ISSN 2067-4082
e-ISSN 2068-9969
L-ISSN 2067-4082

Journal of Urban and Regional Analysis

Volume 17 — Issue 1 — April, 2025

University of Bucharest
Professional Association of Romanian Geographers
www.jurareview.ro

Journal of Urban and Regional Analysis

The review is issued under the aegis and the support of:
Interdisciplinary Centre for Advanced Research on Territorial Dynamics (CICADIT, UB)
Professional Association of Romanian Geographers (APGR)

Journal indexed in:

WEB OF SCIENCE – Emerging Sources Citation Index (ESCI)
SCOPUS
ERIH PLUS
EBSCO Central & Eastern European Academic Source Database Coverage List
ProQuest
Ulrichsweb
Directory of Open Access Journals (DOAJ)
SSOAR – Social Science Open Access Repository (GESIS)
Index Copernicus International
CEEOL – Central and Eastern European Online Library
Crossref
Sherpa Romeo

Volume 17 – Issue 1 – April, 2025

The firm geography of Central and Eastern Europe and the Western Balkans

Judit BERKES[a,b], Ádám PÁTHY[a,b], Ildikó EGYED[b], Szilárd RÁCZ[b]

Email: berkes.judit@sze.hu

[a] Széchenyi István University, Győr, Hungary
[b] Institute for Regional Studies, Hungarian Academy of Sciences, Pécs, Hungary

Abstract: Over the past three decades, significant socio-economic transformations have reshaped the post-socialist states of Central and Eastern Europe. This study examines the geography of firms with over 10 employees across 15 countries: Albania, Austria, Bosnia and Herzegovina, Bulgaria, Croatia, Czechia, Hungary, Kosovo, Montenegro, North Macedonia, Poland, Romania, Serbia, Slovakia, and Slovenia. Using data from over 300,000 firms, the analysis focused on firm size categories, turnover, and activity distribution. The research highlighted disparities between post-socialist and other countries, and it employed descriptive statistics and the framework of agglomeration economies to uncover nuanced spatial patterns. The findings revealed significant differences in business concentration and the functions of small and medium-sized cities, particularly in the regions without a European-scale metropolis, emphasising their role in regional economic and demographic sustainability.

Keywords: post-socialist companies; turnover dynamics; Orbis Europe; Central and Eastern Europe; Western Balkans

Introduction

The evolution of firm geography research has been significant over the years, encompassing various dimensions and perspectives. Early research focused on the spatial dimension of multinational firms, examining the impact of economies of agglomeration and production (Braunerhjelm and Ekholm 1998). Subsequent studies expanded this focus to explore industrial clustering, regional specialisation, and the dynamics of economic networks (Boschma and Frenken 2011, Beugelsdijk and Mudambi 2014). Building on these foundations, this study integrates the concept of agglomeration economies within the post-socialist and non-socialist contexts of Central and Eastern Europe (CEE) to uncover region-specific dynamics in firm geography.

Key studies have emphasised the critical role of firm clustering in enhancing productivity, innovation, and economic growth (Audretsch and Feldman 1996, Geldés

Submitted: 06.07.2024; **Revised:** 05.02.2025; **Accepted:** 13.03.2025

et al. 2017). However, limited attention has been given to the unique characteristics of post-socialist regions, where historical transitions, political structures, and economic reforms have reshaped firm geography. This study addresses this gap by analysing the spatial concentration of firms across 15 countries in CEE and the Western Balkans, incorporating insights from the recent regional development literature (Lang 2015, Rácz 2022).

The research is guided by three primary questions:

- *RQ1:* Is there a typical pattern in the geographic distribution of large corporations by size categories?
- *RQ2:* Is it possible to divide the territory (urban agglomeration, rural area, urban area) based on the activities of the companies?
- *RQ3:* Is there a characteristic concentration of technology and knowledge-intensive sectors in larger geographic areas?

These questions can be better addressed by linking the spatial patterns to theories of regional economic resilience and agglomeration elasticities, providing a more robust framework for interpreting the sectoral dynamics. In this context, the study employs descriptive statistical methods and spatial analysis techniques, utilising the Orbis Europe database as the primary data source. This database provides comprehensive firm-level information, enabling a detailed examination of the distribution of firms by size, activity, and turnover (Bajgar et al. 2020, Egyed and Zsibók 2022). Additionally, spatial measures, such as location quotients and Moran's I index, are applied to identify clustering patterns and regional disparities.

The study contributes to the literature on regional development and economic geography by providing an in-depth analysis of firm geography in a post-socialist context. By focusing on the NUTS3 level, it highlights the economic disparities and structural transformations that characterise the region. The findings aim to inform policymakers about the factors influencing regional economic sustainability and competitiveness, particularly in transitioning economies (Bosker 2009, Cuaresma et al. 2014).

The subject matter of this study is approached differently in this region compared to Western Europe due to distinct operational practices. The border area between Asia and Europe exhibits notable variations. This analysis is not designed to investigate the efficacy of the transition, but rather to emphasise the unique features of this particular area. It is worth noting that comprehensive data is available for the entire Balkan region, which is a departure from previous research.

In the following sections, the paper reviews the theoretical foundations of firm geography. The methodological approach focuses on the NUTS3 level as the primary unit of analysis. However, the literature review delves into the economic characteristics and structure of countries, as well as the factors that contribute to their economic

strength. Particular attention is given to the urban network, which plays a crucial role in shaping the economic landscape of regions. Consequently, further consideration is devoted to the characteristics of the urban network. The study's findings are primarily presented at the NUTS3 territorial level, but the distinctions between urban, agglomeration, and rural areas (based on activity structure) are also emphasised. The study concludes by outlining policy implications and potential avenues for future research.

Literature review

The spatial differentiation of the macro-region

Regional inequalities in CEE have been extensively researched, with a focus on understanding the factors contributing to these disparities (Lang 2015). Localised regional conditions have been identified as key determinants of income differences, with country-specific factors playing a larger role in Eastern Europe (Bosker 2009). Recent empirical research highlights the significant increase in income and wealth inequalities since the fall of socialism, exacerbated by poorly managed transitions to market economies, rising unemployment rates, and declining social capital (Sethi et al. 2017, Brzezinski and Salach 2022).

The economic transition in CEE brought substantial structural changes, yet it also led to uneven regional development. Some regions experienced rapid urbanisation and industrial growth, while others lagged due to insufficient infrastructure and institutional rigidity (Marmot and Bobak 2005, Grillitsch and Asheim 2018).

These disparities are particularly evident when examining the regional distribution of gross domestic product (GDP) across CEE at the NUTS 3 level. The GDP per capita at current market prices in 2020 highlighted significant economic variations both within and between countries in the macro-region (Figure 1), with urbanised and industrial hubs generally exhibiting higher GDP per capita compared to rural and peripheral areas. Regions such as Silesia in Poland and the western parts of Hungary showcased a strong economic performance, driven by industrial and foreign direct investment activities. Conversely, less-developed areas, particularly in Bulgaria and Romania, struggled with lower economic outputs, reflecting the challenges in infrastructure development and their integration into the global markets.

For instance, Poland leveraged the foreign direct investment (FDI) to establish itself as a key player in the automotive and electronics sectors, particularly in regions like Silesia, which became industrial hubs of innovation (Dziemianowicz et al. 2019). Similarly, Czechia benefitted from its strategic location and trade integration within the EU, which fostered advanced manufacturing industries (Arias-Gomez and Antošová 2023). In contrast, Bulgaria and Romania faced slower integration into global value chains due to weaker institutional frameworks and infrastructure limitations (Carstensen and

Toubal 2004). In Hungary, the western regions saw higher economic performance due to their proximity to Austria and Germany, while the eastern regions lagged behind (Lux 2008). This disparity underscores the varying ability of regions to adapt to global economic changes.

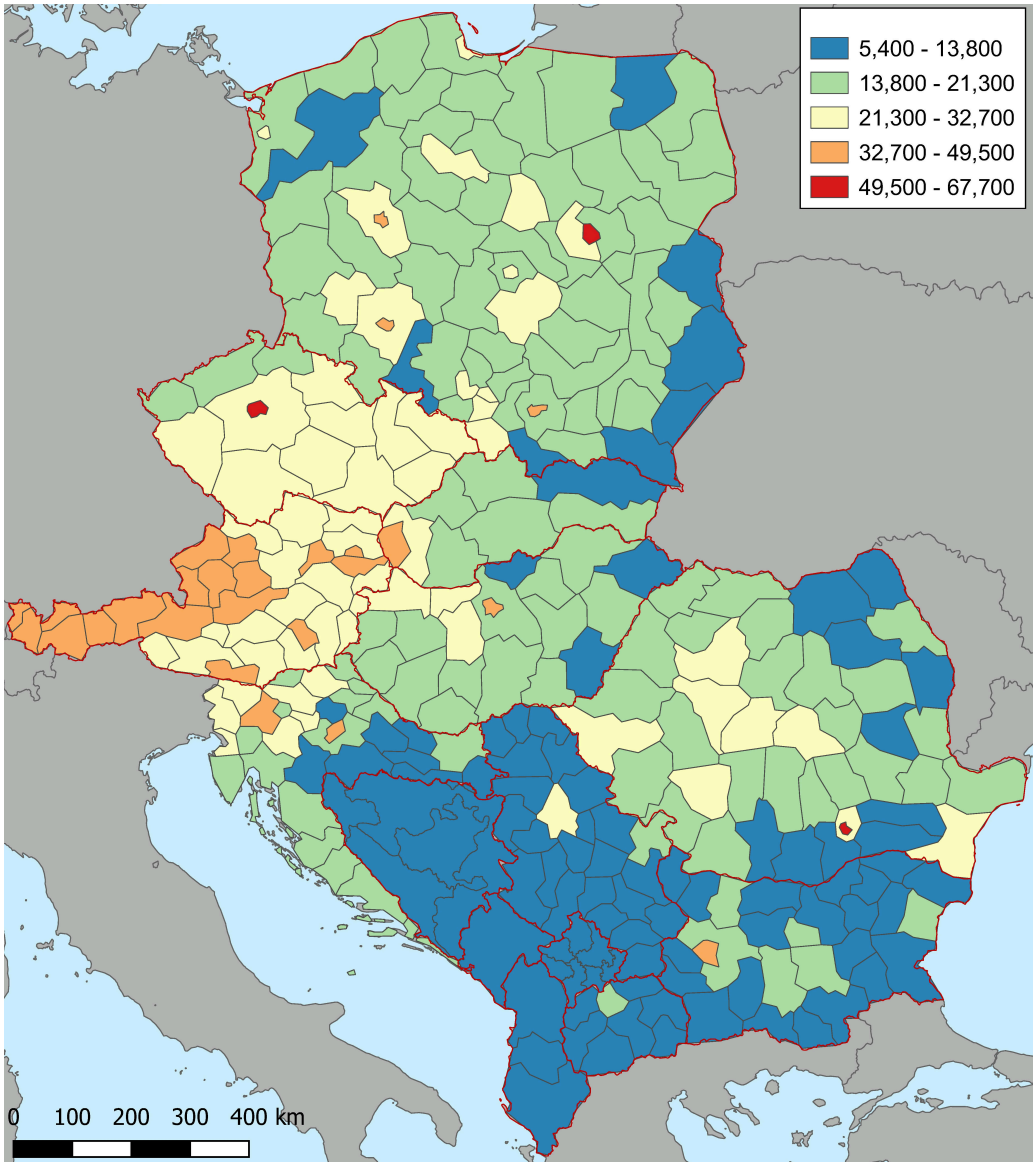

Figure 1. Gross domestic product (GDP) at current market prices by NUTS 3 regions (PPS 2020 per inhabitant)

The historical development of CEE has also profoundly influenced urban and regional growth patterns. Cities such as Prague, Budapest, and Krakow transitioned from their

socialist-era roles as industrial centres to become key nodes in global networks, leveraging their geographic and cultural significance (Lang 2015, Feruni et al. 2020). However, smaller cities and rural areas often lagged behind, leading to pronounced regional disparities (Bajgar et al. 2020). For example, the industrial decline in Northern Hungary left a legacy of economic stagnation, while the revitalisation of Warsaw's financial sector positioned it as a regional hub. Such differences highlight the critical role of localised policy interventions and global market dynamics in shaping development trajectories (Adamowicz 2021). Understanding these urban and regional dynamics is essential for NUTS 3-level analyses, as disparities within broader regions often mask more localised trends that are crucial for effective policymaking.

In addition to economic factors, demographic shifts have played a critical role in shaping regional development. Population decline, aging demographics, and migration patterns have exacerbated uneven development (Marmot and Bobak 2005). Urban areas with diversified economies, such as Warsaw and Budapest, have generally fared better, whereas mono-industrial towns in regions like Eastern Hungary and Southern Romania face significant challenges in attracting investment and sustaining growth (Győri and Egri 2020).

Social capital and community networks often play a critical role in maintaining economic stability in rural areas, albeit on a smaller scale compared to urban centres. Moreover, the increasing focus on sustainability and green infrastructure in urban areas has widened the gap between rural and urban regions, where the latter often lack the resources to compete. For instance, Slovenia has successfully leveraged targeted investments in education and innovation to stabilise its workforce, while Serbia and Bosnia have faced significant challenges in retaining skilled labour due to limited local opportunities and the ongoing phenomenon of brain drain (Matkovski et al. 2022).

The integration of CEE into the European Union brought opportunities for economic convergence but it also highlighted persistent inequalities. EU cohesion policies, aimed at reducing regional disparities, have facilitated improvements in infrastructure and cross-border collaboration. However, these initiatives have often prioritised economic growth over social equity, reinforcing urban-centric development patterns (Avdikos and Chardas 2016). Peripheral regions, particularly rural areas, have struggled to benefit from these policies due to limited institutional capacity and lower levels of investment. At the same time, cross-border projects have opened pathways for knowledge sharing and increased economic interdependence between the neighbouring countries, helping certain regions to overcome isolation. For example, Slovakia demonstrated success in effectively using cohesion funds to enhance infrastructure, while Croatia faced inefficiencies in project implementation. Meanwhile, Romania's southern and eastern regions lagged behind economically despite the national GDP growth. Slovenia, on the other hand, showed balanced development due to targeted policies in education and innovation.

Challenges and opportunities in regional and firm-level dynamics

Firm geography in CEE is shaped by a combination of historical legacies, market conditions, and policy frameworks. Urban regions tend to attract large and knowledge-intensive firms due to better infrastructure, access to skilled labour, and integration into global value chains (Bajgar et al. 2020, Egyed and Zsibók 2022). In contrast, rural and peripheral areas are dominated by micro and small enterprises, which often struggle with limited financial and market access (Avdikos and Chardas 2016). Bridging this gap requires targeted policies to support entrepreneurship, to improve digital infrastructure, and to integrate rural enterprises into broader economic networks. For example, agricultural cooperatives in Poland have successfully connected producers directly with consumers, while digital platforms in Czechia have enhanced rural market access (Kittova and Steinhauser 2018, Matkovski et al. 2022). Enhanced government-backed funding mechanisms have also empowered rural enterprises to enter global markets (Adamowicz 2021).

Agglomeration economies play a pivotal role in shaping firm distribution. Clusters of technology and high-tech industries are predominantly located in regions with strong industrial traditions and strategic geographic positions (Estrin and Uvalic 2014). Hungary, for instance, has attracted significant FDI in automotive manufacturing through targeted incentives and its strategic location, while Romania continues to face challenges in attracting similar investments due to regulatory hurdles (Oates 2011).

Localised innovation spillovers are more pronounced in urban centres, exacerbating the rural-urban divide in economic opportunities. Additionally, multinational corporations often concentrate in regions offering favourable tax incentives, skilled labour pools, and connectivity to global markets, further entrenching geographic inequalities. For example, Bratislava in Slovakia has emerged as a regional innovation hub due to its proximity to Vienna and access to EU research funds (Paunović and Kosanović 2019). Similarly, the city of Cluj-Napoca in Romania has become a technology hub, fostering a vibrant start-up ecosystem despite broader regional disparities (Kashnitsky and Gunko 2016).

CEE and the Western Balkans also showed varying degrees of integration into global value chains. Countries such as Poland, Slovakia, and Czechia have become pivotal players in automotive and electronics manufacturing (Rácz 2019). Simultaneously, the Western Balkans exhibited potential for integration into specialised niches like agribusiness and renewable energy (Matkovski et al. 2022). For example, Serbia's agribusiness sector showed promise, but non-tariff barriers remained a significant obstacle to regional trade (Brankov and Matkovski 2022). Investments in infrastructure, particularly transportation networks such as the Pan-European Transport Corridors, aimed to enhance connectivity and to facilitate trade across the region. However, achieving full integration requires addressing bottlenecks in customs processes, regu-

latory harmonisation, and trade policy alignment with EU standards (Hajdú et al. 2018). Cross-border e-commerce is emerging as a promising avenue, allowing SMEs in peripheral areas to reach new markets while overcoming logistical constraints. Recent policy frameworks, including the EU's Digital Single Market strategy, have sought to address these issues by fostering a harmonised digital environment (Živanović et al. 2024).

Enterprise activity and sectoral diversification

The diversification of firms' main activities varies significantly across the regions of CEE and the Western Balkans, reflecting historical legacies, economic structures, and policy environments. Some regions, such as Silesia in Poland and Northern Hungary, remain concentrated in manufacturing industries, including automotive and heavy industry, leveraging established supply chains and skilled labour pools (Domański and Gwosdz 2018). However, this focus on a narrow range of sectors can make these regions vulnerable to global market fluctuations, which can enhance regional economic resilience and growth potential.

In contrast, urban centres like Prague and Bratislava demonstrated successful diversification into high-value sectors such as IT, finance, and research and development. These cities benefited from their strategic geographic locations, strong infrastructure, and targeted policy interventions (Kashnitsky and Gunko 2016). Meanwhile, rural and peripheral areas, particularly in the Western Balkans, continued to rely heavily on agriculture and low-tech manufacturing. For example, agribusiness dominates in Serbia and North Macedonia, providing stability but limiting technological innovation and integration into global value chains (Jusufi and Bellaqa 2019).

Sectoral diversification played a crucial role in shaping economic resilience. Regions with diverse economic activities, such as Czechia, tended to recover more quickly from economic downturns, thanks to their balanced mix of industries (Zamfir (Avram) et al. 2022). Conversely, mono-industrial regions, including parts of Bulgaria and Romania, often faced economic instability and limited growth opportunities (Dima (Girneata) and Nedelcu 2017).

Labour market dynamics were also significantly influenced by the degree of diversification. Regions offering a variety of employment opportunities are more likely to attract and retain skilled workers, as evidenced in cities like Budapest and Warsaw. On the one hand, these cities not only sustained robust labour markets but they also fostered innovation ecosystems. On the other hand, regions dominated by a single sector frequently experienced higher unemployment rates, exacerbating issues such as outmigration and demographic imbalances (Pastore 2012).

Policies and funding mechanisms played a pivotal role in fostering diversification. EU cohesion policies have been instrumental in supporting small and medium-sized enterprises (SMEs) and infrastructure development. However, the effectiveness of

these policies varies widely. For instance, Slovakia has successfully leveraged EU funds to promote industrial diversification (Šipikal et al. 2017), while less-developed areas in the Western Balkans faced challenges due to limited institutional capacity and administrative inefficiencies (Karini 2017).

The analysis of regional and sectoral dynamics discussed in the literature highlighted the importance of firm-level data in understanding economic disparities and diversification. To further explore these patterns and to provide empirical evidence, this study utilised the Orbis Europe database, which offers a robust foundation for firm-level analysis across the macro-region.

Methodology

The Orbis Europe database is a comprehensive source of financial and ownership information for European firms, both publicly traded and privately held. This database provides high-quality accounting data and it has been widely used in various studies (Bajgar et al. 2020, Cerpentier et al. 2022). The database covers a vast number of companies worldwide, with data on over 130 million firms. Various researchers have utilised Orbis to extract information on productivity, profitability, and firm performance, and it has also been employed to analyse the impact of product market regulations on allocative efficiency and business dynamics (Tenucci and Supino 2020, Egyed and Zsibók 2022).

The coverage of European firms in Orbis is considered unrivalled by other databases. In some respects, the data provided by Orbis Europe should be treated with caution, as there are country-specific regulatory instruments relating to the provision of corporate data that may cause distortions. However, most of these apply to a range of enterprises that are not part of the present analysis (micro-enterprises, non-profit enterprises). Given these concerns, Orbis Europe is a valuable and reliable resource for conducting our analysis.

In this research, data from the Orbis Europe database were used. As criteria for choosing the examined enterprises, we used the legal form, the operating revenue, and the country, based on the conditions shown in Table 1. As we mainly wanted to give an overall picture of territorial structures, we have used the basic data on companies – activity, number of employees, turnover – from the Orbis database. The data referred to the latest available year.

In addition to the Orbis Europe database, data from external data sources and expert classifications (GDP per capita, type of region) were used in the analysis. Individual enterprise data were aggregated at NUTS 3 level. When selecting the territorial level of analysis, our main concern was to ensure that the number of elements per region of the enterprises included in the study was sufficient for the analysis, both for sectoral and typological breakdowns.

Table 1. Orbis Europe search steps and conditions

	Search steps	Conditions
1.	Status	Active
2.	Standardised legal form	Public limited company; Private limited company; Partnership; Branch; Foreign company; Public authority
3.	Operating revenue (Turnover), using estimates (thousand USD)[1]	Last available year; exclusion of companies with no recent financial data; and Public authorities/States/Governments
4.	Number of employees, using estimates	min=10; last available year; exclusion of companies with no recent financial data; and Public authorities/States/Governments
5.	World region /Country/ Region in the country	Albania, Austria, Bosnia and Herzegovina, Bulgaria, Croatia, Czechia, Hungary, Kosovo, Montenegro, North Macedonia, Poland, Romania, Serbia, Slovakia, Slovenia

In addition to a descriptive analysis of the spatial distribution of firms, the analysis focused on efficiency, the differences between different types of regions, the relationship between sectoral structure and economic development, and the spatial concentration of certain sectors. Regarding the distribution of firms by size category, in addition to descriptive statistics, we used the one-way analysis of variance to examine the differences between types of regions. For the spatial distribution of technology- and knowledge-intensive sectors, in addition to the determination of locational quotients, a spatial autocorrelation analysis based on the local Moran indices was carried out.

Territorial concentration, the location quotient, corporate activities, and spatial autocorrelation are important concepts and methods that play a crucial role in the analysis of economic and social processes. The location quotient is a commonly used method for mapping spatial concentration and identifying the role of a particular economic activity in a given region's economy (Vas 2009, Vas et al. 2015, Győri 2021). The analysis of the spatial structure, including the application of the Location Quotient (LQ) and the spatial autocorrelation, is particularly well-suited for examining regions (Győri and Egri 2020). The LQ analysis helps identify the concentration of economic sectors within a region and it provides insights for policymakers to plan and to evaluate regional economic growth based on the regional multiplier effects (Pujiyanto et al. 2022). The study of spatial autocorrelation is also crucial in uncovering spatial disparities and concentrations. Spatial autocorrelation analyses, such as the LISA cluster analysis, help reveal polarised spatial structures and their changes within a country (Pénzes et al. 2018). The application of these methods allows for a better understanding of spatially-based economic and social processes, and the changes that occur within them (Legendre 1993).

[1]Although the inclusion of active enterprises was a primary screening criterion, it was observed that the turnover data for some enterprises was incomplete for the final year within the 2016-2021 timeframe. To address this issue, an imputation method was implemented, whereby the missing data for the final year was supplemented with the closest available data from the preceding years.

The debate between localisation and urbanisation can be examined through the entry of new firms into a region, which serves as a substitute for regional economic growth and it displays the positive effects of both Jacobs- and Marshall-type economies (Beaudry and Schiffauerova 2009). The analysis of the spatial distribution of certain economic activities is of crucial importance from both the perspective of territorial development and economic growth. Through the examination of the spatial distribution of economic activities, clusters, agglomeration benefits, and the economic potential of a specific area can be identified (Szakálné Kanó 2012).

In connection with the subregional economic analysis, location quotas play a vital role in providing a detailed breakdown of economic accounts. As discussed by Sánchez-Chóez et al. (2022), the use of location quotas is essential for a thorough understanding of the economic landscape. Furthermore, the application of the Location Quotient and the Shift-Share Analysis aids in the identification of leading industries within regional economies, which is particularly valuable for the local governments during strategic planning (Maspaitella et al. 2021). Through these methods and investigations, a comprehensive understanding of regional concentration, locational quotients, corporate activity density, and spatial autocorrelation can be obtained, which is crucial for comprehending economic and social processes and for designing effective territorial development plans.

Results

The study area was defined using a broader definition of the CEE region, including the Balkan countries, and Austria, as a reference. First, it is necessary to review the main information of the 15 countries included in the study. Table 2 provides a comprehensive overview of various European countries, encompassing their establishment, international affiliations, territory, population, urbanisation, GDP, and HDI. This information is crucial for understanding the geopolitical landscape and the socioeconomic characteristics of these nations. For example, the data reveals that Poland, with its substantial territory and population, holds a prominent position in the region, as reflected in its high GDP and HDI rankings. But, Kosovo, a relatively new entity, exhibits lower figures across these parameters, indicating its current developing status.

Furthermore, the urbanisation levels of these countries is evidenced and some of them, such as Croatia and Hungary, have relatively high urban population percentages, and significant urban development and associated socio-economic dynamics. Additionally, the affiliations of these countries with the EU and NATO shed light on their geopolitical orientations and alliances, which play a crucial role in shaping international relations and policies. This comprehensive dataset provides valuable insights into the diverse characteristics and positions of these European countries and it serves as a foundational resource for various comparative analyses and research endeavours.

Table 2. Main data on the analysed countries

		Relations		Territory		Population		Urbanisation		GDP		HDI	
Country	Last establishment	EU	NATO	Km²	Rank	Million (2019)	Rank	Urban pop. %	Rank	(PPP c. Int$) Billion (2021)	Rank	Value 2019	Rank
Albania	1912 (Ottoman Emp.)	candidate	member (2009)	28748	141	2.8	140	62.1	95	44	119	0.795	69
Austria	1920 (Austria-Hungary)	candidate	non member	83871	114	8.9	97	58.5	105	537	44	0.922	18
Bosnia and Herzegovina	1992 (SFRY)	potential candidate	candidate	51197	126	3.3	137	49.0	130	52	114	0.780	73
Bulgaria	1908 (Ottoman Emp.)	member (2007)	member (2004)	110879	104	6.9	108	75.6	58	175	73	0.816	56
Croatia	1991 (SFRY)	member (2013)	member (2009)	56594	125	4.0	131	57.6	104	120	85	0.851	43
Czechia	1993 (ČSFR)	member (2004)	member (1999)	78865	116	10.7	87	74.1	61	461	47	0.900	27
Hungary	1920 (Austria-Hungary)	member (2004)	member (1999)	93030	109	9.7	93	71.9	66	343	54	0.854	40
Kosovo	2008 (Serbia)	potential candidate	potential candidate	10908	170	1.8	153	40	est.	22	147	0.787	87
Montenegro	2006 (FRY)	candidate	member (2017)	13812	157	0.6	171	67.5	80	13	155	0.829	48
North Macedonia	1991 (SFRY)	candidate	member (2020)	25713	146	2.1	150	58.5	101	37	129	0.774	82
Poland	1918 (1945)	member (2004)	member (1999)	312658	70	38.2	38	60.0	97	1364	20	0.880	35
Romania	1878 (1920)	member (2007)	member (2004)	238391	82	19.3	62	56.4	111	636	36	0.828	49
Serbia	2006 (FRY)	candidate	potential candidate	77474	117	6.9	107	56.4	111	142	79	0.806	64
Slovak Republic	1993 (ČSFR)	member (2004)	member (2004)	49037	128	5.5	119	53.8	119	190	70	0.860	39
Slovenia	1991 (SFRY)	member (2004)	member (2004)	20273	151	2.1	149	55.1	118	86	97	0.917	22

Source: Own compilation based on EU, NATO, UN, IMF, WB, CIA, and Eurostat data

Table 3 presents the distribution of size, employment and revenue of firms in the 15 surveyed countries. The turnover categories were based on the classical division, which includes the following categories: micro (0-2000 euro); small (2000-10,000 euro); medium (10,000-50,000 euro); and large (over 50,000 euro).

Table 3. Distribution of firms, employment and revenue by country and size category

Country code		Size (%)				Number of firms	Number of firms per 1000 inhabitants
		micro	small	medium	large		
BG – Bulgaria	number	71.3	19.9	6.8	1.9	42041	6.1
	employment	24.7	23.8	25.0	26.5		
	revenue	6.6	13.4	21.9	58.1		
HU – Hungary	number	61.8	27.8	7.8	2.5	40115	4.1
	employment	18.5	19.7	22.2	39.6		
	revenue	4.6	11.0	15.0	69.4		
SI – Slovenia	number	39.8	41.5	14.6	4.0	7746	3.7
	employment	11.1	22.7	24.6	41.5		
	revenue	3.1	13.2	21.6	62.2		
HR – Croatia	number	60.3	28.4	8.9	2.3	13444	3.4
	employment	18.2	21.2	23.6	37.0		
	revenue	6.3	15.7	23.5	54.6		
RO – Romania	number	67.3	23.9	7.0	1.8	56933	2.9
	employment	24.0	22.2	21.7	32.1		
	revenue	7.0	14.3	20.2	58.5		
CZ – Czechia	number	58.2	29.9	10.0	1.9	30538	2.9
	employment	27.7	25.0	20.9	26.4		
	revenue	6.0	16.7	21.3	56.0		
ME – Montenegro	number	65.3	26.2	6.7	1.8	1581	2.6
	employment	25.9	29.1	23.8	21.2		
	revenue	9.9	23.6	27.8	38.7		
MK – North Macedonia	number	73.6	20.3	4.7	1.3	5443	2.6
	employment	34.9	24.5	19.6	21.0		
	revenue	11.4	20.3	22.8	45.4		
AT – Austria	number	22.0	49.3	15.5	13.1	21116	2.4
	employment	2.7	10.4	10.5	76.4		
	revenue	.4	3.4	5.2	91.0		
RS – Serbia	number	61.2	27.8	8.7	2.3	15996	2.3
	employment	19.8	23.7	24.0	32.6		
	revenue	6.5	17.0	25.2	51.4		
SK – Slovakia	number	47.8	36.0	12.3	4.0	12431	2.3
	employment	13.3	21.2	24.1	41.4		
	revenue	2.9	10.6	17.3	69.2		
BA – Bosnia and Herzegovina	number	61.0	29.3	7.9	1.7	6606	2.0
	employment	22.1	28.3	27.2	22.4		
	revenue	8.9	22.8	27.9	40.4		
PL – Poland	number	34.9	39.9	19.1	6.1	53869	1.4
	employment	6.5	16.9	24.7	51.9		
	revenue	1.6	8.6	18.3	71.5		

Country code		Size (%)				Number of firms	Number of firms per 1000 inhabitants
		micro	small	medium	large		
AL – Albania	number	65.7	17.2	12.4	4.8	459	0.2
	employment	32.6	15.2	31.9	20.2		
	revenue	4.7	6.9	30.8	57.6		
KV – Kosovo	number	7.4	53.1	33.2	6.3	252	0.1
	employment	7.4	23.1	29.8	39.7		
	revenue	.4	13.9	37.7	47.9		
Total	number	55.3	30.4	10.7	3.6	308570	
	employment	15.7	19.7	21.9	42.8		
	revenue	3.0	9.3	15.1	72.6		

Source: Own editing based on Orbis Europe

Among the Balkan countries, the situation of Kosovo is specific. Small and medium-sized enterprises (SMEs) are significantly more dominant in Kosovo compared to large and micro companies. While the share of large companies is not negligible, typically concentrated in the Pristina area, the dominance of SMEs is undeniable. Kosovo has grappled with economic challenges due to the Yugoslav wars and subsequent struggles for independence, during which it was challenging for new businesses, particularly SMEs, to establish and to operate. Even today, SMEs often face limited financial resources and restricted access to bank loans or other financial resources, which can impede business growth and development. The size of businesses can be influenced by various factors, including the entrepreneur's professional background and knowledge. If entrepreneurs tend to focus on smaller businesses, this may contribute to the prevalence of SMEs. Additionally, factors such as the economic environment, market needs, and consumer preferences can also impact the size of businesses. It is possible that in Kosovo, smaller enterprises are better suited to the local market conditions and thus they dominate the entrepreneurial sector.

