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City brand in the perception of inhabitants of European capitals: Linear ordering using the TOPSIS method

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ABSTRACT

Objective: The objective of the article is to develop a methodology of city ranking based on the criterion of a city's brand image among its inhabitants.

Research Design & Methods: The article discusses the utilization of the multi-criteria decision-making method (MCDM) to create a ranking of European capitals. It explores the significance of the decision-making approach in establishing a linear order among 28 capital cities within the European Union. The study employs the Technique for Order of Preference by Similarity to Ideal Solution (TOPSIS) for evaluation purposes. By leveraging publicly accessible indicators that gauge the perception of various aspects of a city's brand by its residents, this method facilitates the generation of a comprehensive ranking.

Findings: The top five positions in the ranking are occupied by the following cities: Brussels, Sofia, Berlin, London and Stockholm. Ljubljana, Prague and Helsinki were ranked lowest.

Implications & Recommendations: The ranking built for the purpose of this article, has managerial implications. It can serve as a valuable re-source for territorial managers, communication experts, urban planners, and decision-makers involved in the cities' enhancement and promotion. By utilizing this ranking, they can gain insights into the level of attractive-ness and competitiveness of different cities. Furthermore, it enables them to establish measurable strategic objectives for the development of their respective cities. This information empowers these stakeholders to make informed decisions, implement improvements, and enhance the overall value of their cities.

Contribution & Value Added: The article employed ideal solution-based multi-criteria decision-making techniques to evaluate the brand image of cities as perceived by their inhabitants. We selected seven criteria to build the ranking showing the diversity in terms of residents' satisfaction with living in the city in the following areas: environment and recreation, refinement and diversity, municipal facilities, public services, employment opportunities, cost-effectiveness, and security.

Article type: research article

Keywords: city brand; city ranking; European capitals; linear ordering; TOPSIS method

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INTRODUCTION

The field of city branding is currently the subject of debate within several academic disciplines that study this phenomenon using different methods and conceptual tools (Lucarelli & Berg, 2011). Currently, place branding is a widely discussed concept in the literature, recognized for its role in facilitating the growth and territory development (Florek & Janiszewska, 2011).

Both researchers of the subject and city managers articulate not only the need for a further systematic approach to this concept, but also the necessity to include the measurement of its effects in the context of the strategic objectives of city development (Augustyn *et al*., 2017).

There is a general consensus among both practitioners and academics about the benefits of place branding for the development of a territory (Kerr & Balakrishnan, 2013).

City branding is a strategic approach that serves two main purposes. Firstly, it aims to attain a competitive advantage by attracting investors and tourists to the city. Secondly, it aims to promote community development and foster a sense of belonging among the city's residents (Kavaratzis, 2004).

Above all, city branding aims to build a positive brand among its inhabitants (Boisen *et al.*, 2018). According to Braun *et al.* (2013), residents are considered a 'critically important target market' in place branding. However, they are also identified as one of the most overlooked components in place branding theory (Stuart & Insch, 2015; Gilboa & Jaffe, 2021). Residents are not only 'customers' of city services but they can also 'create' them (Gilboa & Jaffe, 2021). The special role of residents in the process of branding a place is emphasized by Kavaratzis and Ashworth (2008), Aitken and Campelo (2011), Kavaratzis (2012), Braun *et al.* (2013), and Glińska (2016). Residents play a crucial role in shaping the place's brand through their characteristics and behaviours. They serve as ambassadors of the city brand and play a vital role in ensuring the credibility and authenticity of promotional messages (Stubbs & Warnaby, 2015).

We aimed to develop a methodology of city ranking based on the criterion of the city's brand perception among its inhabitants. To construct the ranking of chosen European capital cities, we employed the TOPSIS method. We established the ranking based on publicly accessible indicators that gauged the perception of specific dimensions of the city's brand by its residents. These indicators were obtained from the Eurostat database.

The article has the following structure. In the next section, we will present a literature review and the theoretical foundations for the proposal of the city brand ranking methodology. The third section will offer a detailed description of the research method. In section 4, we will present the main results. Then, we will interpret and discuss the results in section 5. Finally, we will present the main conclusions.

