzera 2021), that the growth of creative industries is a reality (Arcos-Pumarola et al. 2023), and that the creative economy positively affects the GDP of countries (Dronyuk et al. 2019; Agustina et al. 2020; Gola et al. 2022). Many cultural and historical sites attract tourists, generating revenue for the local economy. Studies have shown that cultural heritage tourism contributes substantially to the overall tourism industry's revenue (e.g., Gosal et al. 2018; Varotsis 2022; Arcos-Pumarola et al. 2023), which was demonstrated in this study. In addition, investments in cultural infrastructure and creative spaces have been linked to urban regeneration and gentrification, leading to increased property values and economic development in certain areas, which occurred in Bulgaria and meets the arguments of Hall (2000), Boeri et al. (2018), and Parshukova and Riazantseva (2021). Finally, a strong cultural identity and appreciation of historical heritage can foster social cohesion, stability, and a sense of community, which can have positive effects on business environments and economic activities, as defended by other researchers (e.g., Florida 2017; Bacsı 2020), it's essential to note that the extent of their impact can vary depending on the context, government policies, and the degree of investment and support for creative industries within a specific country or region.

Conclusions and implications

In Bulgaria, representatives of the executive power whose activities are directly related to the creative industries are the Ministry of Culture and the Ministry of Economy. In general, they define measures to support and stimulate creative industries. The regulatory framework, rights, obligations, and protective mechanisms, for activities within the scope of creative industries, are defined by: Laws on small and medium-sized enterprises; the Copyright and Related Rights Act; the Cultural Heritage Act; the Law of the Development and Protection of Culture, etc. Culture and creativity are among the key priorities in the common European policy, which are implemented in the national and regional strategies. When developing these policies related to the creative industries, several factors are taken into account. They include the level of economic development, state of the regional infrastructure, socio-cultural characteristics of the local population, level of education and potential of human resources, access to markets, and financing of entrepreneurial initiatives in the field of creative industries.

The general assessment regarding the district strategies for the development of the regions in Bulgaria shows that the creative industries are not viewed as independent in the long-term program documents. Culture is considered a key factor for tourism development and a source of significant socio-economic effects for local communities. The role of creative industries has been defined in perspective, but their potential and favorable opportunities are underestimated. Although the results presented here show that creativity is one of the pillars of economic growth, financial resources and local and foreign investment for its development are still very limited. The infrastructure related to creative industries should be further developed and the unfavorable demographic and migration processes in the country may aggravate the problems of some shortage of qualified personnel working in this field, so this situation needs to be reversed. In addition, the results presented here refer to Bulgarian districts and not to cities per se. However, Bulgaria has a rich cultural heritage and increasing emphasis has been placed on preserving and promoting this heritage. Various cultural activities, festivals, and events have celebrated traditional Bulgarian arts, crafts, and folklore, attracting local and international visitors. The government and cultural organisations supported initiatives to showcase the country's cultural diversity and historical significance. The creative sector, including design, arts, media, and technology should start to be seen as a driving force for the country's economic growth. Start-ups and creative entrepreneurs are increasingly gaining weight, which has led to the creation of creative

centers and co-working spaces. In 2018, Bulgaria worked to create an enabling environment for the development of creative industries. Thus, the government introduced policies and incentives to support creative entrepreneurship and innovation, including financial support, tax benefits, and simplified regulations to encourage the growth of creative businesses. It is also worth noting that Bulgaria has actively engaged in international collaborations in the cultural and creative fields; in this regard, it has participated in various international cultural exchange programs, festivals, and events, fostering cultural diplomacy and promoting Bulgaria's creative talents on the world stage.

In support of these arguments, the Bulgarian government has made investments in cultural infrastructure, including the renovation and modernization of cultural venues, museums, and theatres, to improve the quality of cultural events and experiences for both artists and audiences. It has also taken steps to preserve traditional culture and promote contemporary art. In the latter case, art galleries and exhibition spaces have displayed works by modern Bulgarian artists, providing them with platforms to gain recognition and exposure. It should be noted that Bulgaria's rich cultural heritage has played an important role in attracting tourists, with the country's historical sites, UNESCO World Heritage sites, and well-preserved traditions being key attractions for cultural tourism, contributing to the tourism industry in general. Not least, the country should continue its focus on education and talent development in creative fields, emphasizing arts and humanities education as well as technology-focused education to create a skilled workforce for the creative economy and create hard and soft amenities to retain it, countering the shortage problem caused by the aforementioned migration flow. These arguments here represent the implications and contributions to the practice of this study, which is unprecedented in the country under review.

Of course, there are also weaknesses in Bulgarian districts, such as the lack of financial resources and investments to support creative and cultural initiatives, which is limiting the development of cultural infrastructure, educational programs, and opportunities for artists and creative entrepreneurs; such as the exodus of creative talent, where artists and creative professionals seek opportunities elsewhere due to the lack of local support and opportunities; how the lack of connections and networks between artists, creative professionals, cultural institutions and businesses can hinder collaboration and the exchange of creative resources, ideas, and opportunities; how unequal access to creative and cultural opportunities can result in

limited participation by certain groups of the population, reducing the diversity and vitality of the local creative scene. Overcoming these weaknesses requires an ongoing commitment to cultural development, institutional support, and investment in programs and resources that actively promote creativity and innovation throughout the country.

As contributions to theory, it is argued that culture, traditions, and historical heritage associated with creativity (culture, creative economy, and favourable environment) should remain one of the driving forces of economic growth. The above argument is supported by the creative economy theory, which states that creativity and intellectual capital are valuable economic assets. It emphasizes the economic potential of creative industries, such as arts, media, design, and technology and the Soft Power Theory refers to a country's ability to influence others through non-coercive means, such as culture, values, and policies and this theory argues that a nation's cultural appeal and attractiveness can positively impact its economic relations and trade opportunities. This means that culture and historical heritage can be rich sources of inspiration for innovation and creativity. When societies value and preserve their cultural identity and traditions, they can stimulate new and unique ideas, leading to the development of innovative products, services, and experiences; cultural heritage and historical sites attract tourists, contributing to the growth of the tourism industry. Tourists spend money on accommodation, food, transport, and souvenirs, creating economic benefits for local communities; that the creative economy encompasses a wide range of industries, including visual arts, performing arts, media and entertainment, design, fashion, architecture, literature, among others, which contribute significantly to a country's GDP, job creation and export earnings; that a strong cultural identity and common heritage can promote social cohesion and a sense of belonging among citizens. This stability and unity can positively influence business environments and economic activities; culturally rich and diverse cities tend to attract creative talent, entrepreneurs, and investors, whose presence of a vibrant arts scene and cultural amenities can improve quality of life and make a location more attractive to businesses and skilled workers.

In short, culture, traditions, historical heritage and creativity have the potential to serve as important drivers of economic growth. Embracing and cultivating these aspects can lead to a more dynamic and resilient economy, with benefits for various sectors and communities. However, striking a balance between preserving cultural heritage and promoting contemporary innovation is essential to ensure sustainable economic development.

As with any study, this one is not without its limitations. The first one concerns the unavailability of data by the Bulgarian NSA at the city level, which directed this study to the use of districts as a unit of analysis and may have caused some bias in the results obtained. The second is the use of EFA and PCA, as many other techniques could have been used. The last one refers to the theoretical framework (creative economy theory) and the 3 T's of Florida. These limitations should be addressed in future research.

As a future agenda, we suggest a replication of this study in the pandemic period in Bulgaria and then a comparative study between the pre-pandemic and pandemic periods. Also, a comparative study between Bulgaria and Portugal is an innovative topic.

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