If we look at the size distribution by type of area, there are clear signs of spatial concentration, with the representation of both large and medium-sized firms significantly higher than the average in the metropolitan regions and agglomerations. The same can be said of their share in employment and turnover. It is commonly observed that the largest firms tend to achieve the highest levels of turnover (see Figure A1), although their share of the total is typically the smallest. This phenomenon is particularly pronounced in the case of companies situated on the outskirts of large urban areas. For instance, in Poland, the regions surrounding Warsaw, Katowice, Krakow, and Poznan are particularly noteworthy, while the Plock area also merits mention. In Slovakia and Czechia, the capital city predominates, with the exception of Košice in Slovakia, where the productivity of large companies is particularly notable.

The predominance of economic power among large companies in Austria, as compared to smaller ones, is widely recognised (see Figure A2). This trend is also

evident in Hungary, where the economic disadvantage of large enterprises is particularly pronounced in regions that are already marginalised, fragmented, or lacking in transport infrastructure, such as Nógrád, Zala, and Békés. In contrast, Slovenia and Croatia exhibit a more diverse landscape, with large firms holding a share of economic productivity roughly equal to that of all other categories combined. However, there are exceptions where the cumulative ratio may be significantly higher.

The Balkan countries generally display a lack of distinction between turnover and size (see Figure A3), with the overall turnover of micro, small and medium-sized enterprises being comparable to or even exceeding that of large firms. This can be attributed to both the size class ratios and the tendency of large firms to operate near major cities in order to capitalise on numerous advantages. The situation in Kosovo can be visualised through its 'colourful' diagram, as there is a negligible share of large companies, which in turn contributes to a minimal share of turnover.

Among the CEEan countries, medium and large enterprises exhibit a notably high turnover in Poland and Czechia, with Slovakia also falling within this category (Figure 2). These regions typically boast a strong sector of medium and large enterprises. In the Balkan countries, Bosnia and Herzegovina has caught up with this field. Hungary and Austria present a more diversified landscape. In the capital cities, high turnover is observed in the medium and large enterprise sector, as well as in regions that play a role in transport, such as those along the road network to Germany and those situated close to the capital (Budapest). In Romania and Bulgaria, productivity in the medium and large enterprise sector displays a similar pattern, with a high concentration of these companies in the capital cities and stronger regions. Albania and Kosovo exhibit a greater share of these companies compared to other countries, but their economic strength is not particularly noteworthy.

In addition to the size categories of companies, it is also worth glancing on sectoral specificities and efficiency issues. There are also significant differences in the distribution of enterprises by sector[2] across countries, but when different types of regions are compared, disparities are also apparent (Figure 3)[3]. The capital regions are strikingly differentiated, with industry playing a much smaller role than in the other regions. Also specific are the metropolitan agglomerations, where the share of other private services is prominent, while financial and business services are less present. Overall,

[2]Service activities are divided as follows: service 1 – other private services; service 2 – financial and business services; service 3 – public services.

[3]The types of regions were defined as follows: metropolitan – standalone NUTS 3 regions of capitals with more than one million inhabitants (Belgrade, Bucharest, Budapest, Prague, Sofia, Vienna, Warszawa), plus Bratislava and Zagreb; urban – NUTS 3 regions of cities with more than 250,000 inhabitants (city regions in Poland and Austria; 'standard' NUTS 3 regions in other countries, plus smaller capitals – Ljubljana, Pristina, Skopje, Tirana); agglomeration – NUTS 3 regions containing FUAs of capitals, the surrounding NUTS 3 regions of Polish city-regions, agglomerations of Linz and Graz, NUTS 3 regions of Upper Silesia conurbation, except Katowice; other – all other regions.

the sectoral distribution of the revenue suggests that metropolitan areas and their agglomerations form a well complementary system in terms of their activity structure.

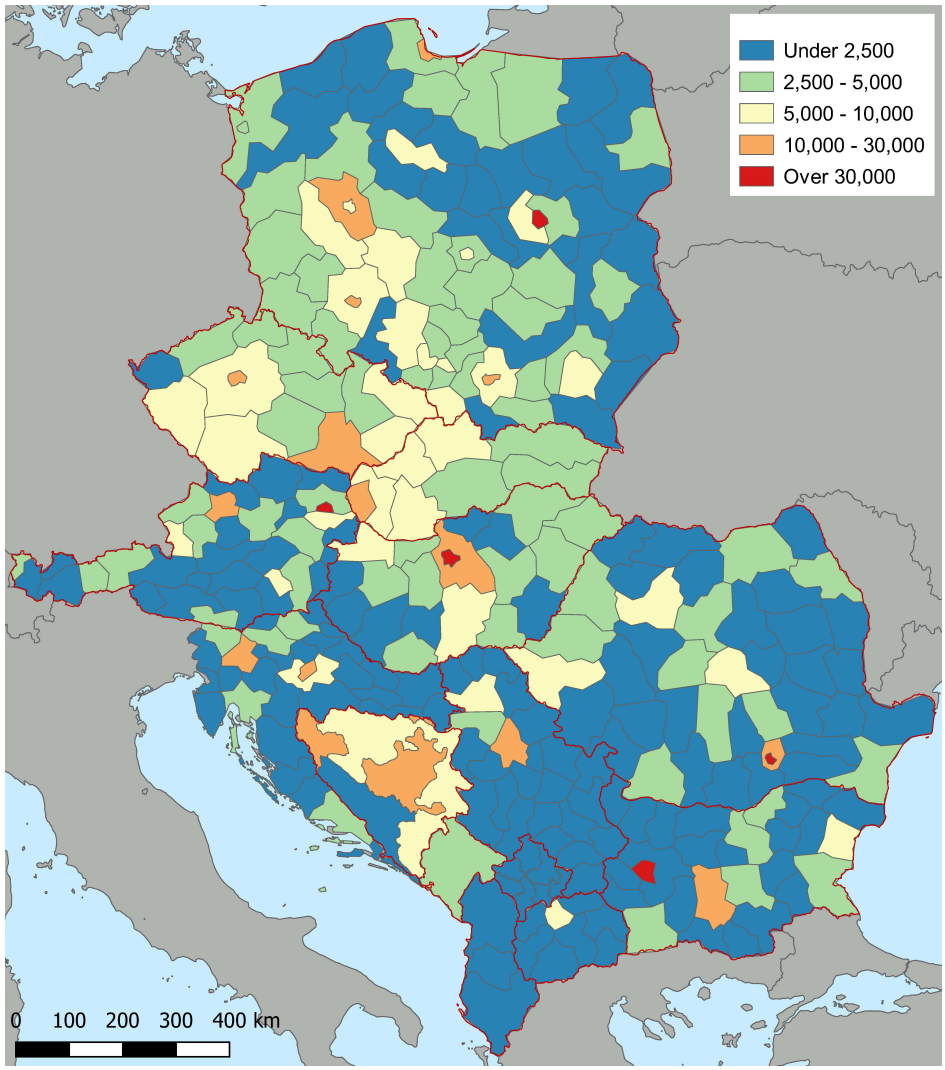

Figure 2. Geographical distribution of turnover produced by medium and large companies (thousand USD, 2021)[4]

Looking at the different indicators of productivity, there is a clear west-east slope. In terms of the simplest productivity indicator (turnover per employee), the last third of the ranking is dominated by the counties of the South-Eastern European region. Among these, it is mainly the peripheral, rural areas that show poor indicators, with only two urban areas (Iasi, Pristina) in the bottom quintile. The majority of the best

[4] See the first footnote.

performing counties are in Austria, while in other countries the capital cities and their agglomerations have favourable indicators (Figure 4).

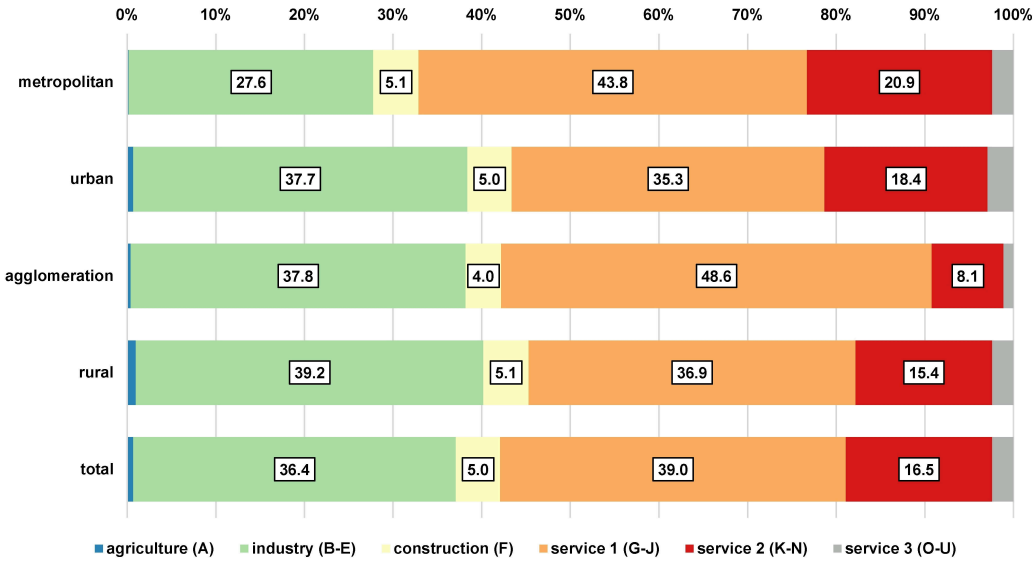

Figure 3. Distribution of enterprises' turnover, by sector in different types of regions

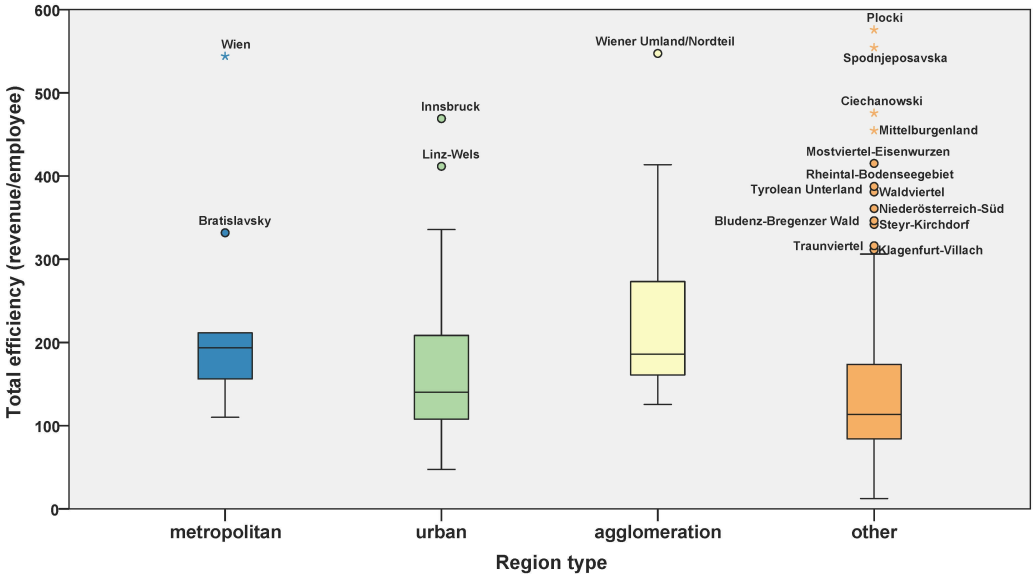

Figure 4. Total productivity (revenue per employee, thousand USD), by types of regions

The top outliers in terms of efficiency from each region category are mainly found among the Austrian counties, with the exception of Bratislava among the capitals.

Other regions (mainly rural) from Poland—Plocki and Ciechanowski—along with one from Slovenia, Spodnjeposavska, also demonstrate high performance. The high performing Austrian counties are characterised by a balanced regional efficiency based on companies (mainly with a commercial, financial services and industrial profile). The aforementioned Slovenian and Polish counties are characterised by the presence of energy suppliers of national importance (Plocki – Orlen; Spodnjeposavska – Krsko Nuclear Plant) or the presence of a large company in a region with a predominantly micro and small business structure (Ciechanowski – LG Electronics Mlawa).

Examining sector-specific productivity indicators reveals a more nuanced picture. Many Polish and Slovak regions record favourable industrial productivity, with a higher proportion of urban and non-metropolitan areas among the top performers. For financial and business services, the advantage of Austrian counties is more pronounced, while for other private services, counties in metropolitan agglomerations perform well above average almost without exception.

The weight of each sector in the regional economy shows significant correlations with the region's level of development. To examine this, the regional GDP indicator was compared with the employment and revenue shares for the second tier of sectors. This allows us to identify those activities whose presence is significantly correlated with regional development. Table 4 shows the sub-sectors with the strongest positive and negative correlations with regional GDP. It can be seen that a significant proportion of the sectors with positive correlations are in financial and business services, and that the main activities in info-communication are included. On the opposite side, the activities with a negative correlation are mainly industrial in nature, and the majority of them are manufacturing activities.

Table 4. Correlation between revenue share of certain sectors[5] and regional GDP (PPS per capita)

Positive sector	Coeff.	Negative sector	Coeff.
Advertising and market research	0.517	Manufacture of food products	–0.309
Management consultancy and head office	0.464	Crop and animal production, farming	–0.289
Financial service	0.451	Water collection, treatment and supply	–0.262
Legal and accounting activities	0.405	Civil engineering	–0.255
Air transport	0.312	Manufacture of wearing apparel	–0.250
Telecommunication	0.291	Manufacture of furniture	–0.196
Publishing	0.278	Manufacture of leather	–0.172
Computer programming and consultation	0.274	Land transport	–0.168
Programming and broadcasting	0.270	Wholesale trade	–0.146
Information service activities	0.262	Manufacture of non-metallic products	–0.144

[5]Sectors with the strongest positive and negative correlation coefficients from all sectors (NACE 2, second level).

The sectors that have a significant impact on territorial development can also be considered as specific in terms of spatial location. If we compare their presence with the type of area, we can see that a significant proportion of the sectors that have a positive impact on development are concentrated in metropolitan areas, while the sectors that have a negative impact are over-represented in rural areas. As an example, Figure 5 shows the relationship between the revenue shares of the strongest positive and negative sectors (Advertising and market research; Manufacture of food products) and regional GDP, with an indication of the types of regions.

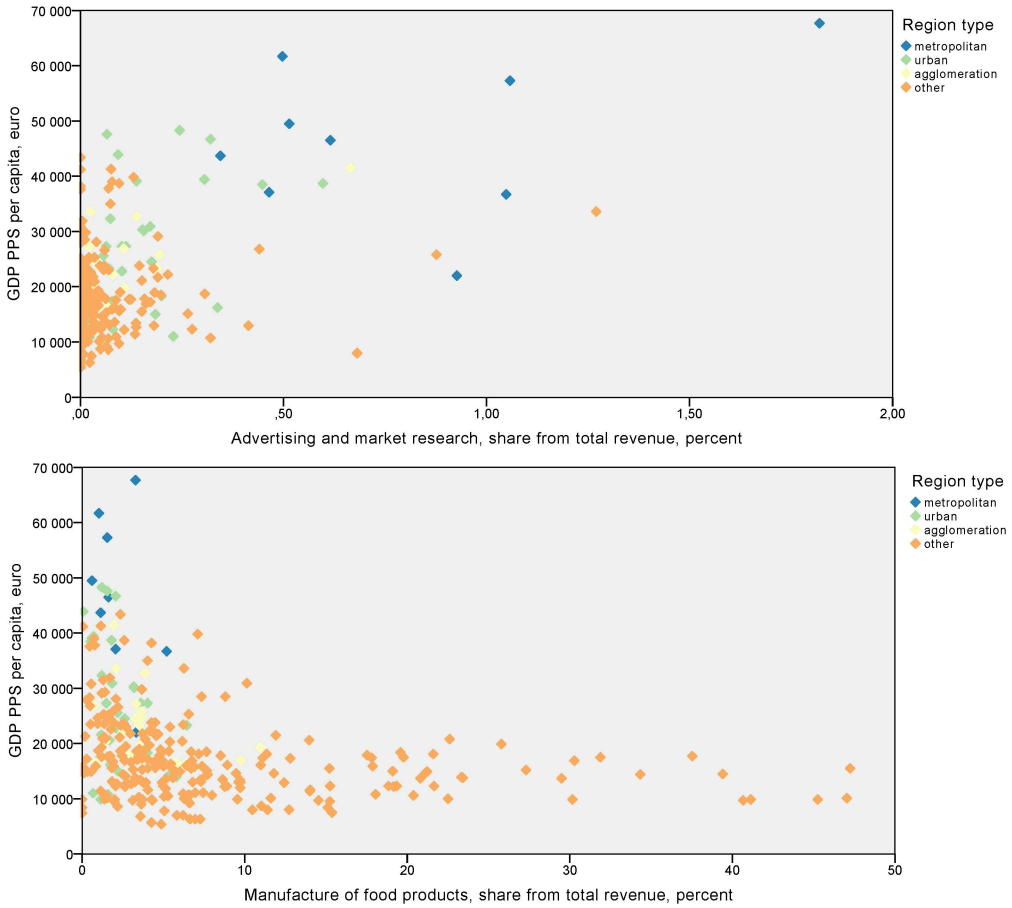

Figure 5. Relationship between revenue shares of selected sectors and regional GDP per capita

The spatial concentration of technology- and knowledge-intensive sectors was examined in two dimensions, looking separately at industrial and service activities, based on the turnover of firms in both categories. In the case of industrial activities, the analysis drew on high- and medium-high technology activities (Eurostat 2024a); while for the services, the analysis drew on the knowledge-intensive services (Eurostat 2024b). The

territorial concentration and agglomeration of the sectors were examined through the location quotient and the local Moran index based on the rook contiguity matrix.

Regarding the high-tech and medium high-tech industrial sectors (Figure 6), it can be established that, on the one hand, the areas with a high location quotient are concentrated in the central part of the region, primarily in Western Hungary and Western Slovakia, and, on the other hand, in the border region of Czechia and Poland, and in Transylvania. Looking at the region as a whole, the picture can be considered polarised, as the concentration of the examined sectors in the periphery (a significant part of the Balkans, areas of Romania outside Transylvania, and Northern Poland) is low. The clusters formed on the basis of territorial autocorrelation outline two larger contiguous hot spots in Hungary and on the border area of Czechia and Poland.

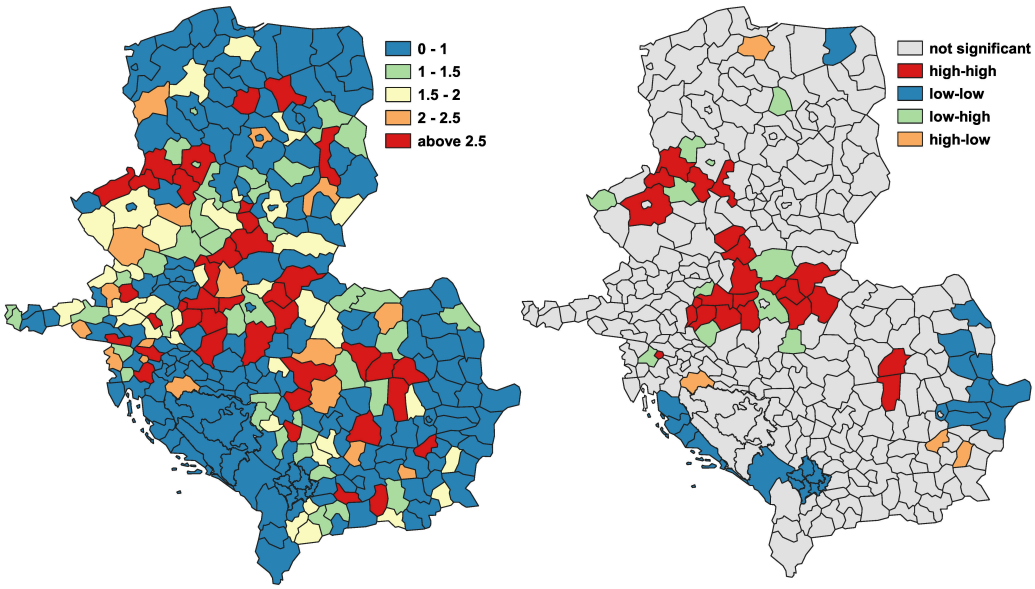

Figure 6. Location quotients and LISA clusters of high- and medium high-tech industries, based on the operating revenue

In the case of knowledge-intensive services (Figure 7), two dimensions of spatial concentration could be identified based on the values of the location quotient. In the case of Austria, there is an almost uniformly high concentration, and only a few regions can be found, mainly in the south-eastern part of the country, where the LQ value remains below 1. The concentration of these sectors in the capital is also clear, as, in addition to Vienna, Prague, Bratislava, Warsaw and Budapest, Pristina and Sofia also have values above 1. The concentration of knowledge-intensive sectors in Poland's big cities (Kraków, Lodz, Poznan, Szczecin, Wroclaw) is also evident. In terms of the agglomeration, a larger contiguous hot spot emerges, which includes not only a large

part of Austria, but also the central areas of Czechia. North-eastern Poland and south-eastern Romania can be identified as more extensive cold spots.

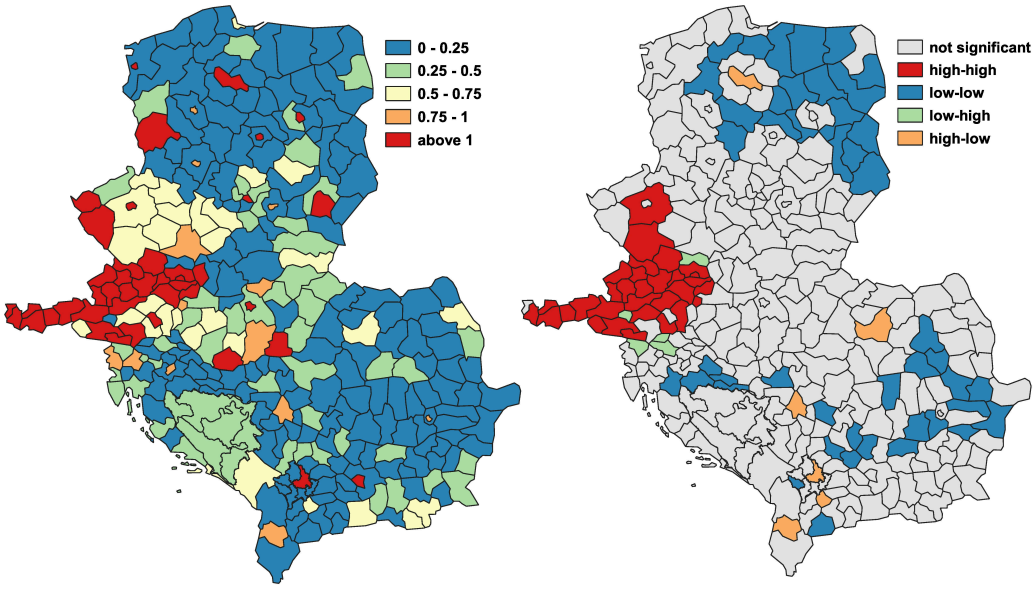

Figure 7. Location quotients and LISA clusters of knowledge-intensive services, based on the operating revenue

Discussion

The evolution of firm geography research has been significant, with various dimensions and perspectives being explored. Previous research (Gal 2013, Egyed and Zsibók 2023, Oberfield et al. 2024) has examined the spatial dimension of multinational firms, the effects of diversification and location strategy on competitiveness, and the relationship between academic institutions and firm geography. Other topics include the determinants of business cooperation (Geldes et al. 2017), agglomeration elasticities, and the economic benefits of business behaviour. The research agenda has shifted towards a firm-centric economic geography approach, and the importance of partnerships in innovation has been emphasised (Andrews et al. 2014, Xu et al. 2024). The economic history of CEE has also undergone noteworthy transformations, with extensive research on the successes and disappointments of the economic transition in the region (Lux 2008, Lang 2015).

This study discusses the characteristics of 15 European countries and it presents data on their socio-economic dynamics and geopolitical landscape. It also provides insights into the distribution of firms by size category in various regions. The research questions may not always receive a definitive answer. Studies have sometimes yielded results that are subject to debate, as typical processes, patterns have been accompanied

by atypical ones. For RQ1, there are two clearly identifiable factors behind the territorial specificities of the location of large companies. The first is the level of development of the different regions within the macro-region, which shows a positive correlation with both the presence and the efficiency of large firms. The other factor is the urban-rural gradient, as the concentration of large firms is more pronounced in urban areas.

Regarding RQ2, it was observed that, for areas with different settlement networks, specific characteristics can be identified in several respects. These include the concentration of large and medium-sized enterprises in the capital cities and their agglomerations. The degree of concentration varies across countries, but it can be seen as a general trend. The sectoral structure also shows differences between the types of regions. For certain services with high added value (e.g. financial services or scientific and professional activities), capital cities are prominent, while agglomerations mainly include supporting service activities (logistics, transport). Rural areas are characterized by a concentrated presence of low-tech, low-intensity, and low-efficiency industry.

Answering RQ3, the spatial concentration and agglomeration of technology- and knowledge-intensive sectors can be clearly perceived, but it shows a slightly different picture in terms of industrial and service activities. In the case of the high-tech industry, centrality does not play a decisive role. It is not primarily the capital and metropolitan regions that are decisive, but rather those areas in which the industrial restructuring processes of the past two decades were more successful and had adequate resources, primarily for the establishment of the vehicle industry and related activities. In the case of knowledge-intensive services, the concentration in the capital and large cities can be clearly observed.

In this more macro-level corporate geography, the corporate organisation, which serves as the most effective management and decision-making centre, is treated as a point. A more detailed exploration of firm interconnections, such as regional clustering and cross-border networks, would enrich the understanding of economic space dynamics. The study faces challenges in revealing certain spatial characteristics, such as ownership characteristics (hierarchies, parent and subsidiary companies, interrelationships, networks), spatiality of production (global value chains, suppliers, added value, site structures), and headquarters characteristics (revenue, profit accounting) within a specific country. Additionally, micro-level studies are necessary to validate the findings of the research.

The Orbis Europe database has also certain limitations. The inclusion of firms in the screening process depends on the regulatory environment of the country and if it had some issues, but mainly in the regard of micro-enterprises not included in this analysis. Moreover, the database is complicated by the issues of "headquarters" and "establishment". In this study, the head office has been taken into account. However, from a methodological standpoint, this approach may differ within countries, but not among them.

Future planned research will concentrate on temporality; how the actual turnover of a company has changed since 2016 and on these modifications by activity. In addition, the exploration of general spatial characteristics provides a starting point for the exploration and analysis of the finer, deeper connections between the sectoral structure and the spatial structure.

Conclusions

Achieving sustainable regional economic growth is an arduous and time-consuming endeavour that necessitates a long-term strategy which is consciously based on local resources. Often, chance plays a significant role, and the competitiveness of numerous regions is attributable to the state's past activities during the periods of decentralisation. State-owned or state-influenced industries often hold a pivotal position.

In most countries, a multi-tiered regional structure has emerged following the political regime changes, with the capital city pursuing a distinct path (metropolitan development model), and regions attracting foreign direct industrial investment (FDI) following diverse development trajectories. However, a substantial portion of CEE comprises peripheral, rural, or so-called transitional regions have shown numerous disadvantages. These disadvantages were present during the market economy transition, and while the presence of foreign capital brought about notable changes, it further exacerbated the disparities. Foreign-owned, incoming companies (sectors) exhibit substantial differences in productivity and knowledge utilisation across various regions (Rácz 2021).

A significant characteristic of regional proximity is that peripheral regions are prevalent along most state borders, and addressing the situation from a bilateral perspective rarely arises as a demand. For instance, the timing and integration of infrastructure connections, such as highway connections in these regions, illustrate the European (industrial relocation) and national (foreign economic, or cohesion) interests.

The need exists for the development of a unique, non-metropolitan and non-FDI-driven sustainable model for the identified regions, which presents a distinct approach to economic and competitive growth, rather than pursuing unattainable objectives. This new economic model can inform the process of regional reindustrialisation and structural transformation, but it cannot provide a general or exclusive development path which generates sufficient growth potential. The limited availability of key resources, such as intellectual capital and new knowledge, spatially and quantitatively concentrated, restricts the potential for exclusive growth. In this context, the settlement structure of a given region or country is critical. The urban network, which serves as the starting point for future initiatives, is a stable system that only evolves gradually over time (Rácz and Egyed 2022).

In regions without a European-scale developed major city, the function of small and medium-sized towns differs significantly. The change in political regime has significantly reduced the economic and employment functions of these towns, which are situated outside the core regions, major European cities, and capitals. As economic and employment functions, especially those related to the new economy, concentrate in these urban centres, they have become increasingly reliant on state or European Union funding, especially for their higher education institutions and research centres. This brain drain phenomenon disproportionately affects the cities located in sparser territorial structures on the periphery. This sustainability challenge is common in the examined region, as the second-tier function and size of the post-socialist urban network are relatively small compared to the capitals, except for Poland and Romania.

Acknowledgements

This research was supported by the National Research, Development and Innovation Office (NKFIH), Hungary, through the OTKA grant #134900 (The development processes of Central and Southeast European cities), and grant #146585 (Hungary and the Western Balkans).

References

ADAMOWICZ M. (2021) The Potential for Innovative and Smart Rural Development in the Peripheral Regions of Eastern Poland, Agriculture 11 (3), 188, https://doi.org/10.3390/agriculture11030188.

ARIAS-GOMEZ H. Y., ANTOŠOVÁ G. (2023) Regional manufacturing in the Czech Republic, Urban, Planning and Transport Research 11 (1), 2222154, https://doi.org/10.1080/21650020.2023.2222154.

ANDREWS D., CRISCUOLO C., MENON C. (2014) Do Resources Flow to Patenting Firms? Cross-Country Evidence from Firm Level Data, OECD Publishing, Paris, https://doi.org/10.1787/5jz2lpmk0gs6-en.

AUDRETSCH D. B., FELDMAN M. P. (1996) R&D Spillovers and the Geography of Innovation and Production, The American Economic Review 86 (3), 630-640.

AVDIKOS V., CHARDAS A. (2016) European Union Cohesion Policy Post 2014: More (place-based and conditional) Growth – Less redistribution and cohesion, Territory, Politics, Governance 4 (1), 97-117, https://doi.org/10.1080/21622671.2014.992460.

BAJGAR M., BERLINGIERI G., CALLIGARIS S., CRISCUOLO C., TIMMIS J. (2020) Coverage and Representativeness of Orbis Data, OECD Science, Technology and Industry Working Papers, 2020/06, OECD Publishing, Paris, https://doi.org/10.1787/c7bdaa03-en.

BEAUDRY C., SCHIFFAUEROVA A. (2009) Who's Right, Marshall or Jacobs? The localization versus urbanization debate, Research Policy 38 (2), 318-337, https://doi.org/10.1016/j.respol.2008.11.010.

BEUGELSDIJK S., MUDAMBI R. (2014) MNEs as Border-Crossing Multi-Location Enterprises: The Role of Discontinuities in Geographic Space, in: Cantwell J. (ed.), Location of International Business Activities, Palgrave Macmillan, London, pp. 8-34, https://doi.org/10.1057/9781137472311_2.

BOSCHMA R., FRENKEN K. (2011) Technological relatedness and regional branching, in: Bathelt H., Feldman M. P., Kogler D. F. (eds.), Beyond Territory: Dynamic Geographies of Knowledge Creation, Diffusion, and Innovation, Routledge, Abingdon, pp. 64-81, https://doi.org/10.4324/9780203814871.

BOSKER M. (2009) The Spatial Evolution of Regional GDP Disparities in the 'Old' and the 'New' Europe, Papers of the Regional Science 88 (1), 3-28, <https://doi.org/10.1111/j.1435-5957.2008.00183.x>.

BRANKOV T., MATKOVSKI B. (2022) Is a Food Shortage Coming to the Western Balkans?, Foods 11 (22), 3672, https://doi.org/10.3390/foods11223672.

BRAUNERHJELM P., EKHOLM K. (1998) The Geography of Multinational Firms, Springer, New York, https://doi.org/10.1007/978-1-4615-5675-6.

BRZEZINSKI M., SALACH K. (2022) Determinants of Inequality in Transition Countries, IZA World of Labor, 496, https://doi.org/10.15185/izawol.496.