LITERATURE REVIEW

The city is a specific product category in the marketing sense. However, the ways of defining the essence of the city as a product vary. This is primarily due to its complexity. The city is a peculiar combination of specific (tangible) features, but also intangible (abstract) components that, overlapping each other, create a peculiar space of experience for inhabitants and other categories of 'users' of the urban offer (Glińska *et al.*, 2009).

Being a form of a product, a city can build its brand using marketing techniques and tools (Florek, 2014). A city brand is described as the collective perception of a place by its various stakeholders, encompassing their cognitive, emotional, and behavioural expressions. This perception is reflected in the significance and additional value that they attribute to the place (Eshuis *et al.*, 2014; Zenker & Braun, 2017; Gilboa & Jeffe, 2021). City branding is indeed a complex and multi-dimensional concept that encompasses various elements. It involves numerous dimensions, many of which are outside the direct control of city managers. This complexity often leads to a lack of consensus on the precise approach to city branding, as well as the methods for measuring and ranking such branding activities (Brencis & Ikkala, 2013).

The intensifying global competition highlights that successful city branding extends beyond mere brand communication. It encompasses various facets, including urban planning, culture, trade, and investment (Herget *et al.*, 2015).

This is because the focal point of the branding process is the city's 'physicality'– its real qualities, as these influence the brand perception. Consequently, managing the city's brand also means developing it in a direction that meets the requirements of its 'customers' and – only in a second stage – includes communicating its image in relation to selected target groups (Zenker & Braun, 2010).

Analysing the specifics of urban product complexity and planning for its development, Hankinson (2004) emphasises that the city product is co-created by public and private sector stakeholders, which brings difficulty in defining and presenting a coherent brand proposition.

City branding has emerged as a widespread phenomenon globally. It is no longer limited to major global cities; even smaller towns and municipalities are recognizing the value of branding and are starting

to develop their own brand strategies. This enables them to promote their unique attributes and compete for customers, including tourists, businesses, investments, and skilled workers (Gilboa *et al.,* 2015).

With the well-being of their inhabitants in mind, cities compete for the factors with which they can ensure an adequate level of local quality of life and development in the desired direction. Competition between cities concerns, among other things, the residents' attachment. City rivalry is a struggle for the right evaluations, feelings, and perceptions of city activities in the opinion of desired target groups, which is the basis of branding (Florek, 2014). Branding is increasingly being utilized as a tool for gaining a competitive advantage. It involves the practice of promoting specific characteristics of a city, such as its history, lifestyle, and culture, in order to attract new opportunities, enhance prestige, and fortify its position in a competitive environment (Zhang & Zhao, 2009). Cities that possess a positive image are more adept at fulfilling the expectations and requirements of their stakeholders, whether they be residents, business individuals, or visitors (Gilboa *et al.,* 2015).

The city's offer aims at a wide range of groups of the city's 'customers' characterised by diverse interests (Zenker, 2011). For residents, the city is a place to live, work and relax, as well as a 'provider' of facilities/services, such as education and health care (den Berg & Braun, 1999).

A particularly important issue in city branding is the measurement of the effectiveness of the implemented city brand strategy. When defining the method for measuring the effectiveness in this sphere of city management, public entities should determine the method of defining the brand of a place. The contemporary understanding of the city brand treats it broadly as one of the public policies. Therefore, the indicators for assessing its effectiveness should refer to a wide spectrum of activities leading to an improvement in the quality of life of residents (and cannot be limited only to the effectiveness of promotional campaigns) (Augustyn *et al*., 2017).

Several city rankings exist, and among them, some are particularly pertinent for evaluating city brands (Herget *et al.*, 2015). Saffron's European City Brand Barometer measures the strengths of city brands and assesses the extent to which cities use brands to leverage their assets. The attributes of city brands taken into account in the Barometer include cultural and sightseeing as well as historical attractions; cuisine and restaurants; good shopping amenities; good weather; and ease of getting around on foot or by public transport (Herget *et al.*, 2015).