CARSTENSEN K., TOUBAL F. (2004) Foreign direct investment in Central and Eastern European countries: a dynamic panel analysis, Journal of Comparative Economics 32 (1), 3-22, https://doi.org/10.1016/j.jce.2003.11.001.

CERPENTIER M., VANACKER T., PAELEMAN I., BRINGMANN K. (2022) Equity Crowdfunding, Market Timing, and Firm Capital Structure, The Journal of Technology Transfer 47, 1766-1793, https://doi.org/10.1007/s10961-021-09893-y.

CUARESMA J. C., DOPPELHOFER G., FELDKIRCHER M. (2014) The Determinants of Economic Growth in European Regions, Regional Studies 48 (1), 44-67, https://doi.org/10.1080/00343404.2012.678824.

DIMA (GIRNEATA) A., NEDELCU M. (2017) Competitiveness Analysis of the Romanian Economy, LUMEN Proceedings 1, 198-209, https://doi.org/10.18662/lumproc.rsacvp2017.19.

DOMAŃSKI B., GWOSDZ K. (2018) Changing Geographical Patterns of Automotive Industry in Poland, Studies of the Industrial Geography Commission of the Polish Geographical Society 32 (4), 193-204, https://doi.org/10.24917/20801653.324.12.

DZIEMIANOWICZ W., ŁUKOMSKA J., AMBROZIAK A. (2019) Location factors in foreign direct investment at the local level: the case of Poland, Regional Studies 53 (8), 1183-1192, https://doi.org/10.1080/00343404.2018.1530750.

EGYED I., ZSIBÓK Z. (2022) Labour Productivity in a Central and Eastern European Secondary City – Evidence from Regional and Firm-Level Data, Acta Universitatis Sapientiae. European and Regional Studies 22, 14-33, https://doi.org/10.2478/auseur-2022-0007.

EGYED I., ZSIBÓK Z. (2023) Exploring firm performance in Central and Eastern European regions: a foundational approach, Hungarian Geographical Bulletin 72 (3), 257-285, https://doi.org/10.15201/hungeobull.72.3.4.

ESTRIN S., UVALIC M. (2014) FDI into transition economies: Are the Balkans different?, Economics of Transition 22 (2), 281-312, https://doi.org/10.1111/ecot.12040.

EUROSTAT (2024a) Glossary: High-tech classification of manufacturing industries, Statistics Explained, Retrieved from: ec.europa.eu/eurostat/statistics-explained.

EUROSTAT (2024b) Glossary: Knowledge-intensive services (KIS), Statistics Explained, Retrieved from: ec.europa.eu/eurostat/statistics-explained.

FERUNI N., HYSA E., PANAIT M., RĂDULESCU I. G., BREZOI A. (2020) The Impact of Corruption, Economic Freedom and Urbanization on Economic Development: Western Balkans Versus EU-27, Sustainability 12 (22), 9743, https://doi.org/10.3390/su12229743.

GAL P. N. (2013) Measuring total factor productivity at the firm level using OECD-ORBIS, OECD Publishing, Paris, https://doi.org/10.1787/5k46dsb25ls6-en.

GELDES C., HEREDIA J., FELZENSZTEIN C., MORA M. (2017) Proximity as Determinant of Business Cooperation for Technological and Non-Technological Innovations: A Study of an Agribusiness Cluster, Journal of Business & Industrial Marketing 32 (1), 167-178, https://doi.org/10.1108/jbim-01-2016-0003.

GRILLITSCH M., ASHEIM B. (2018) Place-based innovation policy for industrial diversification in regions, European Planning Studies 26 (8), 1638-1662, https://doi.org/10.1080/09654313.2018.1484892.

GYŐRI T. (2021) Az álláskeresők iskolai végzettség szerinti koncentrációjának vizsgálata a XXI. század gazdasági recesszióinak kezdetén (An examination of the concentration of school attendance among those seeking employment at the beginning of the economic recession of the 21st century), Észak-

Magyarországi Stratégiai Füzetek 18 (1), 38-48, https://doi.org/10.32976/stratfuz.2021.18.

GYŐRI T., EGRI Z. (2020) A munkanélküliek – mint potenciális munkaerő-tartalék – térszerkezetének vizsgálata Békés megyében, Studia Mundi – Economica 7 (2), 2-17, https://doi.org/10.18531/Studia.Mundi.2020.07.02.2-17.

HAJDÚ Z., HORECZKI R., RÁCZ S. (2018) Changing settlement networks in Central and Eastern Europe with special regard to urban networks, in: Lux G., Horváth G. (eds.), The Routledge Handbook to Regional Development in Central and Eastern Europe, Routledge, London, pp. 123-140, https://doi.org/10.4324/9781315586137-8.

JUSUFI G., BELLAQA B. (2019) Trade Barriers and Exports Between Western Balkan Countries, Naše Gospodarstvo/Our Economy 65 (4), 72-80, https://doi.org/10.2478/ngoe-2019-0021.

KARINI A. (2017) Facilitators and Constraints of Policy Learning for Administrative Capacity in the Western Balkans, NISPAcee Journal of Public Administration and Policy 10 (2), 73-92, https://doi.org/10.1515/nispa-2017-0012.

KASHNITSKY I., GUNKO M. (2016) Spatial variation of in-migration to Moscow: Testing the effect of housing market, Cities 59, 30-39, https://doi.org/10.1016/j.cities.2016.05.025.

KITTOVA Z., STEINHAUSER D. (2018) The International Economic Position of Western Balkan Countries in Light of their European Integration Ambitions, Journal of Competitiveness 10 (3), 51-68, https://doi.org/10.7441/joc.2018.03.04.

LANG T. (2015) Socio-Economic and Political Responses to Regional Polarisation and Socio-Spatial Peripheralisation in Central and Eastern Europe: A Research Agenda, Hungarian Geographical Bulletin 64 (3), 171-185, https://doi.org/10.15201/hungeobull.64.3.2.

LEGENDRE P. (1993) Spatial Autocorrelation: Trouble or New Paradigm?, Ecology 74 (6), 1659-1673, https://doi.org/10.2307/1939924.

LUX G. (2008) Industrial development, public policy and spatial differentiation in Central Europe: Continuities and change. Discussion Papers 62, Centre for Regional Studies of the Hungarian Academy of Sciences, Pécs.

MARMOT M., BOBAK M. (2005) Social and Economic Changes and Health in Europe East and West, European Review 13 (1), 15-31, https://doi.org/10.1017/s1062798705000037.

MASPAITELLA M., PARINUSSA S. M., TEWERNUSA K. I. (2021) Applying Location Quotient and Shift-Share Analysis in Determining Leading Sectors in Teluk Bintuni Regency, Journal of Developing Economies 6 (1), 55-65, https://doi.org/10.20473/jde.v6i1.22182.

MATKOVSKI B., ZEKIĆ S., JURJEVIĆ Ž., ĐOKIĆ D. (2022) The Agribusiness Sector as a Regional Export Opportunity: Evidence for the Vojvodina Region, International Journal of Emerging Markets 17 (10), 2468-2489, https://doi.org/10.1108/ijoem-05-2020-0560.

OBERFIELD E., ROSSI-HANSBERG E., SARTE P. D., TRACHTER N. (2024) Plants in Space, Journal of Political Economy 132 (3), 867-909, https://doi.org/10.3386/w27303.

OATES W. E. (2011) Fiscal Federalism, Edward Elgar Publishing, Cheltenham.

PASTORE F. (2012) Primum vivere. . . industrial change, job destruction and the geographical distribution of unemployment, IZA Journal of European Labor Studies 1, 7, https://doi.org/10.1186/2193-9012-1-7.

PAUNOVIĆ S., KOSANOVIĆ R. (2019) Further milestones in the economic development of south-eastern Europe, SEER Journal for Labour and Social Affairs in Eastern Europe 22 (1), 33-52, https://doi.org/10.5771/1435-2869-2019-1-33.

PÉNZES J., KISS J. P., DEÁK A., APÁTI N. (2018) Térségi sokszínűség és stabilitás: az iskolázottság települési szintű egyenlőtlenségeinek változása Magyarországon 1990–2011 között (Territorial diversity and stability: changes in settlement-level inequalities in education in Hungary between 1990–2011), Területi Statisztika 58 (6), 567-594, https://doi.org/10.15196/TS580602.

PUJIYANTO M. A., DARWANTO D. H., MULYO J. H. (2022) Leading Agricultural Subsectors in South Sumatra

Province Before and During the COVID-19 Pandemic, Agro Ekonomi 33 (1), 45-59, https://doi.org/10.22146/ae.72177.

RÁCZ S. (2021) Regionális központok innovációs potenciálja Közép- és Délkelet-Európában (Innovation potential of regional centers in Central and Southeastern Europe), in: Új Nemzeti Kiválóság Program (New National Excellence Program Study), Széchenyi István Egyetem, Győr, pp. 279-286.

RÁCZ S. (2022) Közép- és délkelet-Európa az ezredforduló óta (Central and Southeastern Europe since the turn of the millennium), in: Nemes Nagy J., Pálné Kovács I. (eds.), A regionalizmus: az elmélettől a gyakorlatig: Illés Iványra emlékezve 80. születésnapja alkalmából (Regionalism: from theory to practice: Remembering Iván Illés on the occasion of his 80th birthday), IDResearch Kft & Publikon, Pécs, pp. 59-71.

RÁCZ S., EGYED I. (2022) Territorial disparities and economic processes in Hungary: Editorial, DETUROPE - The Central European Journal of Regional Development and Tourism 14 (3), 4-14, https://doi.org/10.32725/det.2022.019.

SÁNCHEZ-CHÓEZ N. G., PEREIRA-LÓPEZ X., FERNÁNDEZ-FERNÁNDEZ M. (2022) A Modification of the Cross-Industry Location Quotient for Projecting Sub-Territorial Input-Output Tables, Revista de Economía Mundial 62, 25-50, https://doi.org/10.33776/rem.vi62.5130.

SETHI D., ALDRIDGE E., RAKOVAC I., MAKHIJA A. (2017) Worsening Inequalities in Child Injury Deaths in the WHO European Region, International Journal of Environmental Research and Public Health 14 (10), 1128, https://doi.org/10.3390/ijerph14101128.

ŠIPIKAL M., ŠIRAŇOVÁ M., NÉMETHOVÁ V. (2017) Evaluation of innovation support from EU funds in the manufacturing of wood and wood products in the Slovak Republic, Acta Facultatis Xylologiae Zvolen 59 (2), 167-180, https://doi.org/10.17423/afx.2017.59.2.16.

SZAKÁLNÉ KANÓ I. (2012) Gazdasági tevékenységek térbeli eloszlásának vizsgálata a magyar kistérségek példáján (Examining the spatial distribution of economic activities using the example of Hungarian micro-regions), University of Szeged, Szeged, https://doi.org/10.14232/phd.1643.

TENUCCI A., SUPINO E. (2020) Exploring the Relationship Between Product-Service System and Profitability, Journal of Management & Governance 24, 563-585, https://doi.org/10.1007/s10997-019-09490-0.

VAS Z. (2009) Közelség és regionális klaszterek: a szoftveripar Szegeden (Proximity and regional clusters: the software industry in Szeged), Tér és Társadalom 23 (3), 127-145, https://doi.org/10.17649/TET.23.3.1261.

VAS Z., LENGYEL I., SZAKÁLNÉ KANÓ I. (2015) Regionális klaszterek és agglomerációs előnyök: Feldolgozóipar a magyar városrégiókban (Regional clusters and agglomeration advantages: Manufacturing industry in Hungarian urban regions), Tér és Társadalom 29 (3), 49-72, https://doi.org/10.17649/TET.29.3.2697.

XU J., HUANG G., XUE D., YE Y. (2024) Beyond regional endogenous and firm-centric accounts: Contextualizing multiple and multiscalar industrial branching mechanisms for the emergence of biotechnology industries in Guangzhou, China, Applied Geography 163, 103186, https://doi.org/10.1016/j.apgeog.2023.103186.

ZAMFIR (AVRAM) E.-M., BALABAN G., MARINESCU C. (2022) Economic resilience in Central and Eastern European countries, Theoretical and Applied Economics 29 (1), 5-26.

ŽIVANOVIĆ Z., TOŠIĆ B., MIRIĆ N., VRAČEVIĆ N. (2024) The Nature of Urban Sprawl in Western Balkan Cities, International Journal of Urban Sciences 28 (1), 1-20, https://doi.org/10.1080/12265934.2022.2154692.

Appendix

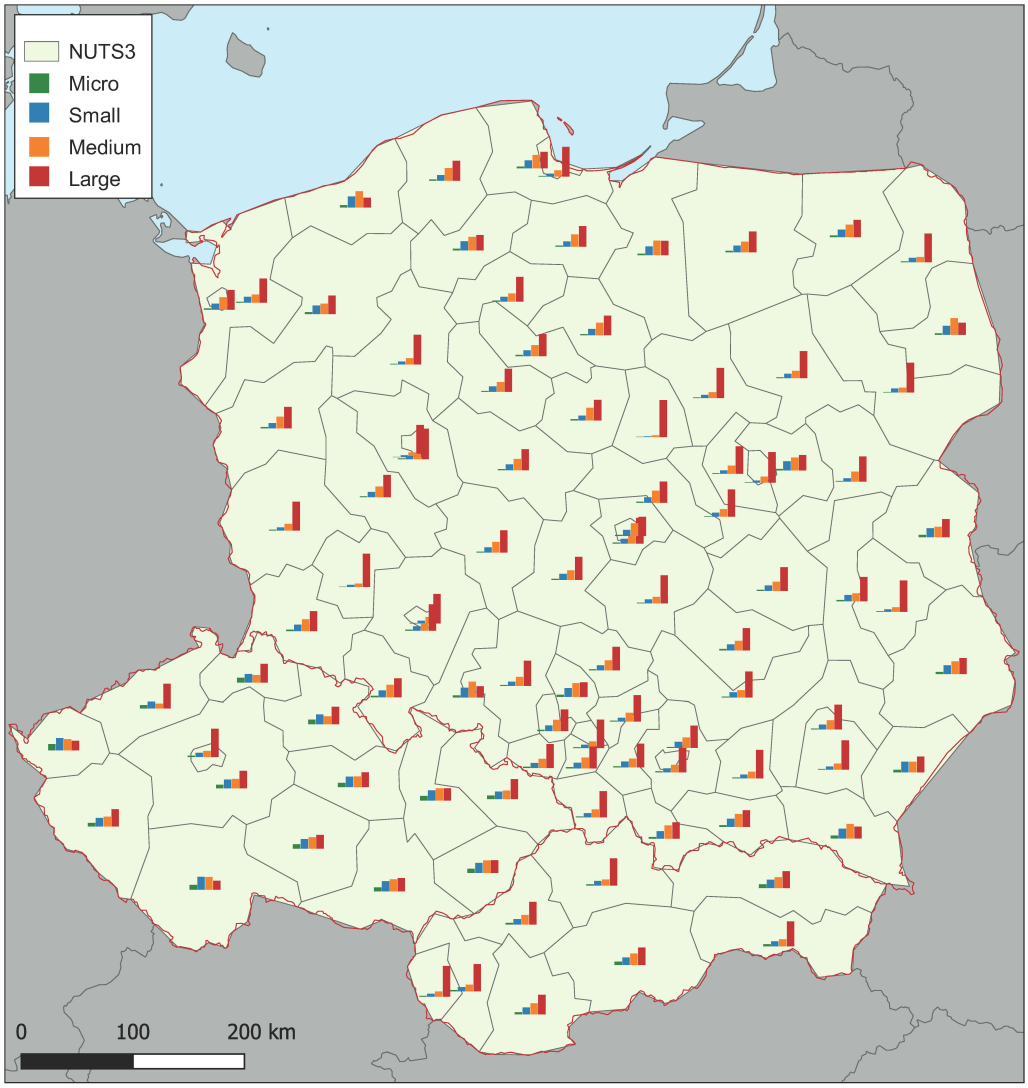

Figure A1. Size of enterprises and distribution of turnover in Poland, Czechia and Slovakia

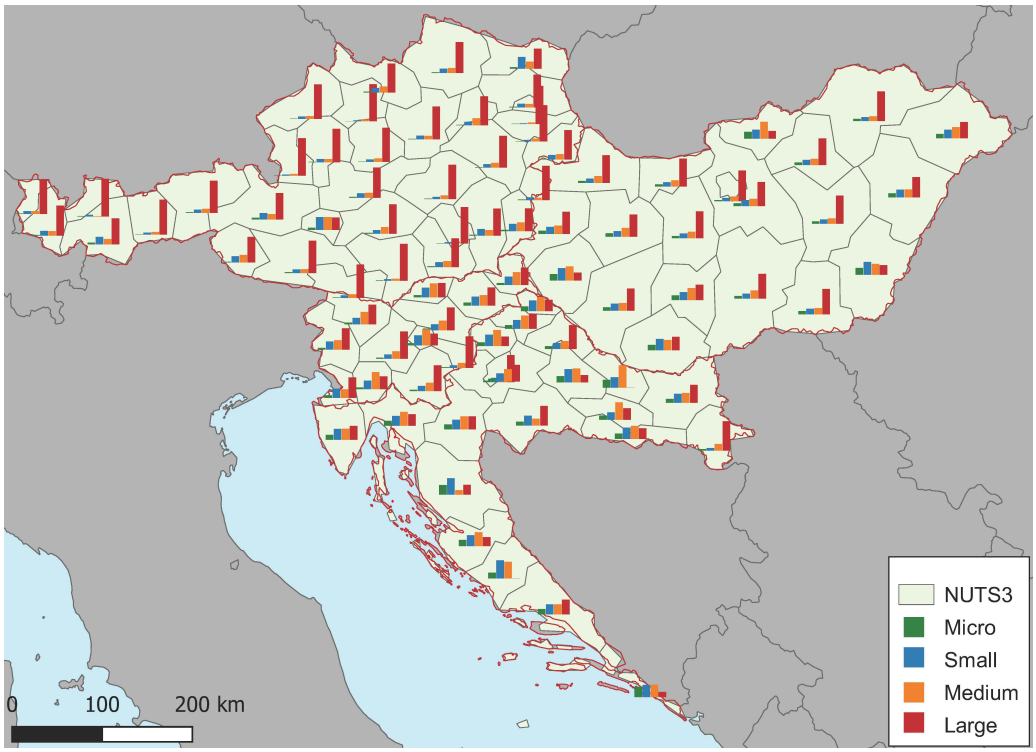

Figure A2. Size of enterprises and distribution of turnover in Austria, Hungary, Slovenia and Croatia

Figure A3. Size of enterprises and distribution of turnover in the Balkans[1]

[1] As a result of the limited number of firms in Albania, it has been deemed appropriate to utilise NUTS2 (3 divisions) instead of the NUTS3 (12 divisions) levels.

Exploring User Nature Experience in Urban Green Spaces through Biophilic Design

Büşra ÜSTÜNDAĞ[a], Koray VELIBEYOĞLU[b]

Email: busra.ustundag@hdr.qut.edu.au

[a] Queensland University of Technology, Australia
[b] Izmir Institute of Technology, Izmir, Türkiye

Abstract: Increasing urbanisation limits human interaction with natural environments, underscoring the critical importance of urban green spaces for daily nature engagement. Biophilic design, which focuses on enhancing human interactions with nature in the built environment, provides an opportunity to fosterthis engagement. This study investigates how the characteristics of urban green spaces impact the users' nature experiences within the experience-based framework of biophilic design. Focusing on three neighbourhood parks in the Bostanlı neighbourhood of Karşıyaka district, Izmir (Türkiye), the research evaluates nature experiences at both environmental and individual levels. The environmental level analysis assessed the nature experience potential of each park, while a nature experience workshop gathered insights into individual nature experiences. The findings indicate that nature experiences in urban green spaces are influenced by a combination of individual and environmental factors, challenging the effectiveness of a uniform approach in the design of these spaces. The study also provides empirical evidence that specific park characteristics—such as quietness, vegetation, size, accessibility, and sense of place—influence the users' nature experiences. This research highlights the value of the experience-based framework of biophilic design for understanding and enhancing user-nature interactions and it underscores its importance in guiding future urban green space planning and design strategies.

Keywords: biophilic design; nature experience; park characteristics; urban green space

Introduction

Numerous studies have emphasised the positive impacts of natural environments on individuals, particularly in terms of improving cognitive function, enhancing attention capacity, and reducing negative emotions (Kaplan and Kaplan 1989, Ulrich 1993, Bratman et al. 2012). These benefits demonstrate the importance of maintaining engagement with natural environments in cities. However, the connection with the natural world is gradually diminishing due to rapid urbanisation, changing lifestyles,

Submitted: 21.05.2024; **Revised:** 09.09.2024; **Accepted:** 09.12.2024

and technological advancements (Clayton et al. 2017, Schweitzer et al. 2018). Therefore, the decline in the individuals' exposure to natural environments prevents the potential benefits derived from such experiences. Moreover, the decrease in contact with nature gradually weakens individuals' emotional connection to nature (Soga and Gaston 2016). This disconnection complicates understanding the interdependence between humans and non-human beings.

Urban green spaces (UGS) serve as the primary areas that enable nature experiences in cities (Razak et al. 2016, Song et al. 2020). However, the lack of a comprehensive understanding of UGS characteristics restricts effective planning and their capacity to fulfil vital environmental roles (Wang 2009). Previous studies have investigated the impacts of UGS characteristics on various aspects, including well-being (Maurer et al. 2021), physical activity (Rivera et al. 2021), social interaction (Rasidi et al. 2012), aesthetic preference, and perceived restorativeness (Wang et al. 2019). Despite the growing interest in understanding these effects, there has been comparatively less attention directed towards investigating the relationship between UGS characteristics and the experience of nature. Additionally, there is a lack of interest in studies that examine UGS from the perspective of a design approach promoting the experience of nature.

This study delves into the influence of the characteristics of UGS on the user's experience of nature. This investigation is conducted within the framework of a biophilic design approach that focuses on increasing human interaction with nature in the built environment. The main purpose of biophilic design is to encourage human interaction with nature by integrating natural elements into the built environment (Kellert 2008). In this regard, Kellert's (2018) experience-based framework of biophilic design, which consists of three experiences and 25 attributes, provides designers with a wide range of options to integrate suitable natural elements for different built environments. The widespread use of the biophilic design approach in urban spaces, especially in UGS, provides an opportunity to increase people's interaction with nature in the built environment (Kellert and Calabrese 2015, Richardson and Butler 2022). However, despite this importance, a specific biophilic approach to UGS is rarely encountered in scientific studies (Tokhmehchian and Gharehbaglou 2019). Furthermore, the association of biophilic design practices primarily with upscale decisions results in the underutilisation of the existing potential in areas that could undergo more rapid transformation in the built environment. Addressing this gap in knowledge, we used biophilic design as a theoretical framework to investigate the nature experience potential of UGS and its impact on the user's interaction with nature.

In this investigation, we focused on three neighbourhood parks located in the Bostanlı neighbourhood of Karşıyaka district in Izmir (Türkiye). Our examination of the nature experience encompassed two distinct levels: the environmental level, on the experienced nature, and the individual level, comprising the subjective experience

of nature by individuals. For both levels, Kellert's (2018) experience-based framework of biophilic design was used as a theoretical framework. We analysed the nature experience potential of the selected parks from an environmental level perspective. Additionally, we conducted a nature experience workshop at the individual level to gain insights into the participants' nature experiences. Based on the results, this study aims to enhance our comprehension of how the characteristics of UGS influence the user's nature experience. It also seeks to shed light on how users interact with nature in UGS, particularly highlighting the challenges and potentials in the UGS design related to this interaction within the context of biophilic design.

Experience of nature

The opportunity to experience nature can be found in many different places, including pristine or wild natural areas, UGS, and even more examples like street trees. In this experience, interaction with nature is a prerequisite (Gaston and Soga 2020). Different types of interactions, including direct, indirect, incidental, and intentional interactions, are influential in shaping the nature experience (Kellert 2002, Keniger et al. 2013). These different types of interactions with the natural environment have several important benefits: life satisfaction (Biedenweg et al. 2017, Chang et al. 2020), social interaction (Hartig et al. 2014, Goldy and Piff 2020), well-being (Fuller et al. 2007, Whitburn et al. 2018, Shimamoto 2019), a decrease in mental fatigue (Berto 2005, Berman et al. 2008), and stress reduction (Chang and Chen 2005, Hunter et al. 2019). Furthermore, the nature experience brings benefits to the natural world. For example, as the nature experience promotes pro-environmental behaviours (Soga and Gaston 2016), it also supports the development of conservation approaches towards nature, such as the protection of natural habitats and biodiversity (Rosa and Collado 2019).

As the experience of nature occurs through the interaction between the individual experiencing nature and the experienced nature, it is influenced by factors that affect both aspects. These factors can basically be explained as individual and environmental factors. Individual factors such as gender, age, socio-economic status, family values, and nature orientation influence the nature experience (Soga et al. 2018, Oh et al. 2021). Furthermore, additional determinants, such as the amount of time spent in natural environments, the level of exposure to nature, the specific environment type, sensory interactions (e.g. visual and auditory stimuli), and the frequency of visits, all contribute to the nature interaction and overall nature experience (Bratman et al. 2012). Environmental factors are equally important; attributes such as vegetation, accessibility, and overall characteristics of UGS can influence the individuals' nature experiences. In essence, how people interact with nature is affected by several individual and environmental factors in the UGS. Therefore, it is important to investigate such differences and to develop local practices that encourage the users' nature experiences in these spaces (Oh et al. 2021).

Biophilic design

Biophilic design is based on the biophilia hypothesis, defined as "the innate tendency to focus on life and lifelike processes" (Wilson 1984: 1). According to Kellert (2008), biophilia indicates a 'weak' biological tendency and it requires external stimuli to become stronger. However, the lack of adequate natural stimuli in the built environment does not encourage the improvement of humans' innate biophilic tendencies (Barbiero 2011, Kellert 2018). The main purpose of the biophilic design approach is to address this deficiency and to encourage human interaction with nature by integrating natural elements into the built environment (Kellert 2008). Kellert (2018) defined the experience-based framework that provides a broad variety of options for designers for the implementation of biophilic design. This framework encompasses three distinct experiences — (1) the direct experience of nature, (2) the indirect experience of nature, and (3) the experience of space and place — and 25 attributes (Table 1).

Table 1. Experience-based framework of biophilic design

Direct Experience of nature	Indirect Experience of nature	Experience of Space and Place
Light	Images	Prospect and refuge
Air	Materials	Organised complexity
Water	Texture	Mobility
Plants	Colour	Transitional spaces
Animals	Shapes and forms	Place
Landscapes	Information richness	Integrating parts to wholes
Weather	Change, age and the patina of time	–
Views	Natural geometries	–
Fire	Simulated natural light and air	–
–	Biomimicry	–

Source: Kellert, 2018

In this framework, the direct experience of nature involves direct interactions with the natural elements, including light, air, water, plants, and animals. Conversely, the indirect experience of nature encourages individuals to engage indirectly with natural attributes like colours, patterns, and textures. Furthermore, the experience of space and place focuses on how site-specific attributes affect the people's interaction with the place. Through these different interactions with nature, biophilic design allows people to derive positive benefits from their interactions, especially in terms of mental health (Gillis and Gatersleben 2015, Zhong et al. 2022). Additionally, biophilic design promotes ecological and social harmony by facilitating the mutual interaction between humans and non-human beings (Kellert 2018).

Methodology

Study area

The empirical focus of our study is the Bostanlı neighbourhood within the Karşıyaka district. The Karşıyaka district has undergone notable physical and social transformations in recent years due to urbanisation pressure. The district has different UGS that provide ecological services at various scales. In 2023, the Biophilic Cities Network selected the district as a partner city, and within the district's biophilic city indicators, green spaces are prominently featured.

Figure 1. The location of the Bostanlı neighbourhood and the selected parks

Data collection for this study was centred on three neighbourhood parks (Figure 1) within the Bostanlı neighbourhood, located in the southern part of the Karşıyaka district. The parks were selected based on a comprehensive assessment that involved

evaluating both quantitative and qualitative aspects of the parks. In selecting the parks, we considered their changing characteristics, surroundings, and distances from each other. This evaluation utilised information from the Karşıyaka municipality park database, including parameters like park size, amenities, and facilities. Accordingly, three neighbourhood parks in the Bostanlı neighbourhood were ultimately selected: Adnan Saygun Park (referred to as Park 1), Hıfzı Veldet Velidedeoğlu Park (referred to as Park 2), and M. Senai Ertekin Park (referred to as Park 3). In this context, Park 1 was chosen for its accessibility via public transportation, its distinguishing amenities from other selected parks, such as a water pool and a dog park, as well as its proximity to the construction site in its surroundings. In the selection of Park 2, the park's size, plant diversity, and proximity to the main road and the coast were instrumental factors. Lastly, for Park 3, the decision was influenced by the park's size, the diversity of plant species, and its location surrounded by residential areas. Furthermore, the selection criteria for the parks included their distances from each other, considering the walking distances between the parks for the workshop participants. The overall aim of this park selection process was to explore how these differences between the selected parks impact the user's experience of nature.

Methods

The examination of the nature experience in the selected parks was conducted from two perspectives: the environmental level, which encompasses the experienced nature, and the individual level, which comprises the individual's experience of nature. At the environmental level, we employed the Kellert's (2018) experience-based framework to assess the nature experience potential of the parks. This framework provided for evaluating the current conditions within the parks, with a focus on the characteristics that contribute to the users' experiences of nature. Using this framework, we analysed the design elements corresponding to the attributes of the framework in the parks through a combination of site analysis and field observation. This study was developed during the research undertaken to prepare the master's thesis of the main author (Üstündağ 2023).

At the individual level, we conducted a nature experience workshop involving seven participants, comprising four women and three men. The participants were selected based on residency in the neighbourhood and on being over 18 years old. The workshop adopted the framework proposed by Kellert (2018) and it consisted of three thematic parts: the direct experience of nature; the indirect experience of nature; and experience of space and place. For the direct experience of nature, sensory-focused activity cards were used to engage the participants' senses of sight, hearing, smell, and touch. User observation reports were also employed to assist the participants in note-taking. In the second part, the participants utilised user observation reports to identify

patterns, colours, and textures in the parks, facilitating their indirect interaction with nature. The last part involved a user observation report focussing on aspects like risk, open views, safe spaces, and exploration within the parks. The participants were then assigned the task of completing user empathy maps, which were adapted from the User Experience (UX) method. The user empathy map was organised into four sections, reflecting the structure of an empathy map: it says; it thinks; it does; and it feels. The participants were asked questions under each of these subsections. The aim was to capture the participants' reflections on their nature experiences after engaging in park activities, and also their thoughts and feelings related to nature. Additionally, the participants were asked about the frequency and the purpose of their visits to the selected parks in their daily lives.

The workshop activities were conducted in the selected parks – Park 1, Park 2, and Park 3, respectively. Before the workshop activities started, the participants were informed about their anonymity protection, the purpose of the study, the workshop program, and the workshop materials. Subsequently, the participants completed user observation reports in the order of 'Direct Experience of Nature,' 'Indirect Experience of Nature,' and 'Experience of Space and Place', based on the instructions provided on the activity cards. As the content of these activities required on-site observation in the parks, the participants walked around in the parks while filling out their user observation reports. Following the completion of activities in each park, the participants also filled out user empathy maps. The duration allocated for each park ranged from 30 to 45 minutes, resulting in a total event duration of two and a half hours.

The data analysis in the study consisted of two main levels: environmental and individual. At the environmental level, a qualitative analysis was conducted to assess the nature experience potential of the selected parks. This involved identifying and documenting notable design elements within the parks to understand their environmental attributes. At the individual level, data from the nature experience workshop was analysed through a multi-step process. First, user observation reports filled out during the nature experience activities were analysed to assess the participants' ability to follow instructions and to engage with the design elements in the parks. Although specific instructions (e.g. find at least three colours) were provided on activity cards, the participants tended to identify numerous design elements beyond the specified limits, indicating their engagement with the parks. Second, the thematic analysis was implemented using the MAXQDA software, following the six steps suggested by Braun and Clarke (2006): familiarisation with the data; generation of initial codes; searching for themes; reviewing themes; defining and naming themes; and producing the report. After the careful examination of workshop materials and participant transcripts, three themes emerged: “The Changing Meaning of Nature”, “The Sensory Experience of Nature”, and “The Role of Neighbourhood Park Characteristics”. These themes provided

insights into the participants' perceptions and experiences related to nature within the selected neighbourhood parks.

Results

Nature experience potentials of the parks

After we completed the analyses at environmental level, it became apparent that the design elements of the parks which encourage nature experiences for users are similar to each other in terms of diversity and quantity. These design elements include those that correspond to the attributes associated with the three categories in the Kellert's (2018) experience-based framework in the parks. In this context, the common elements included: vegetation, for the direct experience of nature; vegetation and ground pavement materials, for the indirect experience of nature; and pathways, for the experience of space and place. Although the parks have relatively different characteristics and surroundings, this similarity demonstrates that there is a standardised design approach for them.

Participants' frequency and purpose of the park visits

Upon analysing the participants' responses regarding their frequency and purpose for visiting the selected parks in their daily lives, most of the participants stated that they use Park 1 and Park 2 relatively more frequently compared to Park 3, due to their walking distance, public transportation connections, and proximity to the coast. Furthermore, most participants stated that they visit Park 1 and Park 2 2-3 times a month, while the majority stated that they do not use Park 3. Examining the purpose for which the participants visit these three selected parks in their daily lives, most participants indicated it for resting and socialising. In addition, one participant stated that she uses Park 2 for a nature experience, and another participant stated that she uses Park 1 for relaxation.

The nature experience activities in the workshop

Examining the outcomes of the participants' nature activities in the parks allowed us to understand the design elements that encourage the user's experience of nature in the parks from the participant's perspective. The quantitative values in Figure 2 indicate the total number of common and different design elements observed by seven participants in three parks. There is a slight variation among the parks in the number of design elements across all three experience categories. Similarly, the diversity of design elements also showed minor differences.

In the direct experience of nature, vegetation is the dominant design element in all three parks for the senses of sight, smell, and touch. For the sense of hearing, the participants primarily reported the animal sounds, such as those of birds and dogs. Similar to the findings in this section, there is no significant difference among the three parks in the indirect experience of nature category. In this category, the common and prominent design elements are the natural elements (e.g. cones, tree trunks etc.), and the ground pavement materials across all the three parks.

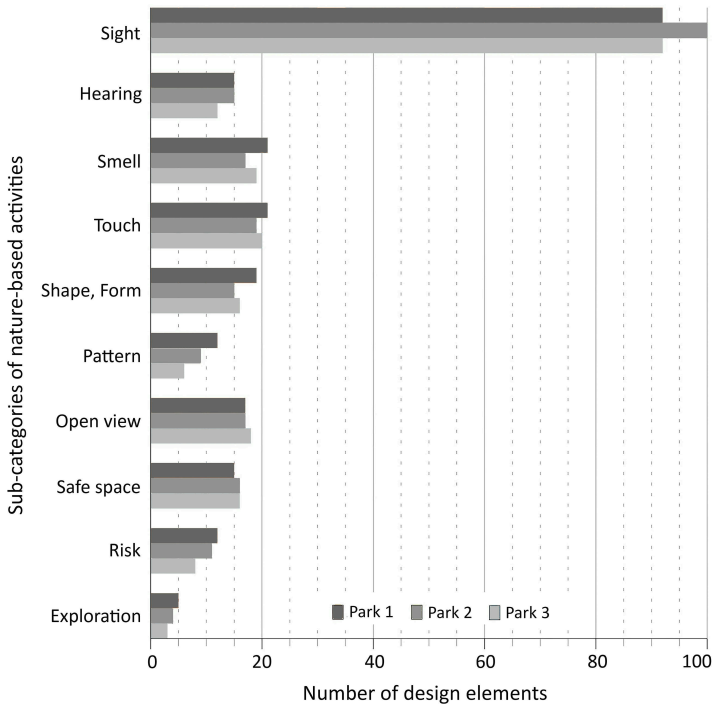

Figure 2. Comparative analysis of nature activities results across the parks

Lastly, in the experience of space and place, the titles “open view” and “safe space” stand out in the parks. However, these two titles do not show a prominent difference in quantitative terms between the parks. For all three parks, most of the participants specified the benches under the trees as safe areas, and they specified the park's lawns and seating areas for open views. Regarding the perceived risk factors or areas in the parks, most participants expressed concerns about the surrounding environment. For the exploration title, the spaces that the participants want to explore or they are curious about in the parks are quite few compared to other titles. Although most of the participants did not write any design elements for this title, plant species and their characteristics and animal houses (e.g. cat houses and bird houses) stand out among the participants' statements. Comparing the participants’ observation outcomes of

the three parts of the workshop, the parks generally offer a similar variety of design elements that allow the users to experience nature. In this context, the participant statements support the findings on the nature experience potential of parks at environmental level.

The investigation of the user's experience of nature

After conducting a coding process in the thematic analysis of the user empathy maps, three themes emerged at both individual and environmental levels (Table 2). These themes primarily explain the diversity of the participants' individual feelings and thoughts towards nature, their interactions with the nature in the parks, and the park characteristics influencing their nature experiences.

Table 2. Examples of extracting codes and themes from raw data

Theme	Codes	Example
The Changing Meaning of Nature	Unique entity	*"I feel that I have a high sense of admiration for nature because every living being in nature is unique." (Male, 32 years old)*
	Independent entity	*"I think there should be no human intervention for the protection of nature." (Male, 56 years old)*
	Vital source	*"Nature is more of a necessity for humans than a source of pleasure." (Male, 18 years old)*
	Longed entity	*"I feel like I miss nature. Because I do not have a life in touch with nature in the city." (Female, 26 years old)*
The Sensory Experience of Nature	Sight	*"When I go to the park, I like sitting in the park and spending time watching the plants around me." (Female, 18 years old)*
	Hearing	*"During my visits to the park, I enjoy listening to the wind as it rustles through the trees." (Female, 50 years old)*
	Smell	*"Whenever I visit a park, I try to perceive the scents of flowers around me." (Female, 27 years old)*
	Touch	*"When I go to the park, I sit on the grass and touch it because touching the grass makes me feel better." (Female, 26 years old)*
The Role of Neighbourhood Park Characteristics	Quietness	*"Parks away from the city's noise appear more attractive to me. Hearing car sounds while sitting in the park distracts people from the nature experience in the park." (Male, 32 years old)*
	Vegetation	*"The plant diversity of this park is beautiful. I think this has a positive effect on my experience of nature." (Male, 56 years old)*
	Size	*"This park is small, and its vegetation is insufficient for the nature experience." (Male, 56 years old)*
	Accessibility	*"The park's accessible location allows me to easily access the park and enjoy nature, which is an important advantage for the nature experience." (Female, 27 years old)*
	A sense of place	*"The fact that the park does not have a unique feature and is almost the same as other parks did not evoke a special feeling for me." (Female, 50 years old)*

The changing meaning of nature

This theme indicates that the participants' feelings and thoughts about nature vary among individuals. Since there is no common definition for the concept of nature, the definition of nature varies according to individual definitions. Accordingly, some participants emphasised their admiration for the uniqueness of nature by stating that every living being in nature is unique. Some participants also emphasised that nature is an entity that needs to be protected and it should be independent from human intervention. One of the prominent issues in the participant views is that nature is a source of life for humans. Regarding this, some participants expressed that nature holds vital importance for humans beyond serving as a source of pleasure. Additionally, some participants considered nature to be separate from urban life. Therefore, they expressed a longing for nature.

The sensory experience of nature

The direct interactions with nature significantly shape the users' nature experiences in the parks. Many participants frequently highlighted direct interactions with nature and the role of their senses while describing nature experiences, both during the workshop and in their daily lives. Evaluating the participants' statements on all four senses reveals that the design elements for direct interaction with nature in the parks lack diversity. Regarding this, most participants share similar views regarding these elements in all three parks. Additionally, in the nature experience workshop, the participants emphasised the direct experience of nature more often in their statements compared to the other two experience categories.

The role of neighbourhood park characteristics

Exploring the park characteristics influencing the participants' nature experiences in the parks, it became evident that many participants consistently stressed the quietness, vegetation, size, accessibility, and sense of place. Most participants emphasised the importance of locating parks away from typical urban noises, such as traffic and construction noise, in order to feel in a natural environment. Regarding Park 2, which is close to the main road, most participants expressed that traffic noise negatively affects their nature experiences. Additionally, some participants stated that they were disturbed by the construction noise coming from the construction site near Park 1. In contrast, for Park 3, which is surrounded by residential areas, most participants stated that the park is far from the urban sounds and that the quietness in the park positively affects their nature experiences.

Natural elements play an important role in the nature experience. For the vegetation, the participants evaluated the parks in terms of the diversity of plant species and the number of plants and they stated the effect of park vegetation on their nature experiences. Regarding this, most participants preferred the vegetation of Park 2 to the

other two parks due to its diversity in terms of the number and variety of plants. The park size significantly influences various aspects of the park, including its vegetation, and many participants noted that this park characteristic plays an important role in shaping their nature experiences. Some participants evaluated the size of the parks in terms of their vegetation. In this context, most participants preferred the vegetation of Park 2, which is larger than the other two selected parks and it has various numbers and types of plants compared to the other two parks. On the other hand, for Park 3, which is smaller than the other two parks, most of the participants stated that the number and diversity of plants in the park were insufficient compared to the other two parks.

The accessibility of the park is an important characteristic, as it also affects the frequency of visits and the use of the park. Some participants evaluated the accessibility of the parks based on the walking distance, the public transport connections, and their proximity to the coast. Regarding this, most participants stated that they use Park 1 and Park 2 more frequently in their daily lives compared to Park 3, as they meet these criteria. Lastly, regarding the sense of place, most participants stated that the parks did not create a different feeling for them and that the parks were similar to each other in many respects, including both spatial characteristics and their services. They also stated this situation prevented the parks from fulfilling the uniqueness criterion.

Discussion

The main purpose of this study is to investigate the extent to which UGS characteristics affect the user's experience of nature and the role of the experience-based framework of biophilic design in understanding this experience. In this section, we discuss the user's nature experience, considering both individual and environmental levels within the neighbourhood parks.

Limitations in the nature experience potential of the parks

The analysis of selected neighbourhood parks within the experience-based framework of biophilic design has revealed that the elements intended to promote nature experiences lack variation both within and between the parks. This finding is supported by the participants' statements. The interpretation of these limitations manifests in two distinct ways. First, the parks' restricted potential to enrich the users' nature experiences limits their opportunities for meaningful interaction with nature. Second, the minimal variation in the nature experience potential among parks indicates a lack of diverse approaches in their planning and design processes. This suggests that parks are being designed with a uniform approach rather than one that considers specific site characteristics. Given that each park should fulfil various functions with distinct features, it is essential to emphasise the importance of context-specific design that

addresses the users' needs and preferences (Kou et al. 2021). Therefore, planners and designers must carefully consider how diverse design elements can impact and engage the users' nature experiences throughout the design process.

Changing interactions with nature in the parks

Understanding how users interact with nature in parks is crucial for the development of parks that encourage and enhance this interaction. Kellert's (2018) experience-based framework allowed us to gain insights into how participants engage with nature in parks. The majority of participants emphasised their direct interaction with nature, particularly through sensory experiences. This direct engagement is a critical component of nature experiences and it significantly amplifies the biophilic effects (Beatley 2016). The participants' feedback underscored the importance of vegetation in facilitating these direct nature experiences. Therefore, both the quantity and quality of park vegetation should be carefully considered in the planning and design processes. However, it is crucial to move beyond standard approaches to vegetation, considering site-specific characteristics, local conditions, and user preferences. Furthermore, although the experience-based framework includes categories such as the indirect experience of nature and the experience of space and place, the participant feedback did not provide sufficient data on these aspects. This gap restricts the ways in which the users can interact with nature and it may hinder the parks' ability to meet the diverse and evolving needs of the users. Overall, park design processes should prioritise features and design elements that facilitate a range of interactions with nature from the users' perspective. Focusing solely on environmental factors without considering individual preferences could limit both the potential for nature experiences and the users' ability to benefit from these experiences.

Individual differences in nature experiences

In this study, individual factors in the users' experiences of nature were examined, focussing on the personal thoughts and feelings which the participants expressed about nature. The richness and diversity of these reflections were evident in their statements, highlighting the complexity of the human-nature relationship. These differences were primarily related to how the participants perceived the connection between nature and human life. According to the biophilia hypothesis, Kellert (1993) identified nine biophilia values, emphasising that humans do not have a singular predisposition towards nature. The diversity of participants' feelings and thoughts further supports this idea.

Given this diversity in the user experiences of nature within UGS, it becomes difficult to define a single nature experience for all users. Nature experiences vary significantly among individuals, as each person is influenced by unique and evolving personal factors. Therefore, it is crucial to adopt a diverse approach rather than a

uniform perspective in the design of UGS. In this context, embracing citizen participation methods that engage various user groups in the planning and design stages is essential for developing UGS that support a broader range of nature experiences and foster inclusivity (Toutakhane 2018, Egerer et al. 2019).

The impact of neighbourhood park characteristics on nature experiences

The findings of our study reveal that the participants significantly emphasised key park characteristics such as quietness, vegetation, size, accessibility, and sense of place in relation to their nature experiences. While previous studies have often addressed UGS characteristics in terms of user preferences (Madureira et al. 2018, Wang et al. 2019) and well-being (Adinolfi et al. 2014, Beute et al. 2023), our study specifically highlights the impact of the characteristics on the user's nature experience.

Most participants indicated that the level of quietness in the park significantly influenced their nature experience. This finding contributes to the growing body of research literature emphasising the importance of quietness in UGS. While other studies reveal the strong correlation of quietness with the user well-being and the overall quality of such spaces (Stessens et al. 2020, Olszewska-Guizzo et al. 2022), our study showed that it is also related to the user's experience of nature in UGS. For instance, in parks located far from heavy traffic, the pronounced quietness had a positive effect on the users' nature experiences. Therefore, it is essential for planners and designers to carefully consider park location criteria and to develop design strategies that minimise the negative impact of environmental factors, such as noise pollution, which could hinder the user's nature experience. Incorporating natural elements (e.g. vegetation and water features) that provide sound insulation can be an effective strategy for mitigating noise in park designs.

The participants also highlighted the crucial role of vegetation in shaping nature experiences within UGS, often evaluating it based on plant diversity and abundance. Previous studies have emphasised the role of trees in fostering a connection with nature (Maurer et al. 2021) and their positive impact on park visits (Rivera et al. 2021). Supporting these findings, our research indicates that vegetation is a key characteristic influencing the users' nature experiences in UGS. Therefore, the increase of plant diversity and abundance in park design while considering the local climate conditions can facilitate diverse interactions between users and nature. Additionally, this approach can support biodiversity within parks, leading to more interactions between humans and non-human species, thereby fostering biophilia.

Many participants also assessed park size in relation to vegetation. Park size is an important factor influencing park visitation (Tu et al. 2020). Larger parks often offer more diverse and extensive vegetation, which can positively impact the users' experiences and the time they spend in the park (Sarı and Bayraktar 2023). In this

context, most participants expressed a preference for larger parks, citing the greater variety of vegetation compared to smaller parks. Thus, these findings suggest that the relationship between the park size and vegetation is a key factor in shaping the user's nature experience. While the participants emphasised the positive aspects of large parks in terms of plant diversity and abundance, effective planting strategies can also be implemented in smaller parks through appropriate design decisions and practices. In small-scale parks (e.g. pocket parks), effective vegetation strategies within limited space can be implemented to enable users to establish a connection with nature. Therefore, it is essential to emphasise that both large and small parks should be effectively planned and designed in terms of vegetation.

Accessibility is another park characteristic highlighted by the participants. This characteristic plays a crucial role in various aspects of park use that influence the park quality and visitation frequency (Neuvonen et al. 2007). Most participants emphasised the importance of walkability and access to public transport, noting that these factors directly impact how often they visit the park. Therefore, accessibility should be a key consideration in park location criteria, ensuring that the needs of different user groups are addressed. Providing diverse transportation options, especially pedestrian-friendly routes and various public transport choices, is essential for facilitating park visits and for enhancing opportunities for the users to engage with nature.

Lastly, many participants emphasised the sense of place as an important park characteristic related to their nature experiences. They noted that the lack of distinctiveness in the services and the characteristics of selected parks limited the development of a sense of place. This underscores the necessity of incorporating both physical and functional diversity into UGS. Additionally, integrating local and cultural elements into park design processes can enhance the sense of place, making the users' experiences more meaningful and enriching.

Along with the findings, the study has some limitations. First, in this study, individual factors such as the feelings and thoughts towards nature were considered when examining the user's experience of UGS. However, due to the relatively small sample size of only seven participants, the study was unable to evaluate the impact of other individual factors, such as demographic and socio-economic factors, on the user's experience of nature in UGS. Second, the use of UGS is only considered within the scope of neighbourhood parks. Therefore, future studies with larger sample sizes can investigate the influence of different individual factors and they can focus on the relationship between various types of UGS and the user's experience of nature.

Conclusions

This study aimed to explore the role of UGS and their characteristics in facilitating user-nature interactions within the experience-based framework of biophilic design

at both individual and environmental levels. The findings reveal that the quantitative and qualitative similarities among the analysed neighbourhood parks stem from a standardised design approach. This uniformity not only limits the potential for diverse nature experiences but it also constraints users' opportunities to engage with nature in varied ways. Additionally, it results in the overlooking of the diverse needs and preferences of different user groups. However, the study highlights that individual factors play a critical role in shaping users' nature experiences, making it challenging to define a single, uniform nature experience.

Therefore, it is essential to incorporate diverse forms of nature interaction in park design processes and to consider the varying individual factors of users. Understanding how users interact with nature in UGS is crucial for enhancing these experiences. The study demonstrates that Kellert's (2018) experience-based framework of biophilic design provides an important opportunity to develop innovative, user-centred methods for understanding and improving user-nature interactions. Furthermore, our research provided context-specific insights into how specific characteristics of UGS, such as quietness, vegetation, size, accessibility, and sense of place, influence the users' nature experiences. Although these characteristics are context-specific, assessing the impact of UGS characteristics on user experiences from the user's perspective during the design and planning stages is crucial for increasing their potential to enhance nature experiences. Consequently, this study underscores the significant potential of UGS and of their characteristics in revitalising the diminishing nature experiences in cities. This potential is vital for enhancing biophilia and for fostering a common future based on social and ecological harmony between human and non-human life.

References

ADINOLFI C., SUÁREZ-CÁCERES G. P., CARIÑANOS P. (2014) Relation between Visitors' Behaviour and Characteristics of Green Spaces in the City of Granada, South-Eastern Spain, Urban Forestry & Urban Greening 13 (3), 534-542, https://doi.org/10.1016/j.ufug.2014.03.007.

BARBIERO G. (2011) Biophilia and Gaia: Two hypotheses for an Affective Ecology, Journal of Biourbanism 1, 11-27.

BEATLEY T. (2016) Handbook of Biophilic City Planning & Design, Island Press, Washington D.C.

BERMAN M. G., JONIDES J., KAPLAN S. (2008) The Cognitive Benefits of Interacting with Nature, Psychological Science 19 (12), 1207-1212, https://doi.org/10.1111/j.1467-9280.2008.02225.x.

BERTO R. (2005) Exposure to Restorative Environments Helps Restore Attentional Capacity, Journal of Environmental Psychology 25 (3), 249-259, https://doi.org/10.1016/j.jenvp.2005.07.001.

BEUTE F., MARSELLE M. R., OLSZEWSKA-GUIZZO A., ANDREUCCI M. B., LAMMEL A., DAVIES Z. G., GLANVILLE J., KEUNE H., O'BRIEN L., REMMEN R., RUSSO A., DE VRIES S. (2023) How Do Different Types and Characteristics of Green Space Impact Mental Health? A Scoping Review, People and Nature 5 (6), 1839-1876, https://doi.org/10.1002/pan3.10529.

BIEDENWEG K., SCOTT R. P., SCOTT T. A. (2017) How Does Engaging with Nature Relate to Life Satisfaction? Demonstrating the Link Between Environment-Specific Social Experiences and Life Satisfaction, Journal of Environmental Psychology 50, 112-124, https://doi.org/10.1016/j.jenvp.2017.02.002.

BRATMAN G. N., HAMILTON J. P., DAILY G. C. (2012) The Impacts of Nature Experience on Human Cognitive Function and Mental Health, Annals of the New York Academy of Sciences 1249 (1), 118-136, https://doi.org/10.1111/j.1749-6632.2011.06400.x.

BRAUN V., CLARKE V. (2006) Using Thematic Analysis in Psychology, Qualitative Research in Psychology 3 (2), 77-101, https://doi.org/10.1191/1478088706qp063oa.

CHANG C.-C., OH R. R. Y., NGHIEM T. P. L., ZHANG Y., TAN C. L. Y., LIN B. B., GASTON K. J., FULLER R. A., CARRASCO L. R. (2020) Life Satisfaction Linked to the Diversity of Nature Experiences and Nature Views from the Window, Landscape and Urban Planning 202, 103874, https://doi.org/10.1016/j.landurbplan.2020.103874.

CHANG C.-Y., CHEN P.-K. (2005) Human Response to Window Views and Indoor Plants in the Workplace, HortScience 40 (5), 1354-1359, https://doi.org/10.21273/hortsci.40.5.1354.

CLAYTON S., COLLÉONY A., CONVERSY P., MACLOUF E., MARTIN L., TORRES A.-C., TRUONG M.-X., PRÉVOT A.-C. (2017) Transformation of Experience: Toward a New Relationship with Nature, Conservation Letters 10 (5), 645-651, https://doi.org/10.1111/conl.12337.

EGERER M., ORDÓÑEZ C., LIN B. B., KENDAL D. (2019) Multicultural Gardeners and Park Users Benefit from and Attach Diverse Values to Urban Nature Spaces, Urban Forestry & Urban Greening 46, 126445, https://doi.org/10.1016/j.ufug.2019.126445.

FULLER R. A., IRVINE K. N., DEVINE-WRIGHT P., WARREN P. H., GASTON K. J. (2007) Psychological Benefits of Greenspace Increase with Biodiversity, Biology Letters 3 (4), 390-394, https://doi.org/10.1098/rsbl.2007.0149.

GASTON K. J., SOGA M. (2020) Extinction of Experience: The need to be More Specific, People and Nature 2 (3), 575-581, https://doi.org/10.1002/pan3.10118.

GILLIS K., GATERSLEBEN B. (2015) A Review of Psychological Literature on the Health and Wellbeing Benefits of Biophilic Design, Buildings 5 (3), 948-963, https://doi.org/10.3390/buildings5030948.

GOLDY S. P., PIFF P. K. (2020) Toward a Social Ecology of Prosociality: Why, When, and Where Nature Enhances Social Connection, Current Opinion in Psychology 32, 27-31, https://doi.org/10.1016/j.copsyc.2019.06.016.

HARTIG T., MITCHELL R., DE VRIES S., FRUMKIN H. (2014) Nature and Health, Annual Review of Public Health 35, 207-228, https://doi.org/10.1146/annurev-publhealth-032013-182443.

HUNTER M. C. R., GILLESPIE B. W., CHEN S. Y.-P. (2019) Urban Nature Experiences Reduce Stress in the Context of Daily Life Based on Salivary Biomarkers, Frontiers in Psychology 10, 722, https://doi.org/10.3389/fpsyg.2019.00722.

KAPLAN R., KAPLAN S. (1989) The Experience of Nature: A Psychological Perspective, Cambridge University Press, New York.

KELLERT S. R. (1993) The Biological Basis for Human Values of Nature, in: Kellert S. R., Wilson E. O. (eds.), The Biophilia Hypothesis, Island Press, Washington DC, pp. 42-69.

KELLERT S. R. (2002) Experiencing Nature: Affective, Cognitive, and Evaluative Development in Children, in: Kahn JR. P. H., Kellert S. R. (eds.), Children and Nature: Psychological, Sociocultural, and Evolutionary Investigations, MIT Press, Cambridge, pp. 117-151.

KELLERT S. R. (2013) Dimensions, Elements, and Attributes of Biophilic Design, in: Kellert S. R., Heerwagen J. H., Mador M. L. (eds.), Biophilic Design: The Theory, Science and Practice of Bringing Buildings to Life, John Wiley & Sons, Hoboken, pp. 3-19.

KELLERT S. R. (2018) Nature by Design: The Practice of Biophilic Design, Yale University Press, New Haven & London.

KELLERT S. R., CALABRESE E. F. (2015) The Practice of Biophilic design, Retrieved from: www.biophilic-design.com.

KENIGER L. E., GASTON K. J., IRVINE K. N., FULLER R. A. (2013) What Are the Benefits of Interacting with Nature?, International Journal of Environmental Research and Public Health 10 (3), 913-935, https://

doi.org/10.3390/ijerph10030913.

KOU R., HUNTER R. F., CLELAND C., ELLIS G. (2021) Physical Environmental Factors Influencing Older Adults' Park Use: A Qualitative Study, Urban Forestry & Urban Greening 65, 127353, https://doi.org/10.1016/j.ufug.2021.127353.

MADUREIRA H., NUNES F., OLIVEIRA J. V., MADUREIRA T. (2018) Preferences for Urban Green Space Characteristics: A Comparative Study in Three Portuguese Cities, Environments 5 (2), 23, https://doi.org/10.3390/environments5020023.

MAURER M., ZAVAL L., ORLOVE B., MORAGA V., CULLIGAN P. (2021) More than Nature: Linkages Between Well-being and Greenspace Influenced by a Combination of Elements of Nature and Non-nature in a New York City Urban Park, Urban Forestry & Urban Greening 61, 127081, https://doi.org/10.1016/j.ufug.2021.127081.

NEUVONEN M., SİEVÄNEN T., TÖNNES S., KOSKELA T. (2007) Access to Green Areas and the Frequency of Visits – A Case Study in Helsinki, Urban Forestry and Urban Greening 6 (4), 235-247, https://doi.org/10.1016/j.ufug.2007.05.003.

OH R. Y. R., FIELDING K. S., NGHIEM T. P. L., CHANG C.-C., SHANAHAN D. F., GASTON K. J., CARRASCO R. L., FULLER R. A. (2021) Factors Influencing Nature Interactions Vary between Cities and Types of Nature Interactions, People and Nature 3 (2), 405-417, https://doi.org/10.1002/pan3.10181.

OLSZEWSKA-GUIZZO A., SIA A., FOGEL A., HO R. (2022) Features of Urban Green Spaces Associated with Positive Emotions, Mindfulness and Relaxation, Scientific Reports 12, 20695, https://doi.org/10.1038/s41598-022-24637-0.

RASIDI M. H., JAMIRSAH N., SAID I. (2012) Urban Green Space Design Affects Urban Residents' Social Interaction, Procedia - Social and Behavioral Sciences 68, 464-480, https://doi.org/10.1016/j.sbspro.2012.12.242.

RAZAK M. A. W. A., OTHMAN N., NAZIR N. N. M. (2016) Connecting People with Nature: Urban Park and Human Well-being, Procedia - Social and Behavioral Sciences 222, 476-484, https://doi.org/10.1016/j.sbspro.2016.05.138.

RICHARDSON M., BUTLER C. W. (2022) Nature Connectedness and Biophilic Design, Building Research & Information 50 (1-2), 36-42, https://doi.org/10.1080/09613218.2021.2006594.

RIVERA E., TIMPERIO A., LOH V. H. Y., DEFORCHE B., VEITCH J. (2021) Critical Factors Influencing Adolescents' Active and Social Park Use: A Qualitative Study Using Walk-Along Interviews, Urban Forestry & Urban Greening 58, 126948, https://doi.org/10.1016/j.ufug.2020.126948.

ROSA C. D., COLLADO S. (2019) Experiences in Nature and Environmental Attitudes and Behaviors: Setting the Ground for Future Research, Frontiers in Psychology 10, 763, https://doi.org/10.3389/fpsyg.2019.00763.

SARI E. N., BAYRAKTAR S. (2023) The Role of Park Size on Ecosystem Services in Urban Environment: A Review, Environmental Monitoring and Assessment 195, 1072, https://doi.org/10.1007/s10661-023-11644-5.

SCHWEITZER R. D., GLAB H., BRYMER E. (2018) The Human–Nature Experience: A Phenomenological-Psychoanalytic Perspective, Frontiers in Psychology 9, 969, https://doi.org/10.3389/fpsyg.2018.00969.

SHIMAMOTO K. (2019) Empirical Analysis on the Determinants of Urban Parks, Journal of Urban and Regional Analysis 11 (1), 87-102, https://doi.org/10.37043/jura.2019.11.1.6.

SOGA M., GASTON K. J. (2016) Extinction of Experience: The Loss of Human–Nature Interactions, Frontiers in Ecology and the Environment 14 (2), 94-101, https://doi.org/10.1002/fee.1225.

SOGA M., YAMANOI T., TSUCHIYA K., KOYANAGI T. F., KANAI T. (2018) What Are the Drivers of and Barriers to Children's Direct Experiences of Nature?, Landscape and Urban Planning 180, 114-120, https://doi.org/10.1016/j.landurbplan.2018.08.015.

SONG X. P., RICHARDS D. R., TAN P. Y. (2020) Using Social Media User Attributes to Understand Human–Environment Interactions at Urban Parks, Scientific Reports 10, 808, https://doi.org/10.1038/s

41598-020-57864-4.

STESSENS P., CANTERS F., HUYSMANS M., KHAN A. Z. (2020) Urban Green Space Qualities: An Integrated Approach Towards GIS-Based Assessment Reflecting User Perception, Land Use Policy 91, 104319, https://doi.org/10.1016/j.landusepol.2019.104319.

TOKHMEHCHIAN A., GHAREHBAGLOU M. (2019) Biophilic Perception in Urban Green Spaces (Case Study: El Gölü Park, Tabriz), International Journal of Urban Sciences 23 (4), 568-585, https://doi.org/10.1080/12265934.2019.1568284.

TOUTAKHANE A. M. (2018) Influencing Factors on Performance of Social Behavior Settings at Parks and Green Spaces of Tabriz, Journal of Urban and Regional Analysis 10 (2), 199-215, https://doi.org/10.37043/jura.2018.10.2.4.

TU X., HUANG G., WU J., GUO X. (2020) How Do Travel Distance and Park Size Influence Urban Park Visits? Urban Forestry & Urban Greening 52, 126689, https://doi.org/10.1016/j.ufug.2020.126689.

ULRICH R. S. (1993) Biophilia, Biophobia, and Natural Landscapes, in: Kellert S. R., Wilson E. O. (eds.), The Biophilia Hypothesis, Island Press, Washington DC, pp. 73-137.

ÜSTÜNDAĞ B. (2023) Understanding user experience of nature in urban green spaces through biophilic design: The case of Karşıyaka, Izmir Institute of Technology, Retrieved from: openaccess.iyte.edu.tr.

WANG X. J. (2009) Analysis of Problems in Urban Green Space System Planning in China, Journal of Forestry Research 20, 79-82, https://doi.org/10.1007/s11676-009-0014-2.

WANG Y., KOTZE D. J., VIERIKKO K., NIEMELÄ J. (2019) What Makes Urban Greenspace Unique – Relationships between Citizens' Perceptions on Unique Urban Nature, Biodiversity and environmental Factors, Urban Forestry & Urban Greening 42, 1-9, https://doi.org/10.1016/j.ufug.2019.04.005.

WHITBURN J., LINKLATER W. L., MILFONT T. L. (2018) Exposure to Urban Nature and Tree Planting Are Related to Pro-Environmental Behavior via Connection to Nature, the Use of Nature for Psychological Restoration, and Environmental Attitudes, Environment and Behavior 51 (7), 787-810, https://doi.org/10.1177/0013916517751009.

WILSON E. O. (1984) Biophilia: The Human Bond with Other Species, Harvard University Press, Cambridge.

ZHONG W., SCHRÖDER T., BEKKERING J. (2022) Biophilic Design in Architecture and its Contributions to Health, Well-being, and Sustainability: A Critical Review, Frontiers of Architectural Research 11 (1), 114-141, https://doi.org/10.1016/j.foar.2021.07.006.

Unveiling Studentification: Reshaping Urban Landscapes and Cultural Identities in Peri-urban Regions

Gabriela Possenti Aurelia NATASYA SANVICA, Jawoto SIH SETYONO

Email: gabrielapans@students.undip.ac.id

Diponegoro University of Urban and Regional Planning, Semarang, Indonesia

Abstract: The peri-urban landscape has undergone significant transformations attributed to the emergence and expansion of higher education institutions, commonly referred to as studentification. This phenomenon, characterised by a substantial influx of students, has notably reshaped the urban fabric. This study aims to determine the chronology of the studentification and to identify the primary variables influencing this transformative phenomenon, focusing specifically on the northern region of Yogyakarta, Indonesia. Employing a descriptive qualitative approach, inclusive of spatio-temporal analysis, in-depth interviews, and field observations, this research scrutinises the physical, socio-economic, and sociocultural variables of the region. The findings reveal that studentification has redefined the regional development orientation of Yogyakarta, with emerging cultural influences and increased investment playing pivotal roles. The implications of these findings extend to educational planning policies, underscoring the necessity of integrating both cultural and economic considerations into urban planning endeavours, particularly concerning the impact of studentification on peri-urban areas and the preservation of urban heritage.