Another city brand ranking is the Anholt-GfK Roper City Brands Index™. The Index is an outcome of a survey that evaluates the advantages and disadvantages of cities worldwide. This evaluation is based on annual interviews conducted with 20 000 citizens and consumers (Herget *et al.*, 2015). It is developed by averaging results in six categories: presence, place, potential, pulse, people, and prerequisites, which altogether make up the so-called hexagon of the city brand (Anholt, 2006). The 'presence' describes perceptions of its international status and position. The 'place' refers to people's perceptions of the city's physical aspect, *i.e.* the infrastructure and urban landscape. The 'potential' focuses on the opportunities the city offers in terms of the economy, labour market, and educational offer. The 'pulse' is defined as the character of cities, *i.e.* how vibrant and exciting a city is in public perception. The 'people' component refers to opinions and perceptions about the city's inhabitants and their characteristics. Finally, 'prerequisites' refer to the basic characteristics of a place providing a standard of living and public amenities (Anholt, 2006).

The essence of city brand index research lies in the city brand dimension system. Previous studies on city brand dimension systems have also incorporated resident satisfaction and commitment as crucial factors (Zenker, 2009; Zheng, 2020). In the context of this article, it is worth paying attention to the rankings like Mercer Quality of Living (Vienna tops…), the Economist Quality of Living, and the Global Liveability Ranking, which is a yearly assessment published by the Economist Intelligence Unit (EIU) (The Global…).

In addition to the analysis of existing city rankings based on city branding, studies describe the dimensions of the city brand which shape the ways in which citizens perceive them. The following publications proved to be particularly useful here: Zenker *et al.* (2013), Merrilees *et al.* (2009), and Gilboa *et al.* (2015). Zenker *et al.* (2013) identified four dimensions: 'nature and recreation' (*e.g.* green spaces, low levels of pollution, access to water bodies), 'urbanity and diversity' (*e.g.* cultural activities,

shopping offer, openness, and tolerance of residents), 'job opportunities' (wage levels, job opportunities, self-employment opportunities, overall level of economic development of the region) and 'cost-efficiency' (price levels and cost of living). Merrilees *et al.* (2009) found that the perception of a city as a place to live is influenced by its characteristics, such as business opportunities, natural assets, cultural activities, social ties, safety, and a clean environment. According to the results of the study by Gilboa *et al.* (2015), the dimensions of residents' perception of the city include municipal facilities, security, leisure opportunities and public services.

The synthesis of the literature review on the perception of the city's brand among its residents allowed us to develop a conceptual model covering seven dimensions: environment and recreation, refinement and diversity, municipal facilities, public services, employment opportunities, cost-effectiveness, and security.

RESEARCH METHODOLOGY

We employed multi-criteria decision-making methods to prioritize decision alternatives. Among these methods, TOPSIS is a popular algorithm used for multi-criteria decision analysis. In the TOPSIS technique, the ranking of alternatives is determined based on their Euclidean distance from both the ideal and anti-ideal solutions. Various studies explored this approach (Stanković *et al.*, 2017; Gokhan & Ceren, 2020; Sojda, 2020). The TOPSIS algorithm encompasses six stages, as outlined in Table 1.

Table 1. Stages and formulas of the TOPSIS technique

Stages of TOPSIS technique	Formulas
A matrix consisting of m-alternatives and n-criteria[1]	$X = [x_{ij}] = \begin{bmatrix} x_{11} & \cdots & x_{1n} \\ \vdots & \ddots & \vdots \\ x_{m1} & \cdots & x_{mn} \end{bmatrix}$ in which: x_{ij} represents the value of the j-th criterion ($j = 1, 2, \dots, n$) for the i-th alternative (city, $i = 1, 2, \dots, m$) and $x_{ij} \in \mathrm{R}$.
The normalized decision matrix	$R = [r_{ij}] = \begin{bmatrix} r_{11} & \cdots & r_{1n} \\ \vdots & \ddots & \vdots \\ r_{m1} & \cdots & r_{mn} \end{bmatrix}$ in which: $r_{ij} = \begin{cases} \frac{x_{ij}}{\sum_{j=1}^{n} x_{ij}}, \text{when } j \in \text{stymulant} \\ 1 - \frac{x_{ij}}{\sum_{j=1}^{n} x_{ij}}, \text{when } j \in \text{destymulant} \end{cases}$
The weighted normalized decision matrix	$V = [v_{ij}] = \begin{bmatrix} v_{11} & \cdots & v_{1n} \\ \vdots & \ddots & \vdots \\ v_{m1} & \cdots & v_{mn} \end{bmatrix}$ in which: v_{ij} means the weighted and normalized value of the j-th criterion ($j = 1, 2, \dots, n$) for the i-th alternatives (cities, $i = 1, 2, \dots, m$).
The positive-ideal and negative-ideal solution for each criterion	$A^+ = (v_1^+, v_2^+, \dots, v_m^+)$ $A^- = (v_1^-, v_2^-, \dots, v_m^-)$ $v_m^+ = \left\{ \left(\max_i v_{ij} \middle\| j \in S \right), \left(\min_i v_{ij} \middle\| j \in D \right) \middle\| i = 1, 2, \dots, n \right\}$ $v_m^- = \left\{ \left(\min_i v_{ij} \middle\| j \in S \right), \left(\max_i v_{ij} \middle\| j \in D \right) \middle\| i = 1, 2, \dots, n \right\}$ in which: $S = \{j = 1, 2, \dots, m \mid j \; represent \; the \; bigger - the \; better \; attribute\}$; $D = \{j = 1, 2, \dots, m \mid j \; represent \; the \; smaller - the \; better \; attribute\}$.
The Euclidean distance between the target alternative and the best/worst alternative	$d_i^+ = \sqrt{\sum_{j=1}^{m} (v_{ij} - v_j^+)^2}$ $d_i^- = \sqrt{\sum_{j=1}^{m} \left(v_{ij} - v_j^-\right)^2}$ in which: d_i^+ – the positive ideal solution d_i^- – the negative ideal solution