Keywords: studentification; urban transformation; cultural resilience; peri-urban development; Yogyakarta

Introduction

Initially conceived as a facet of gentrification, studentification gained formal recognition in the urban academic discourse only in the early 2000s (Gregory 2020, Zasina and Jakubiak 2024). It represents a unique form of gentrification primarily propelled by the influx of students. This phenomenon, which is closely associated with elements of revitalisation and rehabilitation, unfolds as a concentrated migration of students into residential environments spurred by the development of educational zones (Revington et al. 2021). These developments have triggered multifaceted advancements in spatial and non-spatial dimensions, encompassing environmental, health, social, and economic qualities (Brooks et al. 2005, Kinton et al. 2016). In contrast, gentrification is defined as the inflow of capital leading to subsequent social, economic, cultural,

Submitted: 23.04.2024; **Revised:** 02.09.2024; **Accepted:** 12.09.2024

and physical transformations, often resulting in displacement (Atkinson 2003). Both studentification and gentrification involve the arrival of new residents and the transition of the social fabric from long-term to incoming residents.

Despite these similarities, the causes and impacts on neighbourhoods differ significantly. For instance, a case study of campus-led gentrification illustrated how studentification could intensify eviction pressure and displacement among long-term residents (Moos et al. 2019). Unlike other forms of gentrification, studentification introduces distinctive cultural contrasts in neighbourhoods (Gregory and Rogerson 2019). Varying lifestyles, schedules, and interests between students and long-term residents can lead to tension, manifesting in issues such as noise complaints, vandalism, and social segregation (Woldoff and Weiss 2018). Gentrification represents a broader process of neighbourhood change, involving the influx of wealthier residents and the displacement of lower-income residents (Nakazawa 2017). While both phenomena contribute to displacement pressure, gentrification, driven by a wider range of factors, exerts a more significant impact on the social geography of cities (Foote 2017).

The studentification process exhibits diverse patterns across different locations, influenced by varying causes, processes, and impacts (Sullivan 2007). Globally, this phenomenon has been observed in both developed and developing countries such as the United Kingdom, the United States, South Africa, China, and Iran. Each region experiences transformations driven by student influx, affecting socio-economic and cultural dynamics (He et al. 2011, Gregory and Rogerson 2019, Sanmugarajah et al. 2020, Hoseini and Nematimehr 2023).

In Indonesia, research on studentification remains limited. Several studies have documented its effects in urban areas such as Medan and Semarang, where studentification has led to land use changes, rising property prices, and community job shifting (Dewi and Ristianti 2019, Wirapaksi et al. 2021). The presence of students not only alters the economic and social landscapes of cities but it also has significant implications for the housing markets, local cultures, and social cohesion (Hoseini and Nematimehr 2023). The rapid influx of students can lead to increased property prices, displacement of long-term residents, and changes in the character of neighbourhoods, highlighting the need to address these challenges to foster sustainable urban development.

Studentification is not limited to urban centres in developed nations. It extends beyond these areas and it manifests itself in suburban, border, and rural areas (Smith 2002). This phenomenon is not confined to specific regions and it has been documented in developing contexts, exemplified by the case of Babolsar in Iran, where agricultural fields have been transformed into a residential neighbourhood, forming a distinct "dormitory neighbourhood" (Mohammed and Ukai 2022). In the Washington metropolitan area, housing location pe students' desires for suburban living have led to significant changes in land use and social structures (Mirzahossein et al. 2023). Similarly, research in the East-Central European borderlands has highlighted the role of

physical and cultural proximity in facilitating or hindering interactions among ethnic minorities, offering insights into how student arrival affects the cultural dynamics (Berceanu et al. 2023).

The studentification process is intricately influenced by many factors, including the development of higher education, budgetary constraints, students' lifestyle choices and consumption patterns, and rental gaps in certain areas of larger cities (Anderson 2013). Although existing studies have predominantly focused on the effects of studentification, there remains a crucial need for further research and discourse to understand its primary causes. Nardone et al. (2023) emphasise that the socio-economic background of students can lead to friction in urban areas, as students from diverse economic backgrounds converge.

While previous studies have extensively explored the socio-economic and physical changes brought by studentification, there is a noticeable gap in understanding how these changes interact with the local cultural values. This study seeks to fill this gap by examining the cultural dimensions of studentification, particularly in the context of peri-urban regions in Indonesia. This focus on cultural impacts offers a new perspective, contrasting with the predominantly economic and social analyses found in the existing literature.

While the global discourse on studentification offers a broad understanding of the phenomenon, applying these insights to specific contexts, such as Indonesia, is essential for a nuanced analysis. This study investigates the three-decade evolution of studentification and it highlights the key factors driving this transformation. By focusing on cultural impacts — a relatively underexplored area — this research contributes to the existing literature by shifting the attention from the often-emphasised economic and social aspects to the cultural implications. Specifically, it examines the relationship between studentification and cultural preservation in the peri-urban settings of Indonesia, while providing new insights into the cultural dynamics that accompany urban transformation.

This study addresses a significant gap in the literature, which often overlooks the cultural dimensions of studentification. It explores how this process affects the cultural fabric of communities, including local identities, traditions, and heritage. This study seeks to answer the following questions: 1) how does studentification influence the cultural identity and heritage of peri-urban communities in Yogyakarta?, and 2) what are the primary drivers of studentification in the peripheral regions of Yogyakarta? By exploring these aspects, this study aims to inform policymakers and urban planners of the need to consider cultural factors in the urban development strategies. This is crucial for preserving cultural heritage alongside economic growth. Understanding the cultural landscape and community identity changes due to studentification can lead to a deeper appreciation of cultural diversity in urban areas. Ultimately, this study aims to provide a comprehensive understanding of studentification, emphasising the

importance of integrating cultural considerations into sustainable development. The findings enrich empirical evidence on the studentification's complexities in peri-urban settings and they guide future urban and environmental research efforts.

This study focuses on a particular geographical location in the peri-urban region of Yogyakarta. It then highlights the methodologies employed for the data collection and analysis. The results are organised as follows: first, it delves into the historical background and physical development of the study area; second, it investigates social, economic, and spatial-physical transformations, and it explores the influence of cultural values on studentification. Lastly, we present the discussion and conclusions.

Methodology

Study area

This study used Yogyakarta as a case study because of its distinctive characteristics as a city that harmoniously blends education, culture, and tourism. Known as the city of students, Yogyakarta hosts numerous universities and higher education institutions, making it a focal point for educational activity. In addition, as an international destination for both tourism and education, it attracts students and visitors from across Indonesia and the world. The combination of educational prominence and cultural richness creates a unique environment for studying studentification.

The rapidly increasing population of Yogyakarta has heightened the demand for housing, accommodation, and facilities to support educational activities. One area where universities serve as the primary development generator is Sleman Regency. Its strategic location, with good connectivity to Yogyakarta's downtown area (14 km) and the tourist destination Kaliurang (10 km), makes it an attractive site for gentrifiers to reside and to invest. Sleman Regency, a peri-urban area in Yogyakarta, is traversed by Kaliurang Street, one of the main thoroughfares in the region, which holds significant historical and cultural value, symbolising the philosophical and cosmological axis of Yogyakarta's culture (Figure 1).

Administratively, the selected study areas were the hamlets (known in Indonesian as "dusun") which directly border the Integrated Campus of Indonesian Islamic University: Kimpulan, Lodadi, and Tegalsari Hamlets, which are part of Umbulmartani Village in Ngemplak Sub-district, Sleman Regency (Figure 2). Covering 86 hectares and consisting of 14 neighbourhood borders (rukun tetangga), this district has been prioritised by the government as an educational area, according to the Regulation of Sleman Regency Number 3 of 2021 regarding the spatial plan for 2021-2040.

The choice of Yogyakarta, particularly Sleman Regency, is driven by visible signs of studentification, such as the displacement of local communities by the students from various regions, including Kalimantan, Madura, and Sumatra, as well as improve-

ments in neighbourhood infrastructure. By selecting Yogyakarta, this study aims to provide valuable insights into the interplay between studentification and local cultural dynamics in a city renowned for its educational and cultural heritage, allowing for a comprehensive understanding of the broader implications of studentification in similar urban settings.

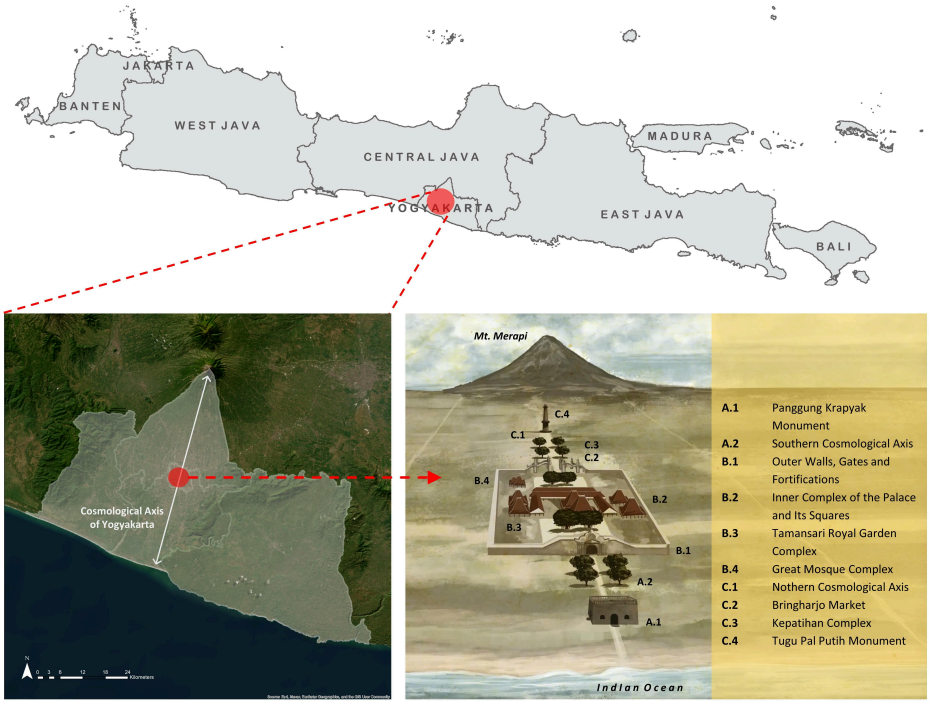

Figure 1. The Cosmological axis of Yogyakarta City
Source: Cultural Heritage Preservation Center of Yogyakarta Special Region, 2019

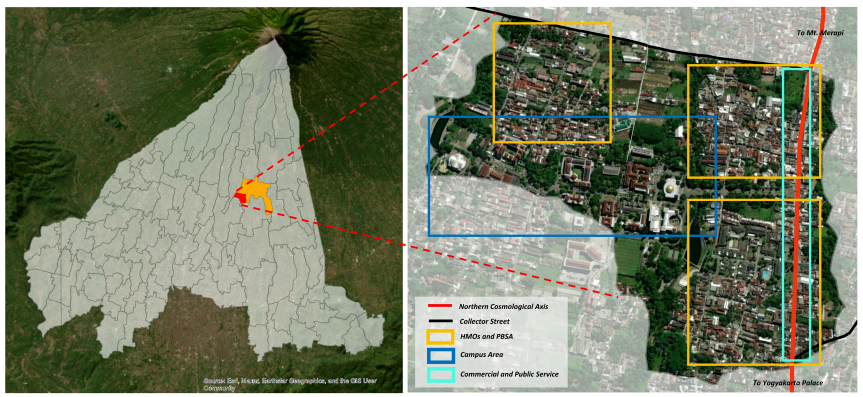

Figure 2. The location of studentification area. Source: Landsat 7 USGS, 2023

Data collection methods

In case study research, it is necessary to obtain in-depth information from various sources to explain the studentification and its transformation. Accordingly, we conducted in-depth interviews, direct observations, and document/report reviews.

Several interviewees, such as the head of the district, local communities, students, and private developers (Table 1), were interviewed to investigate various types of spatial transformation, the regulation development that affect the study area, the social relationships among communities, the local cultural values conducted in the area, and the perspectives of students and investors to live and invest in the region. Nineteen participants were interviewed through open-ended questions. In-depth interviews were conducted with: the former chairman of Kapanewon Ngaglik, Desa Umbulmartani; the chairman of rukun tetangga; the education institution; the local people; and gentrifiers (students and investors). The informants were selected using purposive sampling. Interviews were conducted in the study area from May to June 2023, by using the Javanese and Indonesian languages.

Table 1. Participant Characteristics

Occupation	Age (years) & Gender						Total		Education		Living Time In The Same Locality (years)			
	20-30		31-65		>65		M	F	M	F	< 1	1-5	5-15	>15
	M	F	M	F	M	F								
Local Governance and Educational Institution	-	-	3	-	1	-	4	0	2H, 2U	-	-	-	3	1
Private Developers	-	-	1	1		-	1	1	1P	1U	-	1	1	
Local Community	1	1	2	2	1	-	4	3	3H, 1U	2H, 1U	-		5	2
Middle Income Gentrifier	1	2	-	2	1	-	2	4	2U	4U	2	4	-	-
Total	2	3	6	5	3	0	11	8	5H, 5U, 1P	2H, 6U	2	5	9	3

Notes: M- Male, F- Female, H- Highschool, U- University, and P- Post-University

Field observations were used to verify infrastructure and facility improvements, improvements in housing and student accommodations, environmental quality, and community activities. Field observations focused on physical and social appearances, being conducted twice: once in April and once in June 2023 to obtain the required data.

Furthermore, a review of documents was conducted to fulfil secondary data such as demographic data, institutions, and government regulations, and to address issues and facts about the study area in the Sleman Regency from various studies. Demographic data, such as population number, density, and distribution, were analysed in the form of tables and diagrams. Physical data were identified using a map overlay to determine changes such as land-use transformation and street patterns. This overlay also uses data (in the form of a map) from the 1990s and 2023.

Data analysis

This study employed a qualitative method (Tisdell et al. 2025) to formulate the studentification process using an evidence base from a peri-urban area in Indonesia, namely the Sleman Regency in Yogyakarta. Creswell and Creswell (2022) defined qualitative research as a study that explores and understands the meaning of social problems in individuals or groups and it attempts to interpret the complexity of those problems. Fraenkel et al. (2023) agreed that qualitative research addresses the processes that occur as well as the product or result. Therefore, this study aimed to explore and to construct a process of studentification in the peri-urban area of Yogyakarta. Specifically, we aimed to: 1) identify the chronology of the studentification process using spatiotemporal analysis; and 2) examine the dominant variables that influence chronology.

We used descriptive qualitative analysis, particularly comparative analysis, to provide an in-depth description and interpretation of the studentification process related to the local culture. This analysis compared neighbourhoods before and after gentrification. The analysis was enriched with the spatial and temporal aspects, including spatiotemporal analysis and image interpretation. These methods allowed for the comparison of environmental changes resulting from land use transformations, such as the expansion of built-up areas. Additionally, we included the distribution patterns of infrastructure that supports educational activities within the study area . Furthermore, we conducted an investigation into how these changes in land use affected property prices. This comprehensive approach led to a thorough understanding of the impact of studentification on both the physical landscapes and economic factors.

Data from the interviews were analysed thematically. Transcriptions were thoroughly reviewed to identify key themes, which were then connected to theoretical frameworks and literature. Triangulation was used to ensure accuracy by cross-referencing the interview findings with direct observations and documentary evidence. Moreover, this study examined the differences in perception and adaptation to neighbourhood changes between the local community and those involved in gentrification. However, this study had certain limitations. The interview sample may not fully represent the broader population, and the subjective nature of the interviews may have influenced the findings. Additionally, although the thematic analysis is effective, it is subject to the researcher bias. The results should be interpreted within the specific context of this study and they are not universally applicable.

Results

The emergence of studentification – transformation of the peri-urban

In 1974, the Indonesian Islamic University had various campuses located in downtown Yogyakarta, resulting in challenges, such as inadequate supervision and low opera-

tional efficiency. To resolve this problem, university officials initiated efforts to procure land to erect an integrated campus that would cater to all the existing facilities on one roof. By 1987, the construction plans had adhered to the physical development master plan, whereas the support infrastructure was established in 1990 within the suburban region of Yogyakarta (Figure 3). The decision to choose an alternative site for the consolidated campus was made because of the challenge of expanding the physical infrastructure in the downtown district, owing to a shortage of available land. Therefore, it has been relocated to an area with potential for development. It is conveniently situated adjacent to a major thoroughfare renowned as a symbolic representation and a vital conduit for movement throughout Yogyakarta. The university has a significant impact on the growth of suburban regions and their communities owing to both student accommodation requirements and the UII's expansion strategy involving the establishment of numerous new facilities. The institution is recognised as a catalyst for economic progress in its vicinity.

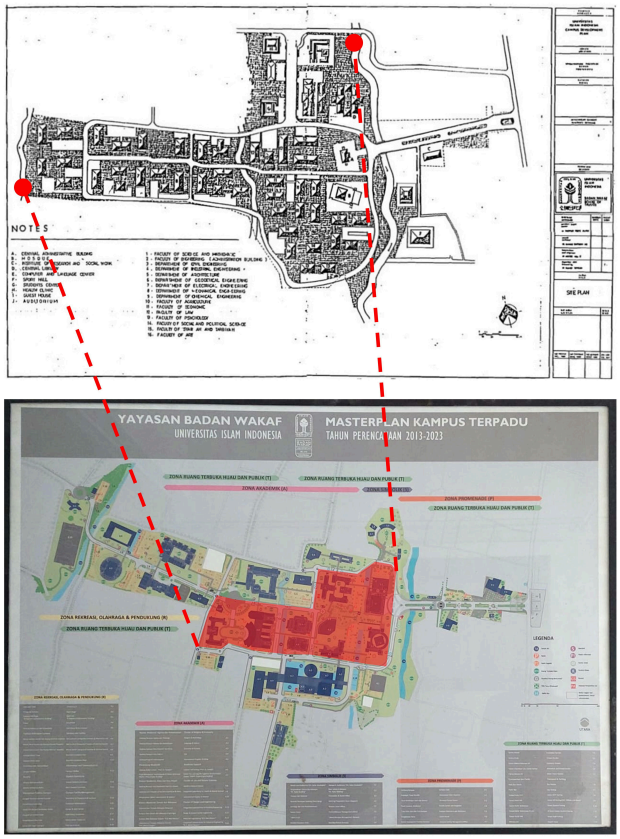

Figure 3. UII's Development; comparing masterplan between 1987 (top) and 2013 (bottom)
Source: Pre-planned image of UII Integrated Campus, 1987

The number of active students in the 2022/2023 academic year is 25,729. The students were from eight faculty members with four diploma programs, 25 bachelor's programs, three professional programs, 13 master's programs, and five doctoral programs. To support lecture activities and to facilitate approximately 5,000 active students in each academic year, this integrated campus has been equipped with various facilities, such as mosques, polyclinics and pharmacies, sports centres, student convention centres, student dormitories, auditoriums, bookstores (Periplus), laboratory facilities (ISO 17025 certified), e-learning (Moodle and Google Classroom), and libraries that support the learning process at the university level (Figure 4).

Figure 4. UII Integrated Campus Student Activity Facilities: a – Co-working Space, b – Sports Facilities, c – Transportation Facilities, d – Worship Facilities (Mosque), e – Auditorium and Meeting Hall, and f – Library
Source: kemahasiswaan.uii.ac.id, 2022

Studentification accross different periods

Social transformation

The development of an area is closely tied to the population and economic factors of the community in that area, particularly the quantity and quality of community activities (Smith 2004). According to the head of Kimpulan Hamlet, in an interview, the population structure in the hamlet predominantly comprised migrants, with the original elderly residents, approximately 65 years old, still living there (Figure 5). The population structure during each phase of the studentification process indicated that elderly individuals dominate property ownership as an investment in old age. At the same time, students comprised the rest of the population. The increasing number of students each year suggests a rising trend aligned with the expansion of built-up areas to meet the student demand.

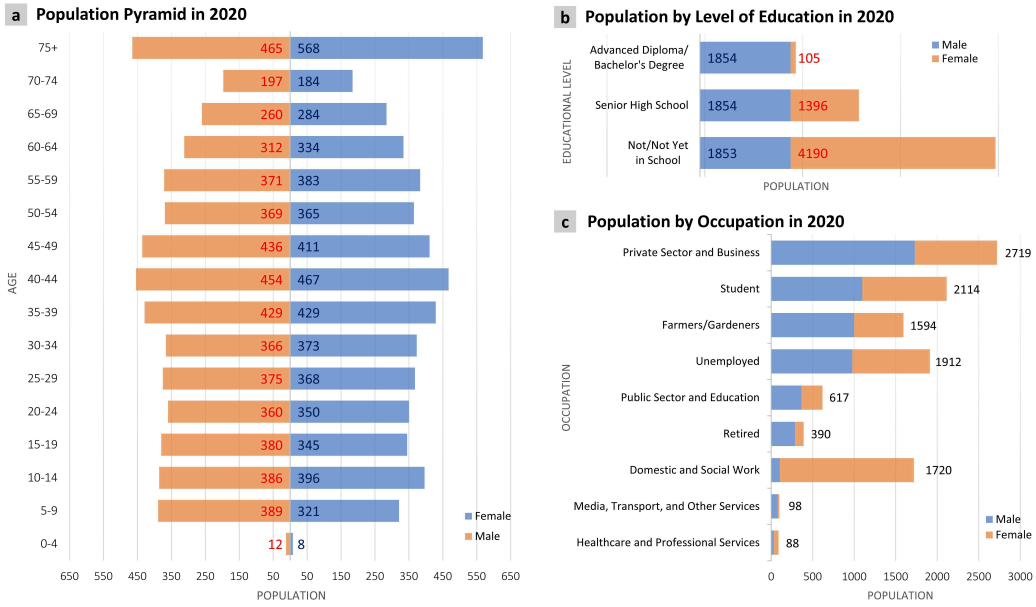

Figure 5. Demographic Profile of Umbulmartani Village in 2020:
a – Population Pyramid, b – Population by Level of Education, and c – Population by Occupation
Source: Umbulmartani Village, 2023

The community's economic conditions improved, which is attributable to the availability of higher-income job opportunities compared with the earlier stages of the studentification process, which were primarily reliant on agricultural land. As reported in an interview with the head of RW 01, the original residents initially worked as farm labourers, construction workers, and employees. However, many have now become self-employed by opening up their businesses. With the growth of built-up areas and the construction of the Integrated Campus of Universitas Islam Indonesia, the community began recognising promising economic prospects, shifting from primary sector occupations to tertiary sectors such as goods and service providers.

The research findings indicate that the increasing influx of student migrants leads to the original community, with middle to low economic levels, being unable to compete with other capital owners and choosing to migrate and to sell their properties to meet the demands of the students. This study also induces a shift in livelihood from the primary sector (agriculture) to the tertiary sector (goods and service providers). Additionally, according to an interviewee native to the area, there are negative non-physical impacts, such as the introduction of diverse student cultures and some migrants in the neighbourhood, often leading to issues of manners and noise.

Moreover, as explained by the head of Lodadi Hamlet in an interview, the impact of migrants on the social dynamics tends to be harmful because of differences in decision-

making approaches for social activities stemming from their higher level of education and economic capabilities compared to the indigenous people. Consequently, the local community needs to adapt to this transition, making it difficult for them to compete with the foreign investors and property owners, who provide modern accommodations for the students. Consequently, many locals choose to sell their property or to relocate elsewhere. Additionally, studentification can lead to gentrification, in which financially capable middle-class individuals replace the disadvantaged members of native communities, triggering significant socioeconomic transformation within the area (Dewi and Ristianti 2019).

Economic transformation

Land is an economically powerful resource, and it is therefore valued and priced. Land parcels in the study area were registered and classified based on the theme of right type, registration status, and use. The highest land price in early 2012 was only 76.63 USD/m² and the lowest price was 18.25 USD/m². In 2013, the highest price for land was 112.73 USD/m². In 2015, there was also an increase in the highest price to 126.85 USD/m². Land prices continue to increase until 2022; the highest price was 195.30 USD/m², and the lowest price was 39.28 USD/m².

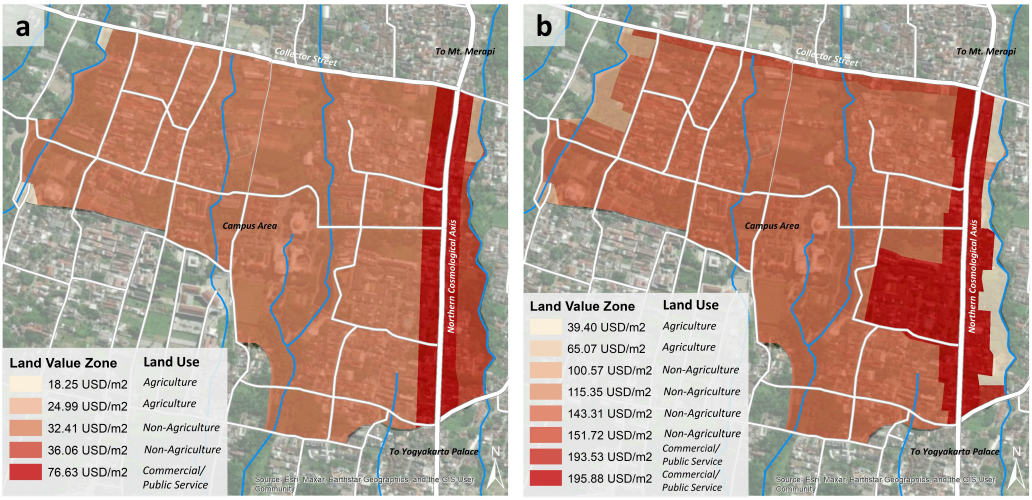

Figure 6. Comparing land value zones: a – 2012 and b – 2022. Source: National Land Agency, 2023

Based on the land price changes, it was found that the location of the highest land prices remains consistent next to the collector road, namely Jalan Kaliurang, which connects Kaliurang tourism with the centre of Yogyakarta City (Figure 6). Meanwhile, land prices tend to be cheaper away from collector roads. Meanwhile, land prices based on the Land and Building Tax Object Sale Value in the study area in 2022 were divided

into ten land value zones with different values. The highest price of 49.46 USD/m² and the lowest price of 5.06 USD/m² were found in the low-density residential areas. Increased land prices and property taxes put economic pressure on less well-off local communities (Dewi and Ristianti 2019).

Spatial-physical transformation

The chronology of changes in physical conditions began with the construction of the first campus building, which was only the Faculty of Civil Engineering, to provide a boundary for campus land. In the first ten years, the development of facilities supporting educational activities was still centred along the Kaliurang Road and Degolan Road. In the second period of the studentification process, the development of educational support facilities became significant along with the addition of new faculty buildings. Development began to be carried out in a widespread manner but it was still easily accessible, especially to campus buildings. Meanwhile, in the third period of the studentification process, an increasing number of new majors opened and the Faculty of Law campus moved from the UII Taman Siswa Campus. This has led to the development of additional support facilities which have begun to penetrate deeper into hamlets or away from the roads.

The percentage of built-up land during the first study was only 8.89 ha (10%) of the total study area. The non-built land amounted to 76.64 ha (90%) of the total study area. In the second period, the percentage of developed land increased significantly by 3.6 times from the previous period to 40.87 ha (48%) of the total study area. Undeveloped land decreased to 44.34 ha (52%) of the total study area. Then, in the third period, the percentage of built-up land increased 0.4 times from the previous period, as up to 55.52 ha (65%) of the total study area. Meanwhile, undeveloped land decreased to 29.68 ha (35%) of the total study area. An overview of the land cover map of the study area for 2010 is shown in Figure 7.

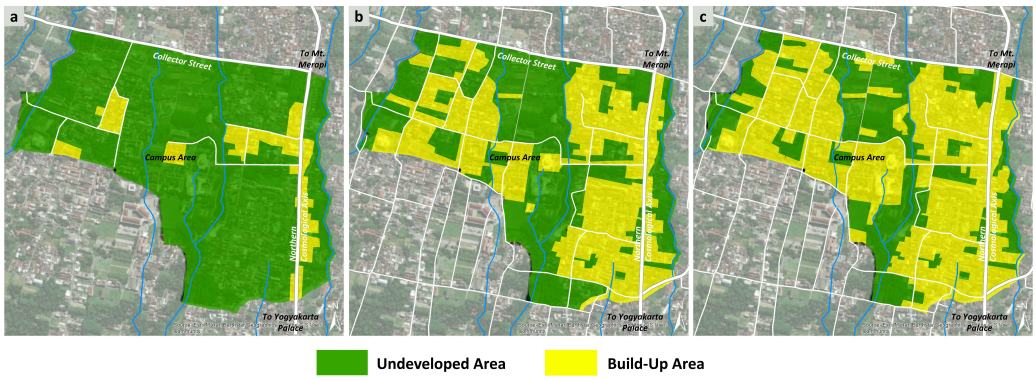

Figure 7. Spatial transformation; Comparing land covers: a – 1990, b – 2010, and c – 2023. Source: Google Earth, 2024

The topography of the study area tends to be flat, with a slope of 0-8% and an elevation of 300-350 meters. Under these conditions, built-up land includes residential, industrial, trade, service, and office uses. Non-built land is classified as urban activity land use, such as cemeteries or city parks, and non-urban activity land use, such as land used for agricultural activities and plantations.

The residential areas included single houses with a height of 1-2 floors, residential housing in residential complexes with a height of 1-2 floors, boarding houses with a height of 1-3 floors, and mixed-use residential housing and commercial buildings (mixed-use). Various types of buildings function as trade and services in the study area, including restaurants, stalls, minimarkets, markets, shops, printing services, motor vehicle repair shops, petrol stations, and laundry services. Building heights are between 1-2 floors and they consist of commercial house types and single building types, specifically for commercial activities.

Studentification-led and influenced cultural value

The local government has undertaken urban planning and physical development initiatives. These activities focus on community development through socialisation and promotion to strengthen the understanding of the local culture on the philosophical value of Yogyakarta City. Other policies on physical development, such as area structuring, rehabilitation, and maintenance of the core zone, have also been implemented. However, the policy or role of the government in regulating the buffer zone outside the core zone in peri-urban areas is yet to be pursued. This causes the development of areas outside the core zone to be less able to support the philosophical values of Yogyakarta as a World Cultural Heritage Site (UNESCO 2024).

Socioeconomic and physical transformations also shape how the neighbourhood differentiate; new student-dominated neighbourhoods, shops, office spaces, and lifestyles emerge due to gentrifiers from diverse cultural backgrounds. The local community survives the benefits of the quality-of-life enhancement. Peri-urban areas, previously agricultural land, have become highly contested locations for investors. The massive development that follows new activity centres puts Yogyakarta's philosophical value of its urban layout at risk, making it indistinguishable from other cities. However, local people who are paid below the minimum wage in informal jobs cannot make ends meet for themselves or for their families. The high demand for land and the inability to meet their ends prompted them to sell their property.

Changes in the population composition, characterised by an influx of migrants rather than local people, significantly influence a community's decision to stay or to move. This demographic shift often leads to the weakening of pre-existing cultural values, which are gradually being replaced by new cultures introduced by the migrants. Such social impacts create challenges for the local governments in maintaining and preserving local cultural values, particularly the philosophical values of Yogyakarta.

This phenomenon has been observed worldwide. For instance, O'Brien et al. (2023) discussed how urban universities attract migrants and how the presence of these newcomers is often met with resistance by the native populations. Similarly, in Yogyakarta, the arrival of new residents, including students from diverse backgrounds, disrupted the traditional cultural fabric, making it difficult for the local authorities to uphold the city's cultural heritage.

The remaining people were the first generation to be elderly. Initially, the local community had a good relationship with the community members. Various community activities have been conducted to develop the living environment. Likewise, during the initial development of the educational area, the community worked together to facilitate their neighbourhood with infrastructure, such as roads, public facilities, and household waste management. This was done on their initiative until the second period of development in the educational area. This is because of the increasing number of students that the institution cannot fully facilitate; therefore, the number and quality of community facilities provided by the local government have decreased. The facilities and accommodations provided by the campus cannot accommodate the needs of the existing students. This encourages the community to take part and to take advantage of the opportunities to provide accommodation, such as boarding houses.

The influx of external culture and the widespread sale of property by the second generation of the community have diminished the quality of the relations between gentrifiers and the local community. This process often results in tension between long-term residents and students, as students frequently prioritise temporary housing over community stability (Kim et al. 2024). Differences in decision-making approaches during the meetings, alongside student behaviours and lifestyles that do not align with the local community's moral values, contribute to the displacement of the remaining local residents. Consequently, the characteristics of the communities in the study area have become increasingly individualistic.

Discussion

Yogyakarta harbours intangible world cultural heritage (UNESCO 2024). The spatial arrangement in Yogyakarta City centres around Keraton Yogyakarta, with a cosmological axis formed by the main road (Suwito 2016). During the initial stages of student area development, a linear pattern emerged along the main axis of the Kaliurang Road, serving as both an evacuation path for volcanic disasters and access to downtown Yogyakarta. Residents have opted to build settlements on either side of the road owing to their topographical advantages (Wiwaha et al. 2016). This arrangement encompasses landmarks (e.g. Mount Merapi, Keraton) and beaches in the South Java region.

Unexplored in previous research in the context of studentification, this unique feature of Yogyakarta indicates that studentification suppresses the existence of

marginalised local communities because of cultural, economic, and environmental disparities in places to live and livelihoods. This creates a value-shift impact that extends beyond the mere establishment of an educational growth centre as the focal point, introducing potential vulnerabilities in these growth centres due to studentification.

The designation of peri-urban areas as sub-centres for urban services and education has attracted numerous students and investors. To meet the student needs, there has been a surge in accommodations, accompanied by supporting infrastructure development. Limited land near primary roads compelled private developers to construct interior student zones, altering the north-south orientation into radial spread configurations from campus centre proximities. This directional change has transformed green spaces and agricultural lands into commercialised living spaces (Prayoga et al. 2013). Furthermore, as smart projects are increasingly being implemented at the interface of urban and peri-urban areas, this transformation contributes to the peripheralisation of these regions, reshaping their socio-economic landscapes (Dragan et al. 2024).

In line with Snelder et al. (2023), the land use in the study area is often subjective and influenced by regional decisions. In the context of studentification, much of the land is repurposed as commercial areas to cater to the needs of the students. This pattern indirectly shapes characteristics, provides order, and it optimises development according to the existing regulations. However, a more in-depth analysis using remote sensing and spatial analysis is crucial to identify the impact of studentification pressure on morphological structures. In contrast with Pramana (2018), who studied the development of the same area and found that physical characteristics and accessibility were the primary drivers of change, particularly in land value transformation, this study underscores the pivotal role of a new culture.

In this context, Yogyakarta is also called the City of Students; therefore, educational institutions must participate in preserving the local culture. They should mitigate the negative impact of studentification on an area's physical condition and the social community. Educational institutions do not play a significant role in addressing these issues. Universities and local governments must be involved in educational district planning strategies, applying the right regulations to manage studentification and its impact on urban structure (Donaldson et al. 2014).

Strengthening local values has become a challenge for the government in maintaining Yogyakarta's privilege. Government regulations play a role in changing the spatial orientation of Yogyakarta. However, the unobserved root of the problem lies in preserving Yogyakarta's urban design philosophy as a City of Philosophy. To maintain the privilege of Yogyakarta's culture, the government needs to evaluate the spatial planning policies so as not to eliminate the philosophical value of ancient Yogyakarta spatial culture. Development actors also need to pay attention to the local culture as an important consideration in regional development.

Individual investors with middle-to-high incomes play a significant role. They built and renovated houses, originally characterised by traditional designs, aligning them with the lifestyles and demands of the students. This transforms the physical appearance of the neighbourhood (Prayoga et al. 2013). Investors with middle-to-high incomes can meet high standards to fulfil the student needs. Meanwhile, low-to middle-income local communities are forced to sell their properties because of competition, leading to socioeconomic vulnerability and displacement (Davidson and Lees 2010). Studentification not only positively impacts peri-urban development, but it also stresses the local community systems socially, economically, and environmentally (Cai et al. 2022, Jolivet et al. 2023). Culture-wise planning is necessary in spatial planning to manage studentification and to achieve sustainability for each component.

Conclusions

Studentification has initiated substantial transformations in economic factors, land use, and social culture in Yogyakarta's peri-urban regions. This study addressed these research questions by identifying the main drivers of studentification and their impact on the local communities. Contrary to the initial assumptions that accessibility and distance were the primary factors, the research revealed that the relocation of academic activities to suburban areas, combined with significant investments in student accommodation, were the dominant forces behind these changes. This influx of investment caused a sharp rise in land prices, disproportionately affecting low-income communities that were compelled to sell their properties and to relocate, resulting in the loss of cultural and traditional ties as well as sources of livelihood.

This study contributes new insights into urban studies by highlighting the importance of external factors, such as new cultural influx and investment, as more influential in the studentification process than internal factors, such as campus development and accessibility. These findings challenge the existing theories that focus predominantly on internal factors and they provide a nuanced understanding of how economic and cultural shifts reshape the local communities.

Future research could build on these findings by exploring the long-term socio-economic impacts of studentification on the displaced communities. Specifically, studies should investigate the effectiveness of urban planning policies designed to mitigate the negative outcomes and to promote sustainable development. Comparative analyses of similar processes in other peri-urban regions could offer additional insights and they could help to refine strategies for managing urban growth, while balancing cultural preservation. This expanded understanding of studentification enriches the academic discourse and it offers valuable implications for the policymakers. Integrating cultural considerations into urban development strategies can foster a more inclusive and culturally sensitive approach for managing urban growth and transformation.

References

ANDERSON J. (2013) Studentification. Cardiff Case Studies, Cardiff University, Retrieved from: www.cardiff.ac.uk.

ATKINSON R. (2003) Introduction: Misunderstood Saviour or Vengeful Wrecker? The Many Meanings and Problems of Gentrification, Urban Studies 40 (12), 2343-2350, https://doi.org/10.1080/0042098032000136093.

BERCEANU I.-C., POPA N., CREȚAN R. (2023) Towards a regional crossover model? The roles played by spatial vicinity and cultural proximity among ethnic minorities in an East-Central European borderland, Journal of Urban and Regional Analysis 15 (2), 159-190, https://doi.org/10.37043/JURA.2023.15.2.1.

BROOKS N., ADGER W. N., KELLY P. M. (2005) The Determinants of Vulnerability and Adaptive Capacity at The National Level and The Implications for Adaptation, Global Environmental Change 15 (2), 151-163, https://doi.org/10.1016/j.gloenvcha.2004.12.006.

CAI R., HU L., HE S. (2022) Policy-driven education-led gentrification and its spatiotemporal dynamics: Evidence from Shanghai, China, The Geographical Journal, 1-16, https://doi.org/10.1111/geoj.12440.

CRESWELL J. W., CRESWELL J. D. (2022) Research Design: Qualitative, Quantitative, and Mixed Methods Approaches, SAGE, Los Angeles.

DAVIDSON M., LEES L. (2010) New-build Gentrification: Its Histories, Trajectories, and Critical Geographies, Population, Space and Place 16 (5), 395-411, https://doi.org/10.1002/psp.584.

DEWI S. P., RISTIANTI N. S. (2019) The Implication of Studentification To Community's Physical and Social Economic aspects in Tembalang Higher Education Area, Jurnal Teknik Sipil dan Perencanaan 21 (1), 1-8, https://doi.org/10.15294/jtsp.v21i1.19027.

DONALDSON R., BENN J., CAMPBELL M., DE JAGER A. (2014) Reshaping Urban Space through Studentification in Two South African Urban Centres, Urbani izziv 25 (supplement), S176-S188, https://doi.org/10.5379/urbani-izziv-en-2014-25-supplement-013.

DRAGAN A., CREȚAN R., BULZAN R. D. (2024) The spatial development of peripheralisation: The case of smart city projects in Romania, Area 56 (1), e12902, https://doi.org/10.1111/area.12902.

FOOTE N. S. (2017) Beyond studentification in United States College Towns: Neighborhood change in the knowledge nodes, 1980–2010, Environment and Planning A: Economy and Space 49 (6), 1341-1360, http://dx.doi.org/10.1177/0308518X17698962.

FRAENKEL J. R., WALLEN N., HYUN H. H. (2023) How to Design and Evaluate Research in Education, McGraw-Hill, New York.

GREGORY J. J. (2020) Studentification and Urban Change in South Africa, in: Massey R., Gunter A. (eds.), Urban Geography in South Africa: Perspectives and Theory, Springer, Cham, pp. 225-238, https://doi.org/10.1007/978-3-030-25369-1_14.

GREGORY J. J., ROGERSON J. M. (2019) Studentification and Commodification of Student Lifestyle in Braamfontein, Johannesburg, Urbani izziv 30 (supplement), 178-193, https://www.jstor.org/stable/26690831.

HE S.-J., QIAN J.-X., WU M.-H. (2011) Studentification in Urban Village: A Case Study of Xiadu Village, Guangzhou, Geographical Research 30 (8), 1508-1519, http://dx.doi.org/10.11821/YJ2011080016.

HOSEINI P., NEMATIMEHR M. (2023) Dormitory neighbourhood: The role of studentification in developing low-quality neighbourhood, case of Babolsar, Iran, International Planning Studies 28 (2), 142-161, https://doi.org/10.1080/13563475.2022.2139667.

JOLIVET V., REISER C., BAUMANN Y., GONZALÈS R. (2023) Before displacement: Studentification, campus-led gentrification and rental market transformation in a multiethnic neighborhood (Parc-Extension, Montréal), Urban Geography 44 (5), 983-1002, https://doi.org/10.1080/02723638.2022.2073150.

KIM H., KIM H., WOOSNAM K. M., SEOMUN G. (2024) How studentification reshapes social vulnerability in

urban Korea: Impressions based on regeneration and shrinkage, Habitat International 148, 103070, https://doi.org/10.1016/j.habitatint.2024.103070.

KINTON C., SMITH D. P., HARRISON J. (2016) De-studentification: emptying housing and neighbourhoods of student populations, Environment and Planning A: Economy and Space 48 (8), 1617-1635, https://doi.org/10.1177/0308518X16642446.

MIRZAHOSSEIN H., BAKHTIARI A., NOSRATI M., JIN X. (2023) Clustering and multinomial logit analysis of factors influencing household residential location choice in the Washington metropolitan area, Journal of Urban and Regional Analysis 15 (2), 221-237, https://doi.org/10.37043/JURA.2023.15.2.3.

MOHAMMED A. M. S., UKAI T. (2022) University campuses as agents for urban change, Environmental & Socio-economic Studies 10 (1), 22-37, https://doi.org/10.2478/environ-2022-0003.

MOOS M., REVINGTON N., WILKIN T., ANDREY J. (2019) The Knowledge Economy City: Gentrification, Studentification and Youthification, and Their Connections to Universities, Urban Studies 56 (6), 1075-1092, https://doi.org/10.1177/0042098017745235.

NAKAZAWA T. (2017) Expanding The Scope of Studentification Studies, Geography Compass 11 (1), e12300, https://doi.org/10.1111/gec3.12300.

NARDONE P., ODOARDI I., LIBERATORE A., D'INGIULLO D. (2023) Where the north-south gap in human capital begins: an analysis of educational outcomes across the Italian regions, Journal of Urban and Regional Analysis 15 (2), 191-219, https://doi.org/10.37043/JURA.2023.15.2.2.

O'BRIEN T., CREŢAN R., JUCU I. S., COVACI R. N. (2023) Internal migration and stigmatization in the rural Banat region of Romania, Identities 30 (5), 704-724, https://doi.org/10.1080/1070289X.2022.2109276.

PRAMANA A. Y. E. (2018) Analisis Faktor yang Berpengaruh Terhadap Nilai Lahan di Kawasan Perkotaan Yogyakarta: Studi Kasus Kecamatan Ngaglik , Kabupaten Sleman, Daerah Istimewa Yogyakarta (Analysis of Factors Affecting Land Value in Urban Areas of Yogyakarta: Case Study of Ngaglik Subdistrict, Sleman Regency, Yogyakarta Special Region), Prosiding Seminar Nasional ReTII, 405-413.

PRAYOGA I. N. T., ESARITI L., DEWI D. I. K. (2013) The Identification of Early Gentrification in Tembalang Area, Semarang, Indonesia, Environment and Urbanization ASIA 4 (1), 57-71, https://doi.org/10.1177/1103308813478606.

REVINGTON N., ZWICK A., HARTT M., SCHLOSSER J. (2021) Universities and urban social structure: Gentrification, studentification, and youthification in five United States legacy cities, Urban Geography 44 (1), 83-104, https://doi.org/10.1080/02723638.2021.1985306.

SANMUGARAJAH D., KANKANAMGE N., RATHNAYAKE R., KARIYAWASAM S. (2020) A Study on the Process of Studentification: a Case Study of Katubedda Neighbourhood, Bhumi 7 (2), 39-53, https://doi.org/10.4038/bhumi.v7i2.54.

SMITH D. P. (2002) Extending The Temporal and Spatial Limits of Gentrification: A Research Agenda for Population Geographers, International Journal of Population Geography 8 (6), 385-394, https://doi.org/10.1002/ijpg.267.

SNELDER T., LILBURNE L., BOOKER D., WHITEHEAD A., HARRIS S., LARNED S., SEMADENI-DAVIES A., PLEW D., MCDOWELL R. (2023) Land-use Suitability is Not an Intrinsic Property of a Land Parcel, Environmental Management 71, 981-997, https://doi.org/10.1007/s00267-022-01764-y.

SULLIVAN D. M. (2007) Reassessing Gentrification: Measuring Residents' Opinions Using Survey Data, Urban Affairs Review 42 (4), 583-592, https://doi.org/10.1177/1078087406295828.

SUWITO Y. S. (2016) Mengenal Sumbu Imajiner dan Sumbu Filosofi Kraton Yogyakarta (Getting to Know the Imaginary Axis and the Philosophical Axis of the Yogyakarta Palace), Mayangkara 2, 6-9.

TISDELL E. J., MERRIAM S. B., STUCKEY-PEYROT H. L. (2025) Qualitative Research: A Guide to Design and Implementation, Wiley, San Francisco.

UNESCO (2024) Rules of Procedure of the Intergovernmental Committee for the Protection of the World Cultural and Natural Heritage, Retrieved from: www.unesco.org.

WIRAPAKSI M. G., MARPAUNG B. O. Y., SUWANTORO H. (2021) Studentification Effects on Building Devel-

opment in Abdul Hakim Street Corridor, Medan, International Journal of Education and Social Science Research 4 (3), 402-411, http://dx.doi.org/10.37500/IJESSR.2021.4325.

WIWAHA A. A., MEI E. T. W., RACHMAWATI R. (2016) Participatory Planning for Evacuation Routes and Meeting Points in Ngargomulyo Village as a Disaster Risk Reduction Effort of Mount Merapi, Journal of Regional and City Planning 27 (1), 34-48, https://doi.org/10.5614/jrcp.2016.27.1.4.

WOLDOFF R. A., WEISS K. G. (2018) Studentification and Disorder in a College Town, City & Community 17 (1), 259-275, https://doi.org/10.1111/cico.12279.

ZASINA J., JAKUBIAK W. (2024) Studentification, youthification, and gentrification, all at once? New-builds, newcomers, and near-campus change in a post-industrial city, Bulletin of Geography. Socio-economic Series 64, 87-101, https://doi.org/10.12775/bgss-2024-0015.

Territorial identity – a dynamic process and vector of local and regional development. Case study: Bukovina (Romania)

Maria-Magdalena LUPCHIAN[a], Despina SAGHIN[a], Vasile EFROS[a], Cristian CIUBOTARU[a], Anca-Gabriela COTLOANA[b]

Email: despina.saghin@usm.ro

[a] Ștefan cel Mare University of Suceava, Suceava, Romania
[b] "Alexandru Ioan Cuza" University of Iași, Iași, Romania

Abstract: Bukovina's identity is a complex construction that reflects the historical, cultural and social influences which marked the region over time; and they are often summarised in its period of flourishing when Bukovina belonged to the Habsburg and then to the Austro-Hungarian Empire. The present study used data collected through an online survey and it aims to highlight aspects of Bukovina's identity based on the perceptions of the population living in the southern part of the former province of Bukovina, as well as of the inhabitants outside Bukovina area. The results of the research revealed that the strongest identity is that of belonging to a clearly defined administrative-territorial unit – Suceava County (north of Romania). However, the territorial self-identification as Bukovinian was mentioned by a significant proportion of respondents, as very little different from those who self-identified themselves as Sucevians. Among the elements on which the perceived Bukovinian identity is based, we explored: self-identification; differentiation from the Moldavians; the way of relating to the authorities and traditions; sharing common values. The territorial component was less important in shaping a Bukovinian identity, which could be a result of the transformation of this real identity by the local authorities into a regional brand for a territory with blurred boundaries.

Keywords: cultural identity; population stereotypes; ethnic cohabitation; Bukovina

Introduction

Without being able to constitute itself as a real political entity, the province of Bukovina has had a historical evolution that gave it a special place among the Romanian territories. It was successively part of medieval Moldavia (mid-14th century: 1775), the Austrian Empire (1775-1867), the Austro-Hungarian Empire (1867-1918), and the Kingdom of Romania (1918-1940). In 1940, its northern part became a territory of the Soviet Union, and then, after 1991, of Ukraine (Nistor 1991, Iacobescu 1993).

Submitted: 04.08.2024; **Revised:** 15.02.2025; **Accepted:** 14.03.2025

Today, the historical province of Bukovina is divided into two parts: 1) its southern part, which belongs to Suceava County (about two-thirds of the county's surface of 8,555 km²), located in the North-East Region of Romania; and 2) its northern part, which belongs to the Chernivtsi Region (about half of this region's surface of 8,100 km²), in Ukraine (Figure 1).

Figure 1. The boundaries of the province of Bukovina during the rule of the Habsburg Empire

Being annexed to the Austrian Empire in 1775, the province of Bukovina has undergone a period of political stability, modernisation and progress in all areas of activity (Purici 2022). During the 143 years of occupation, Bukovina became a "Switzerland" of Eastern Europe in the public consciousness, and the provincial capital – the city of Chernivtsi – acquired the particularly flattering title of "little Vienna" (Pintescu 2001). The policy of religious and ethnic tolerance in Bukovina contributed to the peaceful coexistence of different communities and to the general prosperity of the region. Despite some criticism and tensions, brought about by the resistance movements against foreign

domination, the Austrian and the Austro-Hungarian rule ensured a high degree of modernity (Pintescu 2000, Diaconu 2018). The appreciation of those historical, socio-economic and cultural improvements showed that the people of the area still relate positively to that period of maximum development through a sense of local pride (Diaconu 2018). Belonging to this area and the identification of the people of Bukovina with the features of the region has manifested itself in a differentiation from the Moldavians – the inhabitants of Romania outside the province. Even the expression "homo bucovinensis" appeared (Olaru and Purici 2002, Mohr 2023), designating "the prototype of the tolerant individual, who speaks at least two languages and who offers a model of peaceful inter-ethnic coexistence" (Grigorovici 1996: 458).

The Bukovinian identity can be also analysed from an ethnic perspective, as a social construct, which includes the culture, language, collective origin and the common cultural traditions (Rotaru et al. 2023). As a province of the Austrian and later Austro-Hungarian Empire, Bukovina was considered "an oasis of civilised political life compared to the surrounding regions" (Pintescu 2000: 13). Its uniqueness was attributed to the fact that it was the only region in historical Moldavia that belonged to the Central European cultural area, which oriented its inhabitants towards the values of this area and to modernity (Pintescu 2000).

The Bukovinian identity is a complex construction that reflects historical, cultural and social influences (Eckmann 2004, Charaudeau 2005), which are often limited to the flourishing period when this territory belonged to the Austro-Hungarian Empire. It is also a product of cohabitation with other ethnic and religious groups and a social and historical construction based on memory (Olaru and Purici 2002, Purici 2022). The social relations in the present have roots in the past (real, constructed or imagined), and they sometimes feed this dichotomy between the "Bukovinians" and the "Moldavians". Given its different identity acquired during almost 150 years of foreign domination, Southern Bukovina seems to be different (in terms of its economic, cultural and landscape specificities) from the rest of Moldavia, but also from the rest of Suceava County, where it is almost entirely located today (Chiriță et al. 2015). Țurcănașu (2023) even spoke of a "centrifugal identity", with reference to the Bukovina-Moldavia relationship. He explained the "territorial dissidence of the Bukovinians" and the emergence of a Bukovinian identity, both by exogenous (the separation of Northern Moldavia from historical Moldavia in 1775), and endogenous forces – the decomposition of the territoriality of Moldavia through its ignorance by Bucharest, the new capital of Romania, after 1859 (Țurcănașu 2023).

Bukovina has not been a separate administrative entity for over 100 years. However, its individuality seems to have been preserved at least at the level of perception (both of those who lived there and of those outside the region). Being Bukovinian began to be a form of self-identification and differentiation increasingly used for its positive connotation, especially as, at the level of Romania, Moldavia – from which

Bukovina was detached in the 18th century – was synonymous with poverty, isolation, and periphery. Bukovina's divergent identity was also explained by Muntele (1998) through the "feeling of inferiority and belonging to the periphery", which resulted in the construction of new identities. Nowadays, this identity has been materialised into a regional brand, currently capitalised in terms of tourism. Large-scale projects, such as *Easter in Bukovina*, *Christmas in Buk*ovina, *Bukovina Hour*, *Pilgrimage in Bukovina*, implemented by the county authorities since 2008, have brought to light the desire to preserve a Bukovina identity.

The current public discourse related to the Bukovinian identity ranges from acceptance and satisfaction to the fear that a strong identity could have implications for a possible restructuring of Romania's territorial administrative organisation (Săgeată 2015, Țurcănașu 2023). However, studies indicated that there is no direct relationship between the affirmation of regional identity and the desire for decentralisation (Dargent 2001). At the same time, a strong regional identity can support regional planning policies and it can contribute to economic development (Keating 2000, Banini and Pollice 2015, Ilovan et al. 2016).

In this context, in the present study, we did not aim to objectively argue the existence or non-existence of a Bukovinian identity, because such an approach implies an extremely in-depth approach to numerous dimensions, from various research fields. Our research aims at verifying the existence of a Bukovinian identity in the perception of the inhabitants of Suceava County (being or not inhabitants of historical Bukovina). Another objective of the study is to find out to what extent the inhabitants of Suceava County are integrated into a mechanism of identity convergence, practically transforming the whole current administrative-territorial division (Suceava County) into the region of Bukovina, even if the historical reality was different.

Starting from the idea that regional identity is based on the concepts of similarity and solidarity (Capello 2019), we tried, through this study, to identify the existence of these aspects in the perception of the inhabitants of the historical south of Bukovina and of those who lived in their immediate vicinity. This analysis of the existence and extension of a Bukovinian sense of identity has also a pragmatic purpose. Territorial identity can be used as a tool in local and regional development. The existence of this territorial identity among Bukovina's inhabitants, even only at the perceptual level, is an advantage for the region and for its inhabitants. A strong identity is important for maintaining the cohesion of the region even in more difficult times, for developing self-esteem and for stimulating the desire for progress of its inhabitants (Raagmaa 2002, Roca and Mourão 2004, Ilovan et al. 2016, Banini 2017).

The hypotheses underlying this study are the following: H1) at perceptual level, South Bukovina is clearly individualised within Suceava County by the sense of belonging of its inhabitants, and by the differentiation that they feel from the Moldavians, and by their self-identification as Bukovinians; H2) the perceived identity of Southern

Bukovina was partially transferred to territories that did not belong to it, but which have been evolving, for over 50 years, in the same administrative context (of Suceava County); H3) the respondents' personal characteristics (gender, age, and living experience) nuance their perception of Bukovina's individuality.

Literature review

Studies that focused exclusively on the topic of Bukovinian identity are few (Ungurean 2015, Diaconu 2018, Luchian and Luchian 2019, Cohal 2022). Instead, there is a rich literature on Bukovina that tangentially addresses aspects related to the identity of this territory (Nistor 1991, Iacobescu 1993, Muntele 1998, Pintescu 2000, Purici 2017, Purici 2022). In most of the studies dealing with Bukovina's identity issues, there are two diametrically opposed perspectives: either Bukovina's exceptionalism in relation to Moldavianism, or the non-existence of a real spatial identity, justifiable historically, socially or from other points of view (Cohal 2022).

Through the case of Bukovina versus Moldavia, Țurcănașu (2023) exemplified the phenomenon of territoriality divergence, also in terms of identity, and explaining it by exogenous forces related to their historical evolution under different administrations. Țurcănașu (2023) mentioned also the role of endogenous factors, so that, after 1918, the territory of Bukovina became more peripheral to Bucharest, the capital of Romania, than it was before 1775 to Iași, the capital of Moldavia; and Bukovina lost its autonomy, while becoming part of the centralised Romanian state.

A complex picture of what Bukovina's identity could mean can be constructed with arguments drawn from literary texts belonging to Bukovina's writers or who have written about Bukovina. Thus, Diaconu (2018:108) considered that, even in the inter-war period (therefore, as part of Romania), Bukovina had "an image condensing excellence". Also, for today's Bukovina, "a distinctive identity is still functional" (Diaconu 2018:108), based on these elements: education and culture; material wealth; the development of a complex economy; a world of balance; law and order. Colăcel (2015) analysed how the regional identity of Suceava County is influenced by the historical legacy of the former Duchy of Bukovina. He noted that regional identification has undergone significant changes in the post-communist period, and Suceava County stands out for its association with the former Habsburg Bukovina. This association provided an opportunity for the inhabitants to construct a spatial identity, while some of them prefer to identify with Bukovina rather than with Moldavia (Colăcel 2015).

Valuable insights into how the regional identity of Banat evolved and manifested itself in the context of multiculturalism and contemporary social dynamics were provided by several studies (Neumann 1997, Crețan 2006, Woudstra 2007, Crețan et al. 2008). Crețan et al. (2008) emphasised that identity starts from a sense of "social spatialisation", with a specific language for each ethnic group and a culture formed

over time; and these local ethnic identities led to the emergence of a regional identity. Furthermore, Dragoman et al. (2016) analysed how the cultural factors and strategies of the local actors influenced the regionalisation process in Romania, and they emphasised the importance of local identity and cultural dynamics in shaping regional political strategies.

Recent studies (Dragan et al. 2024) emphasised the importance of spatial analysis in reinforcing rural identity and regional belonging, while integrating them into the local decision-making, which is essential for preserving the cultural heritage and for fostering social cohesion. So, identity can be a valuable tool for promoting social and economic development, while preserving and enhancing cultural heritage and regional specificity (Dragan et al. 2024).

Some studies deal with similar issues related to the identity and perception of the Romanians in Szeklerland, the results of which can be extrapolated to the Bukovinian area (Biró and Gagyi 1999, Lőrincz 1999). Thus, the Romanians in Szeklerland regarded Hungarians as orderly, well-organised, socially united and restrained, close to the Germans in the hierarchy of cleanliness and order (Biró and Gagyi 1999).

Sauer (1969) emphasised that the identity of a territory is shaped by the interaction between natural factors and human activity, as a result of the physical landscape and cultural practices. In a more recent context, the approach to territorial identity emphasised sustainability, and the importance of cultural landscapes and collective memory in preserving territorial identity, together with underlining how social perceptions and community values contribute to defining a region (Van Mansvelt and Pedroli 2003).

Goffman (2022) supported the interactionist conception in identity construction, as it results from the sense of belonging – from "us" in interaction and in contrast with others, with "them". In a similar vein, Horenczyk and Bekerman (2012) expressed a constructivist conception of identity: a constructed, deconstructed, and reconstructed, therefore changing identity. This is grasped as an ongoing process and it does not rest on who we were or could have been, but it refers to who we have become through our collective history and personal trajectories (Horenczyk and Bekerman 2012).

Social identity has been approached by Tajfel (1982) and Perreault and Bourhis (1999) as an individual's self-concept that is related to the knowledge of belonging to particular social groups, and to the emotional and evaluative meaning that results from this belonging. From this perspective, social identity is constructed through interaction with other groups that are considered socially comparable, and its meaning is based on the evaluation provided by these situations (Perreault and Bourhis 1999).

Important for the theoretical framework of our study are the three models of identity construction mentioned in the literature: the cognitive model, the cultural model, and the relational model (Capello 2019). Each of these models considers territorial identity to be a result of specific factors, which generate similarity and solidarity between the inhabitants of a space; subsequently these two pillars of identity create

the so-called "territorial loyalty", a concept that can be considered as a precursor for territorial identity (Capello 2019). The cognitive model is based on the constitution of an economic vocation of a territory, which can be at the basis of territorial identity (Capello et al. 2011); the cultural model is based on the solidarity generated by the sharing of common values (Camagni 2017); and the relational model is centred on the relational capital of a territory, as a basis for the construction of an identity based on belonging to this network of relationships (Capello 2019).

One of the fundamental approaches to identity, from a philosophical perspective (Kauffmann 2008), was to reduce it to an illusion, determined by the passage of time; so, it lends the impression of permanence in time to any element, identity being rather fiction in this case. Also, Kauffmann (2004, 2008) mentioned both the role of social interactions in shaping identity and the reciprocal link between spatial and individual identity – spatial identity contributes to the construction of individual identity, as well as individual identity reflects on the identity of a space.

Jakab and Peti (2009) argued that the image of a territory encompasses community crystallisations, group histories, conflicts, attitudes, realities and assumed transformations and changes, which allow them to define and to distinguish themselves from the others. It relates to "a lost golden age" (Jakab and Peti 2009: 9), an idealised past, when Bukovina was integrated into a supranational space (the Austro-Hungarian Empire), giving it a supranational identity.

Methodology

According to Banini (2017), territorial identity can be built both from bottom up (by the inhabitants of an area), and from top down (by the authorities, and the administrative institutions), while the physical proximity of inhabitation plays an important role in this process. In this context, we considered Suceava County and Southern Bukovina as a perfect framework for applying these concepts. Considering "territorial identity as a process of social construction, open and dynamic, through which collectivities settled in a given territory choose the distinctive features of the territory they inhabit or in which they act, modelling common values, solutions, actions and future trends" (Banini 2017:18), territorial identity is seen as the result of a process in which the inhabitants are the main actors. In this context, the extension of Bukovina's identity to the whole county of Suceava can represent an example of active territoriality.

In order to assess the existence of this territorial identity in the perception of the inhabitants, we have taken into consideration three dimensions: 1) territorial self-identification, the existence of a sense of belonging and attachment to the place; 2) differentiation from the others; 3) sharing common values and attitudes.

The perception of the inhabitants of Suceava County regarding the existence of a Bukovinian identity was analysed through a questionnaire-based survey, as a data

collection method. The questionnaire was distributed online, using a survey administration software (Google Forms), and it was addressed to respondents who inhabit Suceava County; the distribution of the questionnaire aimed at a balanced representation among the respondents, including both inhabitants of settlements that were part of historical Bukovina, and also those of settlements that evolved in the Romanian context in the period 1775-1918 (being part of Moldavia or of the Kingdom of Romania after 1859). The study was conducted in accordance with the Declaration of Helsinki, the ethical approval was obtained from Ștefan cel Mare University of Suceava (reference number 55/2022/03/14), and the participants provided informed consent.

The questionnaire consisted of 36 questions; its first section included six questions on demographic data, education and labour market status, and then on the name of the locality in which they lived and the length of time spent in that locality (Table 1).

Table 1. Descriptive statistics on the general variables

Variable	Number	Percentage
Gender	**875**	**100**
Male	457	52.23
Female	418	47.77
Age	**875**	**100**
18-28 years	196	22.4
29-39 years	261	29.83
40-50 years	241	27.54
51-61 years	106	12.11
62+ years	71	8.11
Education level	**875**	**100**
K-12, vocational and apprenticeship schools	158	18.0
Secondary and post-secondary	424	48.5
Undergraduate and postgraduate	293	33.5
Labour market status	**875**	**100**
State employee	373	42.3
Private sector employee	84	9.6
Liberal professions	17	1.8
Entrepreneur	44	5.0
Pupil/Student	181	20.7
Pensioner	80	9.1
Unemployed	6	0.7
Household worker	94	10.7
Territorial affiliation	**875**	**100**
Historical South Bukovina	515	58.85
The rest of Suceava County	360	41.15
Time spent in locality	**875**	**100**
<5 years	66	7.54
5-15 years	92	10.51
>15 years	717	81.94

The remaining questions covered the following aspects:

- self-identification in terms of objective territorial belonging; and, subjectively, how or what they feel as identity;
- the differences between the Moldavians and the Bukovinians;
- the Bukovina tourist brand and its current trends of generalisation for the whole county of Suceava, not only for historical Bukovina;
- the role of some programs initiated by the authorities, which use the Bukovina identity as a value for the local development;
- different values of the inhabitants; the role of the state, and the role of the individual for personal development.