[1] M-alternatives represents rows in matrix. Alternatives means cities. N-criteria represents columns in matrix. Criteria means attributes.

Stages of TOPSIS technique	Formulas
The relative closeness coefficient for each alternative	$RC_i = \frac{d_i^-}{d_i^+ + d_i^-}$ in which: $0 \leq RC_i \leq 1, i = 1, 2, \ldots, m.$

Source: own study based on Sojda (2020).

We obtained the research material (quantitative data) necessary to achieve our aim from the database provided by Eurostat, which is the statistical office of the European Union. Eurostat's key role is to provide high-quality European statistics to policymakers, businesses, researchers and the public at large (https://ec.europa.eu/eurostat/web/main/about-us). The study covered cities that serve as European capitals and are also included in the Eurostat database. We identified and qualified a total of 28 European capitals for analysis.

To build the cities' ranking, we used data available in the Eurostat database with the code URB_PERCEP 'perception survey results.' The access path to the database was as follows: data navigation tree location: general and regional statistics > city statistics > city statistics. We derived the individual variables taken from the URB_PERCEP 'perception survey results' from surveys conducted among residents of the selected cities and included values according to a five-point scale: very satisfied, rather satisfied, rather unsatisfied, not satisfied at all, don't know/no answer. The latest available survey data considered in this study were from 2019.

Considering the dimensions of city brand image included in the conceptual model, which became the starting point for the quantitative analyses, we analysed a set of several hundred variables included in Eurostat's URB_PERCEP 'perception survey results' database. In the next step, we selected between three and nine variables for each of the seven dimensions of the city's brand image among its inhabitants (Table 2). We based the variables selection on the results of the literature review. To some extent, we based the selection on our knowledge and experience.

Table 2. Dimensions and criteria of city brand model

Dimension 1. Environment and recreation	**Dimension 2. Refinement and diversity**
X_1 - Green spaces such as public parks or gardens	X_6 - Cultural facilities such as concert halls, theatres, museums and libraries in the city
X_2 - Sports facilities such as sports fields and indoor sports halls in the city	X_7 - a good place to live for racial and ethnic minorities
X_3 - The quality of the air in the city	X_8 - a good place to live for gays and lesbians
X_4 - The noise level in the city	X_9 - a good place to live for immigrants from other countries
X_5 - The cleanliness in the city	X_{10} - Availability of retail shop
Dimension 3. Municipal Facilities	**Dimension 4. Public services**
X_{11} - Public transport in the city, for example, bus, tram or metro	X_{20} - Schools and other educational facilities
X_{12} - When you contact administrative services of this city, they help you efficiently	X_{21} - Health care services, doctors and hospitals
X_{13} - Public spaces in this city such as markets, squares, pedestrian areas	X_{22} - For elderly people a good place to live
X_{14} - Information and services of my local public administration can be easily accessed online	X_{23} - For people in general a good place to live
X_{15} - Public transport Reliable (comes when it says it will)	**Dimension 5. Employment opportunities**
X_{16} - Public transport Affordable	X_{24} - In this city, it is easy to find a good job
X_{17} - Public transport Safe	X_{25} - Your personal job situation
X_{18} - Public transport Easy to get	X_{26} - The financial situation of your household
X_{19} - Public transport Frequent (comes often)	**Dimension 6. Cost-effectiveness**
	X_{27} - In this city, it is easy to find good housing at a reasonable price
	X_{28} - Within the last 12 months, would you say you had difficulties to pay your bills at the end of the month
	X_{29} - You have difficulty paying your bills at the end of the month
	Dimension 7. Security
	X_{30} - You feel safe in this city
	X_{31} - Money or property stolen from you or another household member in your city in the last 12 months
	X_{32} - Being assaulted or mugged in your city in the last 12 months