Initially, 1201 subjects fr 122 settlements in Suceava County completed the questionnaire; 515 were frosettlements of historic Bukovina, and 514 respondents were from other settlements in Suceava County; after the questionnaires were assessed, only 875 were validated and retained (515 respondents from historic Bukovina, and 360 from the rest of Suceava County). The data thus obtained were processed with SPSS 23.0, using the quantitative analysis, the correlation, and the comparison. The analysis consisted of descriptive analysis, which mainly highlights the main characteristics of individual variables. Tests of analysis and comparison were used through a T+ test, thus examining the effects of an independent variable on one or more dependent variables, and its application was reserved for comparing two groups. The results of this test helped to discover whether the two used methods differed significantly. The additional chi-square test assessed the association between categorical variables, focusing on the frequencies of observations in different categories. By comparing the observed and expected frequencies, the test determined whether the differences were statistically significant. The chi-square test allowed the discovery of patterns, dependencies or independences in categorical data sets. The chi-square test was used to determine whether there is a significant association between the two categorical variables.

Results

The self-identification of the inhabitants with one of the operational categories in this space – Bukovinian (inhabitant of Bukovina), Moldavian (inhabitant of Moldavia), and/or Sucevian (inhabitant of Suceava County) – highlights whether Bukovina still exists at a perceptual level. Another question is whether more than 100 years of integration into Romania, and more than 50 years of existence within a recognised administrative territorial unit – Suceava County – have blurred the identity of Bukovina.

Those who have analysed the issue of Bukovina's individuality in relation to Moldavia agreed that Bukovina's distinct character was not only almost annihilated (Pintescu 2000), but it even became a "forbidden memory" (Diaconu 2018). This was after the Second World War until 1990 due to the administrative fracturing, but also

due to the totalitarian communist regime. Despite that, after 30 years of recovering history, do the inhabitants of this space perceive any difference between being Bukovinian, Moldavian or Sucevian? Beyond this self-identification, we also considered it important to assess the perceptual dimension, given by the feeling of belonging to one of the mentioned categories. The analysis was conducted for the entire sample, as well as in a disaggregated manner. Specifically, the examination included a subset pertaining to the historical region of Bukovina, while another subset comprised localities within Suceava County that lie outside of Bukovina.

The statistical analysis revealed that, for the whole sample, the strongest identity was the one given by belonging to a clearly defined administrative-territorial unit – Suceava County (Table 2). However, the territorial self-identification as Bukovinian was indicated by a significant proportion of the respondents, which is hardly different from those who self-identified themselves as Sucevians. The results of the t-test and Mann-Whitney test showed significant differences between the responses of the two mentioned categories – those living in South Bukovina (group 1), and those in the rest of Suceava County (group 2). Self-identification as Bukovinian of those in group 1 was an overwhelming majority (83.3%), while self-identification as Moldavian of those in group 2 was less significant (63.1%). The identity of belonging to the administrative territorial unit of Suceava County was significantly more important for those in group 2 (69%) than for those in group 1 (46.6%).

Table 2. Variables related to territorial identity, based on territorial affiliation

		Total %	South Bukovina %	Suceava Department %	t-test / p value
Bukovinian	All the time	34.4	48.7	13.8	< 0.01
	Most of the time	25.9	34.6	13.6	
	Sometimes	19.2	1.5	31.6	
	Rarely	8.9	1.9	18.8	
	Never	11.5	4.3	21.9	
Moldavian	All the time	20.9	10.7	50.8	< 0.03
	Most of the time	16.9	9.5	27.5	
	Sometimes	28.4	31.5	24.1	
	Rarely	21.1	31.1	6.9	
	Never	12.5	17.3	5.8	
Sucevian	All the time	35.3	28.5	45.0	< 0.01
	Most of the time	20.6	18.1	24.4	
	Sometimes	26.4	30.3	20.8	
	Rarely	12.1	16.5	5.8	
	Never	5.4	6.6	3.8	

The perceptual situation is similar. For the whole sample, most people feel themselves to be Bukovinian (56.3%), but there are also a significant percentage of people who feel themselves to be Moldavian (41%); and the difference between the two categories is

smaller than in the case of territorial self-identification. The Bukovinian identity seems to be stronger than the Moldavian one, as 76.7% of the respondents living in historical Bukovina feel themselves to be Bukovinian, and only 65% of the respondents outside historical Bukovina (thus in Moldavia) feel themselves to be Moldavian. At the same time, the share of those living in historical Bukovina, but who do not perceive their identity as being Bukovinian at all or almost not at all (4%), is significantly lower than the share of those living in Moldavia who do not perceive themselves as Moldavians (13.4%). However, the share of Bukovinian residents who do not feel Moldavians (38.2%) is higher than the share of those who lived in Moldavia and do not feel Bukovinians (32.5%). These results may represent another argument for the existence of a clearer perceived identity among the Bukovinians.

There is no perfect overlap between those who territorially self-identified themselves as Bukovinians and those who feel themselves to be Bukovinians (Table 3), or between those who territorially identified themselves as Moldavians and those who feel themselves to be Moldavians. More people said that they were Bukovinians (by territorial affiliation) than those who said that they felt themselves to be Bukovinians. This result can be interpreted as dissolution of identity, as they know that they belong to the territory of Bukovina, but they do not feel this belonging.

Table 3. Correlation between the self-identification by territorial belonging and the felt identity

How do you identify yourself by territorial affiliation?		*How strongly do you feel as a Bukovinian?*		
		Value	df	Asymptotic Significance (2-sided)
Bukovinian	Pearson Chi-square	793.042[a]	20	0.000
	Likelihood Ratio	751.747	20	0.000
	Linear-by-linear Association	199.456	1	0.000
Sucevian	Pearson Chi-square	64.250[a]	20	0.000
	Likelihood Ratio	62.711	20	0.000
	Linear-by-linear Association	0.172	1	0.678
Moldavian	Pearson Chi-square	115.263[b]	20	.000
	Likelihood Ratio	124.127	20	.000
	Linear-by-linear Association	8.197	1	.004

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 6.76.
b. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 8.02

Among the Moldavians, more people said that they felt Moldavian than those who identified themselves as Moldavians by territorial belonging. This result may be the consequence of overlapping the Moldavian and the Sucevian identities in the minds of the Moldavians (they feel Moldavians but they territorially self-identify themselves as Sucevians because, broadly speaking, in their perception, there is no difference between being a Sucevian and being a Moldavian). Both results argue for the existence

of a Sucevian identity as dominant in Suceava County. This can be explained by the weakening of the sense of identity among the young people of Bukovina and by the weak Moldavian identity of those who did not live in the Bukovina part of Suceava County.

The perception of the differences between the two categories – Bukovinian and Moldavian – can be also a point of support in shaping a perceived Bukovinian identity. For the whole sample, more than one third of the respondents considered that there are differences between the Moldavians and the Bukovinians, while other respondents considered that there are no such differences (12.6%), or they did not answer (9.6%). The T-tests and the Mann-Whitney tests indicated again significant statistical differences between the responses of the two categories differentiated by their territorial affiliation – the Bukovinians and the Moldavians. The respondents of historical Bukovina considered that there are such differences to a greater extent than those from Moldavia (45.5% compared to 28.1%). The share of those from Bukovina who said that there is no difference between the Bukovinians and the Moldavians is of 8.5%; the share of those from Moldavia who said that there is no difference between the Bukovinians and the Moldavians is of 18.6%. These results clearly indicate a much stronger perception of a Bukovinian identity than that of a Moldavian one.

The attachment to one's place of birth can be considered either as a factor contributing to the shaping of a group's identity, or as a manifestation of this already existing identity (Giuliani 2016). From this point of view, there seem to be no significant differences between the respondents in the two groups, as, in both cases, a little over 40% of the respondents are strongly attached to their place of birth (town, village), and only a small percentage (9%) want to leave the town/village where they are living now, under any conditions and as soon as possible. The difference in behaviour between the two groups appears in terms of attachment to the country of origin, with those from historical Bukovina proving to be much more attached to Romania than those from Moldavia – more than half of the Bukovinians did not want to leave Romania; and only 35% of non-Bukovinian people did not want to leave Romania. Studies have shown (Tarrius 1992, Waldinger 2013) that the Bukovinians were among the first Romanians who constituted external migration flows after 1990. Their current relative stability can be explained through this early migratory experience. On the one hand, external migration allowed them to accumulate financial capital, and they took advantage of it after that in the country, and, on the other hand, they have already experienced the painful effects of external migration, especially at a personal level.

Overall, the statistical analysis aimed at testing the existence of statistically significant differences regarding the existence of a territorial entity of Bukovina in the perception of those living in historical Bukovina and of those living in its immediate vicinity, on the territory of the same administrative-territorial unit – Suceava County. The results showed that the probability value associated with the Asymptotic Sig. test

(2-sided test) is 0.00, indicating the presence of statistically significant differences (Table 4).

Table 4. Independent-Samples and the Mann-Whitney U Test

	Self-identification, attachment, perceived differentiation	Economically perceived characteristics	Characteristics perceived in terms of reporting to the authorities	Characteristics perceived in terms of embedded values
Total N	875	875	875	875
Mann-Whitney U	102268.500	77119.000	127451.000	105489.500
Wilcoxon W	167248.500	142099.000	192431.000	170469.500
Test statistic	102268.500	77119.000	127451.000	105489.500
Standard Error	3664.992	3651.653	367.463	3666.505
Standardised Test Statistic	2.611	-4.267	9.468	3.488
Asymptotic Sig (2 sided test)	.009	.000	.000	.000

From an economic point of view, the differences between Bukovina and the territory outside Bukovina are perceived by the respondents at an individual level. The economy based on primary sector activities (animal husbandry, wood exploitation, mining) and tourism, the absence of collectivisation[1] during the communist period and the higher intensity of external migration have shaped a more prosperous image for Bukovina's municipalities and towns than that of the Moldavian localities. The assessment of the level of personal wellbeing showed a lower level of satisfaction for the respondents of historical Bukovina than for those of Moldavia: 66.6% of the Bukovinians and over 80% of the Moldavians considered their level of wellbeing to be at least "fairly good"; also, the respondents from the localities of historical Bukovina were more moderate in their assessment of their level of well-being than those of Moldavian localities – 62.2% of which rated their level of well-being as good, and very good (compared to only 37% of the respondents of historical Bukovina). The Pearson correlation coefficient values indicate the existence of a weak positive correlation between the characteristics perceived from the economic point of view by the Bukovinians and the perceived individual characteristics (r = .156, p-value = .000).

Our study results revealed that there are differences between the inhabitants of historical Bukovina and those outside Bukovina area in the way they relate to the representatives of the authorities and to the important members of the community. The statistical analysis showed that these differences are statistically significant (sig < 0.01) in a few cases. Those from Bukovina were less trustful in all state representatives, be they local authorities, doctors or teachers (less than 30% of the respondents said

[1] A process initiated by the Romanian state in 1949, which meant replacing the private ownership of agricultural land with collective forms of ownership, such as state-run farms; most of the mountainous area in Romania was not included in this process.

that they trusted them much or very much, while for those outside Bukovina the percentage exceeded 40%). The inhabitants outside historical Bukovina showed the highest trust in the local authorities (more than 45% trusted them much or very much, compared to only 30% of the Bukovinians), and in the police (39.9% compared to 21%).

Moreover, the way in which the Bukovinians related to the authorities was also different from that of the Moldavians. Only 8.5% of the respondents from Bukovina considered the state to be solely responsible for their economic development and level of education, compared to 13.8% of the Moldavians. At the same time, 59% of the Bukovinians believed that the responsibility for their individual's economic and educational level should be shared equally between the authorities and at individual level; this opinion was shared by only 39% of the respondents from outside Bukovina. It is also worth noting that the Moldavians expressed less concern about this issue, as 14.3% of the respondents said that they do not know or they did not answer to this question, as opposed to only 4% of the Bukovinians. There were also significant differences in terms of their source of information on community affairs: over 37% of the outside Bukovinians got their information from the local authority most often, compared to only 21.7% of the Bukovinians; the latter ones got information from the mass-media most often (61.6% turn to this source most often, compared to only 52.5% of the outside Bukovinians). Important differences also appeared in terms of relating to the church, from where the outside Bukovinians got their information more frequently.

The way in which the inhabitants of historical Bukovina are perceived by those who lived in the other localities of Suceava County and by themselves outlined a respected and proud community. The overwhelming majority of non-Bukovinians (91%) had a good and a very good opinion on the Bukovinians, which coincides with almost the same proportion of Bukovinians with a good and a very good opinion of themselves (95%). The situation is similar for the non-Bukovinians: they expressed a positive opinion of their community in a proportion of over 90%, which may indicate the maintenance of a still important Moldavian identity.

We believe that this convergence of opinions between the Bukovinians and the Moldavians in their immediate vicinity could be explained precisely by the complicated relations between the two territories. The Bukovinians individualised and defined themselves from the beginning by differentiating themselves from the others, with whom they did not want to be confused. In the self-identification of the inhabitants of this area, the term "Bukovinian" appeared with the incorporation of Bukovina into Galicia (Purici 2022) – and the Bukovinians did not want to be confused with the Galicians. Later (in the inter-war period), they wanted to differentiate themselves from the Romanians of Greater Romania, who seemed to ignore their identity (Purici 2022).

Nowadays, being Bukovinian is once again valued (especially through the efforts of the local authorities to promote Bukovina). So, the support of the respondents for promoting the whole county of Suceava under the Bukovina brand was unanimous,

but it was stronger among women outside Bukovina, and especially for those aged 51 to 61, and for the 29 to 39 years old, and for those people who have been living here between 5 and 15 years long. All these positions can result in a very good image of one's own community. And the good opinion that both the Bukovinians and the Moldavians in Suceava County have of each other may be a sign of the convergence of the spatial identity towards which the inhabitants of Suceava County are tending.

Also of interest are the statistically significant differences in the responses to the question aimed at capturing those personal values that are important to the respondents. The most important differences emerged in relation to the importance of the existence of a legislative framework that genuinely guarantees respect for the citizens' rights. From this point of view, over 80% of the people from the territory of historical Bukovina considered this aspect to be of great and of very great importance, while the Moldavians were less interested in this aspect (69%). Significant but smaller differences also appeared in the role of financial prosperity and of individual freedom for the individual well-being – both aspects were more important for the Bukovinians than for the Moldavians.

As regarding the personal traits of those in their community, as mentioned by the respondents from the two groups, the differences appear to be related only to the entrepreneurial spirit mentioned more by the Bukovinians (44.8%) than by the Moldavians (37%), and to the hardworking quality, mentioned as a defining trait especially by the Moldavians.

Aspects related to the preservation of the traditional architecture of houses, the practice of various crafts in the locality or the existence of local gastronomic customs were mentioned by the respondents from both territories in relatively equal proportions; the differences were of nuance: local gastronomy with local products, mentioned by the outside Bukovinians; local gastronomy with ingredients from various sources, mentioned by the Bukovinians; iron and clay processing mentioned more by the Bukovinians; wood processing mentioned more by the outside Bukovinians. However, the fact that the respondents did not know/did not answer to these questions was much more frequent among those from outside Bukovina (20.2% – regarding the architecture of the house; 32% – regarding the traditional crafts practiced in the locality; 12.8% – in terms of keeping traditional gastronomy in the family) than among those from Bukovina (7.6%, 2.1% and 4.5% respectively) indicates a higher importance of local traditions for those living within the territory of historical Bukovina.

The way in which the inhabitants of Suceava County perceived the existence of differences between the territory belonging to historical Bukovina and the one that remained in Moldavia (and then in the Romanian Kingdom), as well as the way in which they related to this territory by self-identifying themselves as Bukovinians, Moldavians or Sucevians, were also nuanced by individual demographic characteristics. The self-identification as Bukovinian was more frequent for men, especially for those living in

the territory of historical Bukovina; and it was also different according to age, while being stronger as age increased for those living in Bukovina (Figure 2), and more important for the young respondents and for those over 62 years of age who lived in settlements outside Bukovina (Figure 3). Our results were previously confirmed by several studies in the field (Woudstra 2007, Creţan et al. 2008), and they allow us to state that the Bukovina identity (the "Bukovina spirit") is still present among the young people, although to a lesser extent than among prior generations.

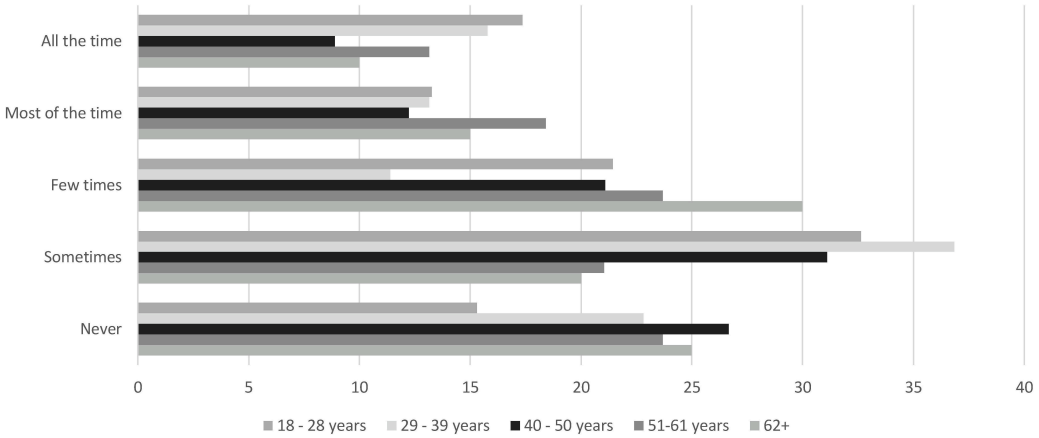

Figure 2. Self-identification of territorial belonging as Bukovinian, according to age, for those who lived in historical Bukovina

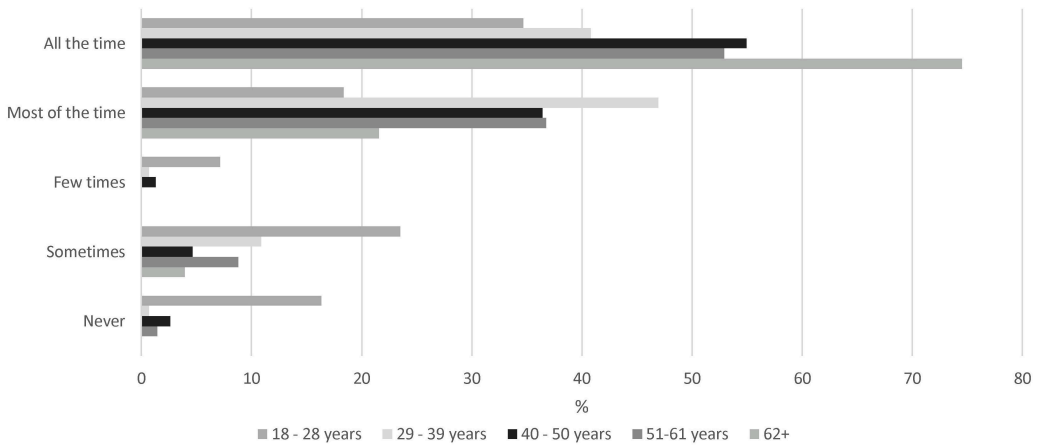

Figure 3. Self-identification of territorial belonging as Bukovinian, according to age, for those who lived in Moldavia

Also, those who frequently self-identified as Bukovinians were those who have been living in their current settlements for a longer time (if they lived in historical

Bukovina), and those who have been living there for less than 5 years (if they lived in settlements outside Bukovina).

Young people and those in the 51-61 age group felt especially to be Moldavians, and for those who lived in localities in the former Romanian Kingdom, the feeling of belonging to Moldavia increased with age and length of residence. Age and length of residence also generated differences in the perception of differences between the Bukovinians and the Moldavians. As age and length of residence increased, the perception of these differences was also more important; for the Bukovinians, the more these parameters increased, the more the differences were perceived, while for those living in non-Bukovinian settlements, the situation was reversed.

Discussion

The study results highlight that, despite the long time since it lost its administrative existence and since it is part of another administrative-territorial unit (Suceava County), Bukovina continues to exist in terms of spatial identity, at least at perceptual level, due to some of its distinctive marks. Contrary to Kauffmann's approach (2004, 2008), Bukovinian identity cannot be interpreted as an illusion, determined by the passage of time. This historical and social construction has been perpetuated for over two centuries. It is a local identity that stems from its economic, legal, ethnic and religious heritage, marked by historical and modern stereotypes and by the way in which the Bukovinians have built themselves as a community. The Bukovinian identity is clearly conditioned by the relationship with the territory in question, a complex area due to the successive structuring and restructuring that it has undergone. The bonds of solidarity often go beyond the physical borders of the province and they transcend space, resulting in subtle but extremely strong links abroad, where the Bukovinians often form small communities. Individual and collective memory weaves links with history and it plays a key role in building the Bukovinian identity. But there are important differences in the way in which the inhabitants of Suceava County declare their territorial belonging, as the Bukovina identity is still strong, even if the Sucevian one is invoked more frequently.

The spatial identity perceived and expressed by indicating the territorial belonging to different spaces (Bukovina, Suceava County, or Moldavia) seems to be based on several important pillars, and there are statistically significant differences between the respondents from the two analysed groups (the Bukovinians and the outside Bukovinians). This concerns especially the economic dimension, with Bukovina being perceived as more prosperous, more economically dynamic, and with a more diversified economy, focused on tourism and on wood processing, alongside agriculture.

Social cohesion, the trust in the actors involved in territorial management and the trust in the other members of the local community can be another criterion by

which one area can be differentiated from another at a perceptual level (Paasi 2003, Paasi 2009, Capello 2019, Banini and Ilovan 2021). These community characteristics are crystallised through a long evolution in a particular historical context and they can form the basis of a specific development model. The lower level of trust of the Bukovina inhabitants in the authorities and in the church may be characteristic to a society in which a feeling of distrust has probably become entrenched towards the public institutions which have not always promoted the interests of the majority.

The way in which the inhabitants of historical Bukovina are perceived by themselves and by those living in other localities of Suceava County outlines a respected and proud community. This differentiation perceived by the others, and complemented by an important segment of both groups and their perception of the existing differences between the Moldavians and the Bukovinians, is another pillar of a strongly perceived Bukovina identity.

The relation to local traditions, the respect for their preservation and their knowledge on them is another aspect that underpins the shaping of Bukovina's identity, as it is perceived by the inhabitants of Suceava County. The same idea of a still strong Bukovina identity is supported by the values which are more important to Bukovinians (the importance of individual freedom and of the law, as a guarantee of personal and group security, and a greater responsibility for one's own development) than to those living in settlements outside historical Bukovina. Thus, in the case of Bukovina and its construction of territorial identity, specific mechanisms can be found from each of these models (cognitive, cultural, relational) mentioned in the literature (Capello 2019); these mechanisms have worked in the past and remain so today.

The perceived Bukovinian identity is much stronger for those from Bukovina than the Moldavian one for those outside Bukovina; but it is slightly surpassed by the Sucevian identity in the part of the county which did not belong to Bukovina. This may be the reason for us to assert that, at least after 1990, the phenomenon of spatial identity convergence, mentioned by Țurcănașu (2023) for the western part of Romania in relation to Transylvania, began to manifest itself at county level. The inhabitants' support of the idea of promoting the whole county as Bukovina is proof of this. Moreover, in 2009, on the initiative of a few private stakeholders and in partnership with the local authorities, the "Produs în Bucovina" (Made in Bukovina) Association was set up, bringing together producers from various sectors operating in Suceava county, to promote different local products across Romania and at international level. It should be noted, however, that not only producers from Bukovina benefited from this label, but also many producers from outside the county of Suceava, who were therefore assimilated to the region of Bukovina.

The role of the local actors in preserving regional identity, in contrast to the lesser involvement of the government representatives in preserving the Bukovinian identity, was confirmed by Crețan et al. (2008), in their study on the cultural identity of the

Banat region. Bukovina's identity was and it is promoted especially in the hospitality industry and through the materials published by the Suceava County Council destined to create the public identity of Suceava County; these promotional materials use different marketing strategies based on the area's diverse past and historical heritage to emphasise the existence of a multicultural community with specific symbols (Colăcel 2015).

Moreover, the place name of Bukovina is ubiquitous throughout Suceava County and it is used as a distinctive mark for the entire county, both by the local and regional authorities, when naming different public institutions (e.g., Bukovina Economic Centre, Bukovina Cultural Centre, Bukovina National Museum, Bukovina Institute, Library of Bukovina), and by the private actors, especially in tourism, but not only (e.g., Bukovina Hotel, Bukovina Tourism Association, Bukovina Medical Centre, Bukovina Dairy; various local action groups in the county: Bukovina Citadel, Bukovina Mountain, Bukovina Land; various non-governmental organisations: Bukovina Civic, Bukovina Ladies Society, Bukovina Seniors Association). The actions and activities of these institutions and organisations including "Bukovina" in their name are not limited to the historical Southern Bukovina, as, in their case, "Bukovina" became a substitute for the whole Suceava County.

These aspects, as well as the strong support shown by the respondents from both territories (Bukovina and outside Bukovina) for the promotion of the entire territory of Suceava County in terms of tourism and economy under the Bukovina brand, show that, in the present, the territorial component, resulting from the historical evolution of this area, is no longer very important in its definition. So, the image of Bukovina has already been transferred to the entire administrative-territorial unit of which historical South Bukovina has been part of for the last 60 years – Suceava County.

The analysis results lead to the identification of a Bukovina identity as defined by Shayo (2009), and by Capello (2019:145): spatial identity is characterised by "a set of socio-economic and cultural context conditions allowing convergence between collective and private advantages, feeding sense of belonging and loyalty to community". We believe that a very important role in triggering this identity convergence was played by the local authorities, who have intensively promoted Bukovina in the last 20 years, often superimposing it on the whole Suceava County. This overlapping was taken over, intentionally or not, by the national mass-media which not only associated, but it also identified, for many times, the Suceava County with Bukovina. Moreover, the role of public institutions in shaping regional identity is often invoked in the literature (Paasi 1986, Roca and Mourão 2004, Capello 2019). A more detailed analysis of this role in the case of Bukovina, as well as the investigation of the objective attributes of Bukovina identity, can constitute future directions of research. Today's Bukovina identity is, in fact, the result of the action of several factors, including the development strategy supported by the local authorities. Furthermore, in 2023, the Bukovina tourist resort

(which includes all 25 county tourist resorts) was launched and this initiative can be a proof that Bukovina identity is already being used as a tool for local and regional development.

The analysis carried out only at the level of Suceava County did not allow us to outline a broader perspective on Bukovina's identity, which is a limitation of the study. The extension of this investigation to the inhabitants of Moldavia, or even to the inhabitants of Romania, may be the subject of future studies. Furthermore, the online distribution of the questionnaire represents another methodological limitation of the research, as it limited the inclusion in the analysis of elderly people with no internet use; thus, the perspective on the Bukovinian identity resulting from the study is not complete. Also, the distribution of the questionnaire using the snowball method meant that the questionnaire reached also people outside Suceava County (who were not the target of this study), and the young people under 18 years of age, as well (for whom parental consent would have been required). For this reason, a significant number of questionnaires were discarded from those initially collected. As another methodological limitation of our study, using the snowballing method also resulted in the under-representation of the category of private sector workers among the questionnaire respondents.

Conclusions

Although more than 100 years have passed since Bukovina was no longer a clearly delimited region with its own administration, it still exists, at least in the minds of its inhabitants and of those in the vicinity, through its distinctive marks. Its multi-cultural and multi-ethnic character has faded and it changed, and its current administration is the same as that of the territories that did not belong to it, and yet there seems to be more and more talk about Bukovina recently.

The dynamics of its identity have evolved from the beginning of its construction at the end of the 18th century to the present day, with ups and downs. Although built on a foundation of ethnic and confessional diversity, tolerance, prosperity, law and order, this identity of Bukovina has not always been well received. At the time of the Austrian and the Austro-Hungarian rule, the Bukovinian identity was considered to be or it could have been a threat to the Romanian identity, and there is sufficient evidence to show that this side of things existed (Nistor 1991, Iacobescu 1993).

Having entered under the Romanian administration, the management of Bukovina territory and, implicitly, of its identity were subject to several challenges – the transition from self-government to the centralised government; the management of the multi-ethnic character; the general attitude towards the Jewish minority in the 1930s (Diaconu 2018, Purici 2022), to which the Romanian authorities did not always respond in the most appropriate way – e.g., the deportation of the Jews from Bukovina, in

1941 (Hrenciuc 2018). After 1948, being melted into the mass of the Soviet-inspired region, and then into Suceava County, the Bukovina identity faded and its belonging, for a while, to the Central European cultural area turned from an advantage into a disadvantage. But, the post-Decembrist recovery of the "forbidden memory", the consistent involvement of the local authorities in the promotion of its identity and the undesirable positioning of Bukovina in the Moldavian periphery have reinvigorated the former identity of an area nowadays fed by the nostalgia for what it could have been if the history had been evolved differently. So, our study may represent an example on how the administrative-political boundaries can compose and decompose territorial identities – the creation of Bukovina in the 18th century generated Bukovina's territoriality, and the reconfiguration of national borders after the World War II and the delimitation of Suceava County in 1968 decomposed it.

Whether this Bukovinian identity is singular or whether it can coexist with other spatial identities remains a topical question. Can you be Bukovinian, Sucevian, Romanian and, why not, European at the same time? Or are the identities of Bukovinian and Moldavian completely incompatible, if the Bukovinian is also a Sucevian, as there are some Moldavians? To what extent the perceived identity of Bukovina still has an objective support today is a topic that can be investigated by future studies. Also, to what extent this identity convergence is beneficial for the development of this territory, to what extent it harms the Moldavian identity, and to what extent it may even expand in the future, regardless of the former historical reality, are other possible directions of subsequent research.

References

BANINI T. (2017) Proposing a Theoretical Framework for Local Territorial Identities: Concepts, Questions and Pitfalls, Territorial Identity and Development 2 (2), 16-23, http://doi.org/10.23740/TID220172.

BANINI T., ILOVAN O.-R. (2021) Introduction: Dealing with territorial/place identity representations, in: Banini T., Ilovan O. R. (eds.), Representing Place and Territorial Identities in Europe: Discourses, Images, and Practices, Springer, Cham, pp. 1-19, https://doi.org/10.1007/978-3-030-66766-5_1.

BANINI T., POLLICE F. (2015) Territorial identity as a strategic resource for the development of rural areas, Semestrale di Studi e Ricerche di Geografia 27 (1), 7-16, https://doi.org/10.13133/1125-5218.15105.

BIRÓ Z. A., GAGYI J. (1999) Romanian-Hungarian Interetnic Relations in Csíkszereda, in: Biró Z. A., Lőrincz J. D. (eds.), Szeklerland in Transition: Essays in Cultural Anthropology, Pro-Print & WAC – Center for Regional and Anthropological Research, Miercurea Ciuc, pp. 227-278.

CAMAGNI R. (2017) Territorial capital, competitiveness and regional development, in: Huggins R., Thompson P. (eds.), Handbook of regions and competitiveness: Contemporary Theories and Perspectives on Economic Development, Edward Elgar, Cheltenham, pp. 232-244, https://doi.org/10.4337/9781783475018.00016.

CAPELLO R. (2019) Interpreting and understanding territorial identity, Regional Science Policy & Practice 11 (1), 141-159, https://doi.org/10.1111/rsp3.12166.

CAPELLO R., CARAGLIU A., NIJKAMP P. (2011) Territorial capital and regional growth: increasing returns in

knowledge use, Tijdschrift voor economische en sociale geografie 102 (4), 385-405, https://doi.org/10.1111/j.1467-9663.2010.00613.x.