Source: own study based on www.ec.europa.eu.

RESULTS AND DISCUSSION

The research commenced by calculating the fundamental statistics for 32 indicators, which involved determining the average value (arithmetic mean) and the variability (standard deviation, coefficient of variation). The most diverse indicator was the share of 'being assaulted or mugged in your city' in the last 12 months (86.9%), while the least – 'a good place to live for people in general' (8.0%). Table 3 provides an overview of the statistics for each indicator.

Table 3. Basic statistics of criteria

Dimension	S/D	$\overline{x}$	S_X	V	Max value, city	Min value, city
X_1	S	76.4	18.3	23.9	93.0 Oslo	29.0 Athens
X_2	S	60.3	14.0	23.2	83.2 Zurich	31.0 Rome
X_3	S	58.5	21.3	36,4	91.5 Zurich	19.7 Bucharest
X_4	S	60.7	15.4	25.3	85.7 Dublin	30.7 Bucharest
X_5	S	58.4	21.5	36.8	93.7 Luxemburg	8.2 Rome
X_6	S	79.3	12.7	16.0	94.4 Vienna	33.5 Valletta
X_7	S	72.8	10.4	14.3	88.5 Luxemburg	51.4 Ljubljana
X_8	S	73.3	15.9	21.6	94.1 Oslo	4337 Sofia
X_9	S	68.1	13.7	20.2	87.9 Lisbon	34.2 Sofia
X_{10}	S	83.8	7.7	9.2	95.0 Vilnius	59.0 Madrid
X_{11}	S	72.6	15.7	21.6	96.2 Zurich	25.3 Roma
X_{12}	S	52.5	15.2	29.0	80.0 Luxemburg	27.0 Rome
X_{13}	S	74.5	14.0	18.8	89.0 Zurich	34.4 Athens
X_{14}	S	69.3	9.5	13.8	83.9 Luxemburg	52.2 Rome
X_{15}	S	72.8	16.1	22.2	95.3 Zurich	18.6 Rome
X_{16}	S	71.0	10.8	15.2	88.5 Tallinn	47.1 Zagreb
X_{17}	S	79.0	21.4	27.1	99.2 Berlin	27.4 Copenhagen
X_{18}	S	83.6	6.9	8.2	92.6 Ljubljana	69.0 Warsaw
X_{19}	S	74.4	12.1	16.3	90.2 Copenhagen	45.4 Zagreb
X_{20}	S	64.5	11.1	17.2	85.6 Zurich	44.5 Sofia
X_{21}	S	66.8	17.4	26.1	91.9 Zurich	33.9 Athens
X_{22}	S	73.5	13.9	18.9	96.3 Zurich	42.7 Sofia
X_{23}	S	89.9	7.2	8.0	99.7 Zurich	73.5 Rome
X_{24}	S	42.9	16.8	39.2	76.5 Prague	11.6 Athens
X_{25}	S	54.2	7.2	13.3	64.3 Copenhagen	39.2 Athens
X_{26}	S	71.9	12.2	17.0	88.5 Zurich	33.9 Athens
X_{27}	S	22.9	13.8	60.2	60.4 Athens	8.8 Copenhagen
X_{28}	D	8.7	7.1	81.9	1.3 Stockholm	31.4 Athens
X_{29}	D	28.5	13.9	48.9	8.0 Stockholm	63.0 Athens
X_{30}	S	75.5	16.0	21.2	97.0 Zurich	36.0 Athens
X_{31}	D	17.3	6.9	39.9	6.3 Valletta	41.9 Athens
X_{32}	D	6.2	5.4	86.9	1.4 Valletta	28.7 Athens

Note: $\overline{x}$ – the arithmetic mean; S_X – the standard deviation, V – the variation coefficient.
Source: own study based on Eurostat.

The subsequent step involved the preparation of a decision matrix (X). Following that, we created a normalized decision matrix based on a normalized vector (r). Appendix A presents the normalized decision matrix. We then calculated the weight factors (w) and then derived the weight-normalized decision matrix (V). Appendix B presents the weight-normalized decision matrix.

Subsequently, we calculated the relative closeness coefficient (RC) based on the positive distance (d_i^+) and the negative distance (d_i^-). Table 4 showcases the relative closeness coefficient, positive distance, and negative distance. The relative closeness coefficient values range from 0.0289289 to 0.9605336.

Table 4. The ranking of European capitals

Cities	d^+	d^-	RC	$Rank$
Brussels	0.003458969	0.0841845	0.9605336	1
Sofia	0.002528448	0.003101	0.5508527	2
Berlin	0.085341085	0.0052181	0.0576204	3
London	0.082768598	0.004571	0.0523356	4
Stockholm	0.082552383	0.0044128	0.0507418	5
Budapest	0.083361468	0.0044036	0.050175	6
Warsaw	0.082861566	0.0042876	0.0491988	7
Bratislava	0.082831345	0.0040941	0.0470991	8
Zurich	0.082383955	0.0039685	0.0459567	9
Vilnius	0.082820901	0.0039183	0.0451731	10
Athens	0.083940005	0.0039704	0.0451644	11
Dublin	0.082455158	0.0038531	0.0446433	12
Oslo	0.082447171	0.0038428	0.0445333	13
Vienna	0.082468926	0.0037078	0.0430257	14
Rome	0.083718614	0.0036385	0.0416504	15
Tallinn	0.082742436	0.0033596	0.0390194	16
Copenhagen	0.087268248	0.0033947	0.0374435	17
Lisbon	0.083135533	0.0032301	0.0374001	18
Paris	0.08275252	0.0031469	0.0366342	19
Madrid	0.083380401	0.0030497	0.0352853	20
Bucharest	0.083419465	0.0030475	0.0352449	21
Valletta	0.083134459	0.0029844	0.0346543	22
Amsterdam	0.082748997	0.0028825	0.033662	23
Zagreb	0.083049611	0.0028454	0.0331263	24
Luxembourg	0.082469518	0.0025562	0.0300638	25
Helsinki	0.082667453	0.0024884	0.0292221	26
Prague	0.084721718	0.0025284	0.0289793	27
Ljubljana	0.083154275	0.0024772	0.0289289	28

Source: own study.

We calculated the relative closeness coefficient (RC) for each of the selected European capitals included in the study. Consequently, Brussels emerged as the most desirable city among the alternatives, surpassing its closest competitor, Sofia. On the other hand, Prague and Ljubljana occupied the lowest positions in the ranking.

Table 5 presents the dimensions of the European capitals, showcasing the best city, the worst city, and the average values.

Table 5. City brand dimensions of European capitals

Dimensions	Average	Brussels	Ljubljana
Environment and recreation	0.3973625	0.4553514	0.1956997
Refinement and diversity	0.3699436	0.5713191	0.2269272
Communal amenities	0.3482592	0.5799669	0.2434308
Public services	0.3536706	0.5715781	0.2635297
Employment opportunities	0.0761152	0.9818595	0.0253495
Cost-effectiveness	0.0624603	0.9630858	0.0285076

Source: own study.

In the opinion of the residents of European capitals, in all the dimensions surveyed, Brussels or Sofia comes in first place except for environment and recreation, with Athens in second place behind Sofia, followed by Rome. Berlin appears in the top three within the dimensions of public services and cost-effectiveness. When it comes to the cities that took the lowest places in the ranking, there is a

large variation depending on the given dimension. Within environment and recreation and refinement and diversity, Madrid performed the worst. Municipal facilities and public services were rated the lowest by residents of Ljubljana. In terms of Employment opportunities, Zagreb was the worst, and cost-effectiveness – Warsaw. Helsinki inhabitants declared the lowest level of safety. Table 6 shows the ranking of the best and worst European capitals in the residents' opinion.

Table 6. The best and worst cities in the ranking in terms of individual dimensions

Dimensions	The best cities	The worst cities
Environment and recreation	Sofia, Athens, Rome	Madrid, Ljubljana, Luxembourg
Refinement and diversity	Sofia, Brussels, Athens	Madrid, Amsterdam, Luxembourg
Municipal Facilities	Brussels, Sofia, Budapest	Ljubljana, Prague, Luxembourg
Public services	Sofia, Brussels, Berlin	Ljubljana, Helsinki, Luxembourg
Employment opportunities	Brussels, Sofia, London	Zagreb, Valletta, Bucharest
Cost-effectiveness	Brussels, Sofia, Berlin	Warsaw, Budapest, London
Security	Brussels, Sofia, Luxemburg	Helsinki, Zurich, Copenhagen

Source: own study.

Establishing city rankings serves various purposes, with assessment and competitiveness being among the most prominent reasons (Melo, 2020). Rankings can provide valuable information about a specific city and its performance relative to other places (Brencis & Ikkala, 2013).

In assessing the effectiveness of city branding activities (including those related to building rankings), it is suggested that the adopted indicators take into account both image (emotional) aspects and those related to the assessment of the local quality of life (local satisfaction). This allows for a more comprehensive approach to the impact of the brand on the reality of the territorial unit, which is the city (Augustyn *et al.*, 2017).

Based on this assumption, for the purposes of this article, we built a ranking taking into account residents' level of satisfaction with seven spheres of life in the city. The obtained results showed that the following European capitals were among the top 10 cities whose inhabitants declare the highest level of satisfaction: Brussels, Sofia, Berlin, London, Stockholm, Budapest, Warsaw, Bratislava, Zurich, and Vilnius. When it comes to Brussels, Berlin, London, Stockholm or Zurich, the high positions of these cities in the ranking are not surprising, as confirmed by other rankings (The Global…, Vienna tops…).

However, the high position of cities like Sofia, Budapest, Warsaw, Bratislava, and Vilnius from Central and Eastern Europe is puzzling. It probably results from the fact that the developed ranking was not based on objective variables (available statistics), but only on subjective declarations of residents of individual cities regarding the assessment of given spheres of functioning of the city of their residence. The high ranking of cities in Central and Eastern Europe may result from the lower requirements of their inhabitants as to the local quality of life. Noteworthy, we treated all dimensions of the city's brand included in the ranking equally. Hence, the position of a given city depended equally on economic issues, the availability of green areas, and the level of safety.

CONCLUSIONS

This article utilized ideal solution-based multi-criteria decision-making techniques to assess the brand image of a city as perceived by its inhabitants. By using the TOPSIS technique, we obtained the ranking of selected European capitals in terms of the internal city's brand image. We selected seven criteria to build the ranking showing the diversity in terms of residents' satisfaction with living in the city in the following areas: environment and recreation, refinement and diversity, municipal facilities, public services, employment opportunities, cost-effectiveness, and security.

All city rankings, including the one constructed for the purpose of this article, have managerial implications. They offer valuable insights and strategic guidance for territorial managers, communication experts, urban planners, and decision-makers in general, empowering them to promote, enhance, and add value to their cities (Melo, 2020).

Moreover, this study has several limitations that require consideration. Firstly, the analysis was constrained by the limitations of the Eurostat database, resulting in a limited inclusion of only 28 European capitals. This restricted sample size may not fully capture the diversity and representation of all European capitals. Secondly, the selection of dimensions and indicators to construct the ranking was subjective and based on our decision. This subjectivity may introduce biases or overlook certain important aspects that could have influenced the final results. Moreover, the exclusion of certain indicators that are challenging to obtain might have influenced the ranking's comprehensiveness.

Moreover, the TOPSIS method, while employed in this study, is known to be sensitive due to its normalization and weighting procedures. The outcomes of the ranking may vary depending on the specific choices made during the normalization and weighting process, potentially affecting the overall results and interpretation.

Future research objectives involving the TOPSIS procedure will entail exploring alternative algorithms for normalization and criteria weighting. The authors intend to develop rankings based on other popular MDCM techniques, like DEA, and AHP. In future research, it would be valuable to develop a comparable ranking that considers the city's brand image among tourists or business investors. This would provide additional insights and perspectives on the city's overall branding and attractiveness.

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