CHARAUDEAU P. (2005) Réflexions sur l'identité culturelle. Un préalable nécessaire à l'enseignement d'une langue (Reflections on Cultural Identity. A necessary prerequisite for teaching a language), in: Gabry J., Moreau A., Teninges C. (eds.), Ecole, langues et modes de pensée (School, languages, and ways of thinking), CRDP Académie de Créteil, Paris.

CHIRIȚĂ V., MATEI D., EFROS V. (2015) Geo-cultural landscape – landmark of sustainable development of the rural area of Bucovina, Carpathian Journal of Earth and Environmental Sciences 10 (3), 255-264.

COHAL L. (2022) Moldovean sau bucovinean? O incitantă analiză a filologului ieşean Laurenţiu Cohal (Moldavian or Bukovinian? An exciting analysis by the philologist from Iași, Laurențiu Cohal), Ziarul de Iași, Retrieved from: www.ziaruldeiasi.ro.

COLĂCEL O. (2015) Regional Identification in Present Day Romania. The Case Study of Suceava County, Messages, Sages, and Ages 2 (1), 7-16, https://doi.org/10.1515/msas-2015-0001.

CREȚAN R. (2006) Etnie, confesiune și opțiune electorală în Banat: structuri teritoriale, tradiție, actualitate (Ethnicity, confession and electoral behaviour: territorial structures, tradition, actuality), West University of Timișoara, Timișoara.

CREȚAN R., TURNOCK D., WOUDSTRA J. (2008) Identity and multiculturalism in the Romanian Banat, Méditerranée 110, 17-26, https://doi.org/10.4000/mediterranee.523.

DARGENT C. (2001) Identités régionales et aspirations politiques : l'exemple de la France d'aujourd'hui (Regional identities and political aspirations: the example of France today), Revue française de science politique 51 (5), 787-806, https://doi.org/10.3406/rfsp.2001.403667.

DIACONU M. A. (2018) Bucovina, între idilizare şi demonizare. Cum e cu putinţă identitatea? (Bukovina between idealization and demonization. Is its identity possible?), Meridian Critic 31 (2), 105-123.

DRAGAN A., CREȚAN R., JUCU I. S., OANCEA O. A. (2024) Rural Landscapes as Cultural Heritage and Identity along a Romanian River, Heritage 7 (8), 4354-4373, https://doi.org/10.3390/heritage7080205.

DRAGOMAN D., LUCA S.-A., GHEORGHIȚĂ B. (2016) In defence of local identity. Cultural factors and actors' strategy during regionalization in Romania, Studia Politica 16 (3), 331-356.

ECKMANN M. (2004) Identités en conflit, dialogue des mémoires: Enjeux identitaires dans les rencontres intergroupes (Conflicting identities, dialogue of memories: Identity issues in intergroup encounters), Éditions ies, Genève, https://doi.org/10.4000/books.ies.1507.

GIULIANI M. V. (2016) Theory of attachment and place attachment, in: Bonnes M., Lee T., Bonaiuto M. (eds.), Psychological theories for environmental issues, Routledge, London, pp. 137-170, https://doi.org/10.4324/9781315245720.

GOFFMAN E. (2022) The presentation of self in everyday life, Penguin Books, London.

GRIGOROVICI R. (1996) Das Modell Bukowina (The Bukovina model), Annals of Bukovina 3 (2), 261-280.

HORENCZYK G., BEKERMAN Z. (2012) A social constructivist approach to Jewish identity, in: Cohen S. M., Horenczyk G. (eds.), National Variations in Jewish Identity: Implications for Jewish Education, SUNY Press, Seattle, pp. 281-298, https://doi.org/10.1515/9780791499405-015.

HRENCIUC D. (2018) O scurtă istorie a evreilor din Rădăuți (A brief history of the Jews of Rădăuți), MEGA, Cluj-Napoca.

IACOBESCU M. (1993) Din istoria Bucovinei (From the history of Bukovina), Romanian Academy Publishing House, Bucharest.

ILOVAN O.-R., JORDAN P., HAVADI-NAGY K.-X., ZAMETTER T. (2016) Identity matters for development: Austrian and Romanian experiences, Transylvanian Review 25 (1), 261-276.

JAKAB A. Z., PETI L. (eds.) (2009) Procese şi contexte social-identitare la minorităţile din România (Social-identity processes and contexts among minorities in Romania), The Romanian Institute for Research on National Minorities, Kriterion, Cluj-Napoca.

KAUFMANN J.-C. (2004) L'invention de soi. Une théorie de l'identité (The invention of self. A theory of

identity), Armand Colin, Paris.
KAUFFMANN J.-C. (2008) Quand Je est un autre. Pourquoi et comment ça change en nous (When I am another. Why and how it changes in us), Armand Colin, Paris.
KEATING M. (2000) The New regionalism in Western Europe: Territorial restructuring and political change, Edward Elgar, Northampton.
LŐRINCZ J. D. (1999) Letters to the editor, in: Biró Z. A., Lőrincz J. D. (eds.), Szeklerland in Transition: Essays in Cultural Anthropology, Pro-Print & WAC – Center for Regional and Anthropological Research, Miercurea Ciuc, pp. 147-194.
LUCHIAN M., LUCHIAN S. (2020) Bucovina: identitate și emancipare națională (Bukovina: national identity and emancipation), Cartea Românească, Iași.
MOHR C.-A. (2023) Homo Bucovinensis – an attempt to disambiguate, Annals of Bucovina 61 (2), 599-616, https://doi.org/10.56308/AB.2023.2.18.
MUNTELE I. (1998) Populația Moldovei în ultimele două secole (Population of Moldavia in the last two centuries), Corson, Iași.
NEUMANN V. (1997) Multicultural Identities in a Europe of Regions. The case of Banat County, European Journal of Intercultural Studies 8 (1), 19-35, https://doi.org/10.1080/0952391970080102.
NISTOR I. (1991) Istoria Bucovinei (History of Bukovina), Humanitas, Bucharest.
OLARU M., PURICI Ș. (2002) "Bucovinism" and "homo Bucovinensis", Annals of Bukovina 9 (2), 367-374.
PAASI A. (1986) The institutionalization of regions: a theoretical framework for understanding the emergence of regions and the constitution of regional identity, Fennia 164 (1), 105-146, https://doi.org/10.11143/9052.
PAASI A. (2003) Region and place: regional identity in question, Progress in Human Geography 27 (4), 475-485, https://doi.org/10.1191/0309132503ph439pr.
PAASI A. (2009) Regions and regional dynamics, in: Rumford C. (ed.), The Sage handbook of European studies, Sage, Thousand Oaks, pp. 464-484, https://doi.org/10.4135/9780857021045.n26.
PERREAULT S., BOURHIS R. Y. (1999) Ethnocentrism, social identification, and discrimination, Personality and Social Psychology Bulletin 25 (1), 92-103, https://doi.org/10.1177/0146167299025001008.
PINTESCU F. (2000) Bucovina, zonă de convergență etnică și spirituală (Bukovina, an area of ethnic and spiritual convergence), ROCSIR 1, 9-16.
PURICI Ș. (2017) Habsburg Bukovina at the Beginning of the Great War. Loyalism or Irredentism?, Codrul Cosminului 23 (1), 85-106.
PURICI Ș. (2022) Bucovina – Metamorfozele unei Provincii (Bukovina – The Metamorphoses of a Province), Annals of Bukovina 29 (2), 343-355, https://doi.org/10.56308/AB/2022.2.01.
RAAGMAA G. (2002) Regional Identity in Regional Development and Planning, European Planning Studies 10 (1), 55-76, https://doi.org/10.1080/09654310120099263.
ROCA Z., MOURÃO J. C. (2004) Territorial identity and sustainable development: from concept to analysis, Campus Social: Revista Lusófona de Ciências Sociais 1, 85-103.
ROTARU M.-A., CREȚAN R., IANĂȘ A.-N. (2023) Ethnicities in Post-Communist Romania: Spatial Dynamics, Fractionalisation, and Polarisation at the NUTS-3 Level, Land 12 (6), 1133, https://doi.org/10.3390/land12061133.
SAUER C. O. (1969) The Morphology of landscape, in: Leighly J. (ed.), Land and Life: a selection from the writings of Carl Ortwin Sauer, University of California Press, Berkeley, Los Angeles, pp. 315-350.
SĂGEATĂ R. (2015) A proposal for Romania's administrative organization based on functional relations in the territory, Transylvanian Review of Administrative Sciences 46, 178-196.
SHAYO M. (2009) A model of social identity with an application to political economy: Nation, class, and redistribution, American Political Science Review 103 (2), 147-174, https://doi.org/10.1017/S0003055409090194.
TAJFEL H. (1982) Experimental studies of intergroup behaviour, in: Codol J.-P., Leyens J.-P. (eds.), Cognitive

analysis of social behavior, Springer, Dordrecht, pp. 227-246, https://doi.org/10.1007/978-94-009-7612-2_8.

TARRIUS A. (1992) Les fourmis d'Europe: Migrants riches, migrants pauvres et nouvelles villes internationales (Europe's Ants: Rich Migrants, Poor Migrants, and New International Cities), L'Harmatan, Paris.

ȚURCĂNAȘU G. (2023) Teritoriu, teritorialitate și reforma administrativă. Relevanța scărilor geografice (Territory, territoriality and administrative reform. The relevance of geographical scales), in: Cohal A. L., Dobrincu D., Țurcănașu G. (eds.), Regionalizarea: către un model de bună guvernanță a României (Regionalization: towards a model of good governance for Romania), Polirom, Iași, pp. 107-196.

UNGUREAN Ș. (2015) Bucovina - spiritul occidental în spațiul românesc; o perspectivă sociologică (Bucovina. The Western Spirit of a Romanian Province), Sociologie Românească 13 (3-4), 36-54.

VAN MANSVELT J. D., PEDROLI B. (2003) Landscape – A Matter of Identity and Integrity: Towards Sound Knowledge, Awareness and Involvement, in: Palang H., Fry G. (eds.), Landscape Interfaces, Springer, Dordrecht, pp. 375-394, https://doi.org/10.1007/978-94-017-0189-1_19.

WALDINGER R. (2013) Immigrant transnationalism, Current Sociology 61 (5-6), 756-777, https://doi.org/10.1177/0011392113498692.

WOUDSTRA J. (2007) Giving meaning to identities. A case-study for the Romanian Banat region, Review of Historical Geography and Toponomastics 2 (3-4), 69-84.

Suitability assessment for pluvial flood mitigation in dense urban areas, using nature-based solutions: a case of Delhi

Manish M. NAIR, Shama PARWEEN, Rajan Chandra SINHA

Email: ar_shama@bitmesra.ac.in

Birla Institute of Technology Mesra, Ranchi, India

Abstract: Over the past years, pluvial floods have become a major concern for Indian cities. The factors that exacerbate the flood conditions include climate change, urbanisation, outdated stormwater infrastructure, decreasing capacity of natural wetlands, and natural stormwater sinks. As India's metropolitan cities are at risk due to their high rate of urbanisation, the study aims to develop a methodology to identify areas at risk due to pluvial floods, at a watershed scale. Also, it aims to support flood mitigation through nature-based solutions (NBS) and geospatial analysis, by considering the case of Delhi. Based on local flood data, the settlements at risk of pluvial floods were mapped using GIS, and the "pluvial flood susceptibility map" has been developed to assess the risk of flooding, followed by the selection of the most vulnerable local action area with the help of parameters like susceptibility (based on past pluvial flooding incidences) and urbanisation. Further, the "NBS suitability map" for the milli watershed (area of about 1000 to 10,000 ha) has been generated using the geospatial overlay technique of GIS. It can help identify potential areas within the study region at a sub-watershed level where NBS can be integrated, considering suitable and unsuitable conditions, based on physical, environmental, and planning parameters.

Keywords: pluvial floods, vulnerability assessment, land use suitability, flood mitigation, nature-based solutions.

Introduction

Disasters have become humanity's constant companion, and extreme situations have increased due to global climate change. The impacts of climate change can be seen in the form of various types of hydrometeorological disasters, like floods, droughts, increasing global temperature etc. (IPCC 2023). Floods are among the most common natural disasters, causing significant social and economic losses, and they can be categorised into three major types (Tanaka et al. 2020): fluvial floods (caused when rivers swell); pluvial floods (when infiltration capacity decreases and the rainfall increases); and coastal floods (when cyclone storms increase the seawater level). Further, various

Submitted: 02.11.2023; **Revised:** 05.07.2024; **Accepted:** 28.02.2025

types of floods were described based on their type and source (NDMA 2008, Murray et al. 2021).

The direct impact of these events is visible in urban areas through physical, economic, and social losses. Globally, many cities are prone to fluvial, coastal, and pluvial floods (Stavropoulos et al. 2020). Pluvial floods occur when precipitation exceeds the infiltration and drainage capacity, resulting in water stagnation for extended durations (Jha et al. 2012, Yu et al. 2022), caused by various factors like land-use change, urbanisation and an increase in surface runoff. Increased rainfall is a primary cause of urban pluvial floods (Murray et al. 2021, Pacetti et al. 2022). Further, sealing natural surface and channelling stormwater through underground drainage pipes increases surface water runoff and it decreases water quality (Di Salvo et al. 2017). Cities have become more prone to pluvial flooding due to increased precipitation, obsolete and ageing stormwater infrastructure, increased population, and imperviousness (Gaitan et al. 2016). Moreover, climate change, precipitation patterns, and increased paved surface areas further contribute to pluvial flooding (Ashley et al. 2005).

Urban stormwater infrastructures are designed for a particular rainfall event, but changing the rainfall patterns has put cities at risk due to insufficient stormwater infrastructure (Ashley et al. 2005). This calls for more resilient infrastructure through nature-based planning strategies. Nature-based solutions (NBS) represents a universal term for human interventions to resolve varied environmental and societal issues based on ecosystem and natural processes (Cohen-Shacham et al. 2016). It is also an umbrella concept which provides a unified vision to address these challenges differently, from a sustainable approach (Ruangpan et al. 2020). For example, the European Commission defines NBS as "living solutions inspired by, continuously supported by and using nature, which are designed to address various societal challenges in a resource-efficient and adaptable manner and to provide simultaneously economic, social, and environmental benefits" (Maes and Jacobs 2017: 121). And IUCN refers to NBS as "actions to protect, sustainably manage and restore natural or modified ecosystems that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits" (Cohen-Shacham et al. 2016: 2).

Different nomenclatures are used globally for NBS as it has evolved over the years. Various terminologies have emerged in the context of disaster mitigation and hydrometeorological disaster risk reduction, as NBS planning strategy can help enhance urban resilience (Frantzeskaki 2019). NBS has many advantages, effectively addressing urban challenges like water access, food security, climate change adaptation, and the potential to create new green jobs (Chausson et al. 2020, UN-Habitat 2022). Additionally, NBS contribute to human well-being, biodiversity benefits (Cohen-Shacham et al. 2016), and spaces for new interactions between nature and people (Frantzeskaki 2019).

NBS, such as constructed wetlands, can potentially decrease the high runoff and further reduce the intensity of floods caused by heavy rainfall (Kumar et al. 2021, Zhou

and Penning-Rowsell 2021). Adding a green roof, and green facades/green walls promote stormwater retention, mitigation, and runoff reduction, eventually decreasing localised flooding scenarios (Morgan et al. 2013, Majidi et al. 2019, Huang et al. 2020, Hachoumi et al. 2021, Vojinovic et al. 2021, Sarabi et al. 2022). Urban forests also play a significant role in rainfall interception, reducing the risk of pluvial floods in urban areas, while regulating stormwater volume reaching impervious surfaces (Xiao and McPherson 2002, Livesley et al. 2016, Karlo and Sajna 2017), and thus demonstrating their contribution to increasing resilience.

Services offered by open green spaces in runoff reduction are remarkable (Schuch et al. 2017, Kadaverugu et al. 2021, Kim 2021), and they can also decrease the risk of floods by capturing the surface runoff (Bănică et al. 2020). NBS like bioretention areas (swales, permeable pavements, infiltration trench) (Xie et al. 2017, Hu et al. 2018, Shafique et al. 2018, Ekka et al. 2021, Sood and Biswas 2022, Arora et al. 2023) have the potential of decreasing the surface runoff and of increasing infiltration. Adding retention ponds, detention ponds or stormwater ponds, which serve the purpose of rainwater collection, to the conventional drainage system can decrease the risk of flooding (Vojinovic et al. 2021, Waghwala and Agnihotri 2021, Guptha et al. 2022).

The present research focuses exclusively on urban floods caused by pluvial conditions where surface runoff increases due to increased rainfall, impermeability, and high-density settlements in the catchments, causing hindrance to the natural drainage flow. The paper aims to identify the areas at risk due to pluvial floods at a watershed scale, and to evidence their mitigation through NBS.

Methodology

Study area

India has five megacities with populations exceeding ten million people: New Delhi, Mumbai, Kolkata, Bengaluru, and Chennai. Due to their extensive urbanisation and high population density, these cities are particularly vulnerable to natural disasters induced by climate change. DDA (2021) reports that Delhi hosts 33.8 million people, covering 47.31% of the state's surface of 148,300 ha. Changes in the catchment area's hydrological characteristics have increased Delhi's flood risk (Kumar et al. 2017). Agrawal (2020) predicted that, given Delhi's current population and urbanisation rate, 80% of the city could be submerged by 2041. The situation has deteriorated due to ineffective urban planning strategies (DDMA 2023).

Delhi experienced two main types of floods: fluvial floods, caused by the Yamuna River overflowing; and urban floods, resulting from clogged drains and dense urbanisation (Prashar et al. 2012, Kumar et al. 2017, Agrawal 2020). Notably, Delhi suffered significant urban floods in 2002, 2003, 2009, 2010, 2013, and 2016 (Tomar et al. 2021).

The study area is the sub-watershed part of South Delhi Municipal Corporation and it lies within the planning zones (Figure 1). It has an area of 14010.25 ha, with 46.9% and 53.1% as built and unbuilt surfaces, respectively. Natural drains, like Kushak Nallah and Pushpa Vihar Nallah, collect the wastewater and stormwater from the catchment and they release it to the Yamuna River at the outfall. The identified study area of Delhi is the most vulnerable to pluvial floods and it requires the utmost attention.

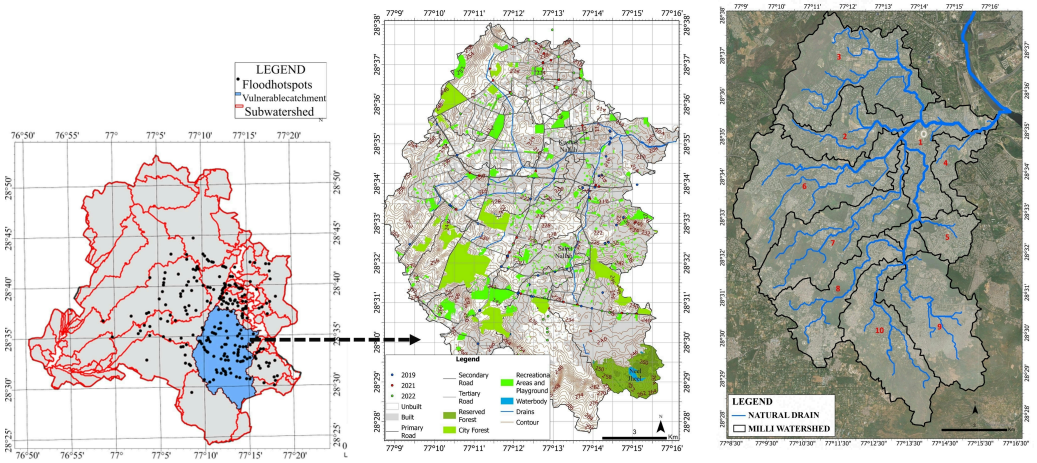

Figure 1a: Most Vulnerable Watershed in Delhi

Figure 1b: The study area

Figure 1c: milli watersheds in the study area

Figure 1. Study area

Delineation of local action area (milli watershed)

The sub-watershed map for pluvial flood vulnerability assessment was further delineated to the milli watershed, a subunit of a sub-watershed, typically covering an area of about 1000 to 10000 ha. The area is part of the Barapullah basin, one of the catchments of the Yamuna River basin. The study area is surrounded by hilly terrain and a reserved forest on its northeast and southeast parts. The elevation ranges between 224 m to 279 m above the mean sea level, dropping from southeast to northwest, and the runoff generated is discharged to Pushpa Vihar Nallah, which outfalls Yamuna river.

The site is mainly flat, with an average slope of 4.71%. The study area is composed of unauthorised/unplanned settlements (30.84%), planned residential (21.37%), forest (21.47%), and recreational areas (10.34%). Several events of pluvial floods have occurred in recent years affecting the unplanned settlements and transport networks for several hours, causing traffic delays and inconvenience to commuters.

Tools and techniques

Pluvial flood assessment evaluates the area using indicators like past flood events and vulnerability based on built-up areas. Data on past flood events can help to identify the

areas at risk due to pluvial floods. A flood vulnerability assessment model was created using water logging data from the Delhi Traffic Police (2022).

Natarajan et al. (2021) used data on historic flood locations and other supporting information to create a flood susceptibility map of Chennai. Similarly, Wan Mohtar et al. (2020) used inventories of flash flood reports to develop a flash flood index for Kuala Lumpur. Di Salvo et al. (2017) utilised flood vector layers between 2004 and 2007 to develop a pluvial flood hazard map for Rome (Italy). Multiple studies have identified urbanisation as one of the prime factors for increasing flood risk (Khalequzzaman 1994, Pervin et al. 2020, Fernando et al. 2022, Ma et al. 2022). Further, the relationship between flooding and increased urban runoff due to higher imperviousness has been studied to identify vulnerability to pluvial floods (Qi et al. 2020, Pacetti et al. 2022).

The runoff potential in a catchment can be estimated using various methods, such as the soil conservation service curve number (SCS-CN) method (Ansari et al. 2016, Yao et al. 2018). Shrestha et al. (2021) estimated the surface runoff for specific rainfall return periods using the SCS-CN method and they established a relationship between runoff and land use change. In recent years, research in NBS has advanced with the development of tools and methodologies focusing on reducing the risk of pluvial floods through NBS (Huang et al. 2020, Zhou and Penning-Rowsell 2021, Pacetti et al. 2022).

Pluvial flood vulnerability assessment

Initially, the city of Delhi was delineated into sub-watersheds (10000-50000 ha) using a watershed analysis process. The watershed delineation for Delhi was carried out at two levels — sub-watershed, and milli-watershed — using ArcGIS Pro with a 30-meter resolution digital elevation model (DEM) sourced from the SRTM DEM via USGS Earth Explorer. The DEM was projected to the WGS 1984 UTM Zone 44N coordinate system to ensure spatial accuracy. The fill tool was applied to remove artificial depressions, followed by the computation of flow direction and accumulation to define hydrological flow paths.

Initially, the sub-watershed was delineated, with the Yamuna River basin in Delhi as the primary outlet. Building on the initial watershed delineation, the most vulnerable sub-watershed (10000-50000 ha), identified based on past flood events, was further delineated into milli-watersheds (1000–10000 ha) for a more detailed study. Using ArcGIS Pro, the watershed analysis was performed on the clipped DEM, which was refined to align with the sub-watershed (10000-50000 ha) boundary. The same hydrological modelling process was applied, beginning with the fill tool to eliminate artificial depressions, followed by the computation of flow direction and accumulation to establish accurate hydrological pathways. To enhance precision, additional snap pour points were incorporated to improve the accuracy of milli-watershed delineation, ensuring a finer resolution for assessing flood vulnerability within the most susceptible areas.

Pluvial flood data obtained from Delhi Traffic Police (2022) was digitised to a vector layer named "Flood hotspots", and the hydrology tool in ArcGIS was used to perform the watershed analysis. The flood hotspot data was spatially joined to the "sub-watershed (10,000-50,000)" layer in ArcGIS Pro using the spatial join tool, with the match option set to "contains". This operation assigned each flood point to the sub-watershed polygon that fully encompassed it. The attribute table of the resulting layer was then analysed to determine which sub-watershed contained the highest number of flood points, identifying it as the most vulnerable area for further study. The sub-watershed with the maximum flood density was selected as the study area for susceptibility mapping. In order to understand the factors causing floods in the locations identified as water logging areas by the Delhi Traffic Police (2022) we conducted a reconnaissance survey in December 2022. As part of the fieldwork and reconnaissance survey, site visits were carried out at the identified locations to observe and document the factors contributing to waterlogging. Key aspects such as blocked or damaged drains, encroachments, and ground conditions were evaluated. Photographs were taken, and discussions with local residents provided further insights. This on-site assessment offered a clearer understanding of the primary causes of water accumulation in the surveyed areas. Further, suitable areas and feasibility for NBS implementation were assessed through a survey and expert interviews with officials from Delhi public organisations such as the Town and Country Planning Organisation (TCPO), South Delhi Municipal Corporation (SDMC), and the Public Works Department (PWD).

As the objective was to identify the most vulnerable areas within the sub-watershed, it was further delineated into milli watersheds (1000-10000 ha) using the same process of watershed delineation and using the hydrology tool of ArcGIS. Inverse distance weighting (IDW) interpolation was applied to enhance the resolution of low-quality digital elevation models. This technique estimated the missing elevation values based on the spatial proximity of known points, by assigning more significant influence on closer points to create a smoother and more continuous terrain representation. By implementing IDW, the accuracy of the DEM was significantly improved, making it more suitable for applications such as flood modelling and urban planning. The susceptibility for pluvial floods has been estimated using indicators such as previous flood incidences and built-up density. To identify the vulnerability based on the last flood events, the past pluvial flood data was collected from Delhi Traffic Police, South Delhi Municipal Corporation, and Public Works Department.

Using equation (1) (Addis 2023, Chowdhury 2024), the susceptibility for individual milli watersheds was evaluated using the frequency ratio method to identify the density of flood events in each milli watershed:

$$Flood\ susceptibility = \frac{Total\ number\ of\ flood\ counts}{Area\ of\ milli\ watershed\ (Ha)} \quad (1)$$

The pluvial flood vulnerability was also identified using the built-up density as an indicator, and using NDBI (2) and NDVI (3) combined. Equation (4) was used to calculate the built-up percentage (He et al. 2010, Varshney 2013, Bhatti and Tripathi 2014):

$$NDBI = \frac{MIR(B6) - NIR(B5)}{MIR(B6) + NIR(B5)} \quad (2)$$

Where, MIR – Medium Infrared; NIR – Near infrared.

$$NDVI = \frac{NIR(B5) - R(B4)}{NIR(B5) + R(B4)} \quad (3)$$

Where, NIR – Near infrared; R – Red.

$$BU = NDBI - NDVI \quad (4)$$

Where, NDBI = Normalised Difference Built-up Index; NDVI = Normalised Difference Vegetation Index; BU = Built-up area.

By utilising the NDBI and the NDVI, this method enhanced the accuracy of the built-up area estimation. These algorithms were derived from Landsat 8 imagery (SRTM 2023). The computation utilised specific spectral bands: NDBI was calculated using the shortwave infrared (SWIR) band (Band 6) and the near-infrared (NIR) band (Band 5), while NDVI used the NIR band (Band 5) and the red band (Band 4). The difference between NDBI and NDVI aided in extracting built-up areas, minimising misclassifications. The Raster Calculator in ArcGIS Pro was used to process this equation, ensuring precise spatial analysis and enhancing the accuracy of built-up area detection.

Past pluvial flood incidences

From the Delhi Traffic Police, South Delhi Municipal Corporation, and the Public Works Department we collected the data of the last flood locations for the years 2019, 2021, and 2022. A total number of 45, 46 and 82 locations were flooded, including both new and repetitive locations. The flood data was primarily stored in geocoded photos that captured specific locations, digital flood point maps, and historical flood event data linked to location names provided by the municipal authorities. These flooding locations were transferred as point vector datasets and they were placed under the group layer "pluvial flood events", with layer names as 2019, 2021 and 2022 (Figure 2). The clip tool estimated individual flood counts and susceptibility for all milli watersheds.

Percentage of built-up area

The analysis comprised multispectral Landsat 8 satellite image algorithms like NDBI and NDVI (Zha et al. 2003). NDBI is an index used to calculate the build-up using near-

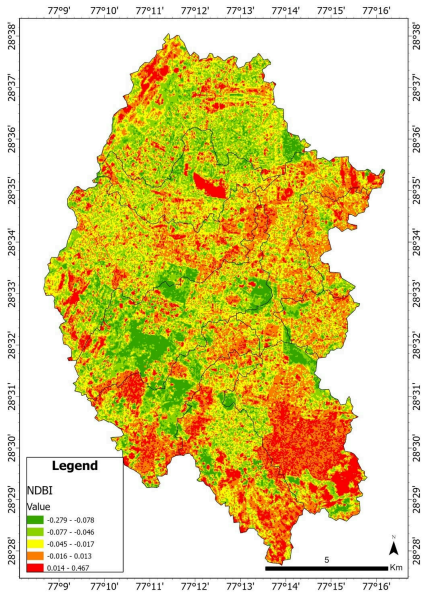

Figure 2a: NDBI map

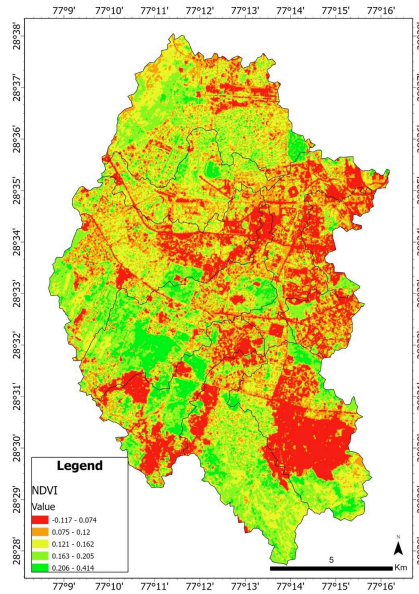

Figure 2b: NDVI map

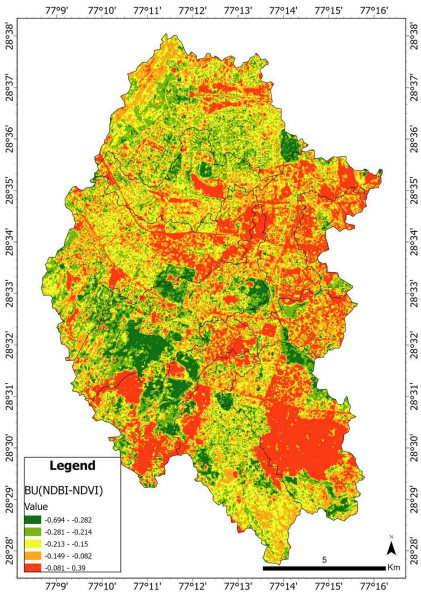

Figure 2c: Built-up map (NDBI-NDVI)

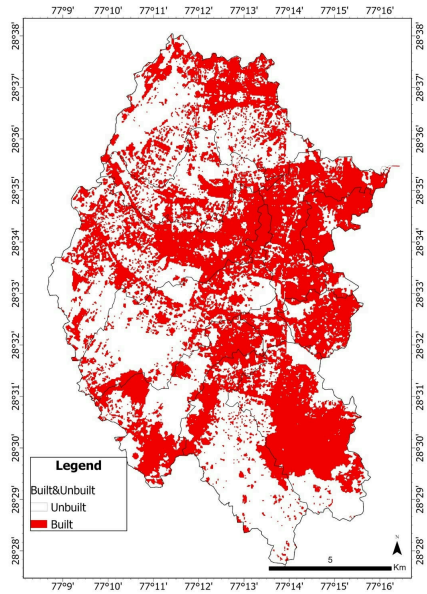

Figure 2d: Built (Red) and unbuilt (White) area

Figure 2. Calculation of the built and the unbuilt area

infrared (NIR) and mid-infrared (MIR). The map generated using the NDBI equation (Figure 2a) shows that the areas falling from -0.045 to 0.467 are built-up spaces.

The map generated using equation (3) has been developed using the NDVI algorithm (Figure 2b). The values lying in the range 0.163-0.414 are the vegetation density. The map generated by subtracting NDVI from NDBI using a math algebra tool represents the built-up (BU) map (Figure 2c) and it is more accurate than the map developed using NDBI. From the built-up map, the values lying between -0.149 and 0.39 were extracted using the math algebra tool's raster calculator of ArcGIS to create a map consisting of only two values: "built", and "unbuilt" (Figure 2d). The built-up is spread over the entire milli watershed, and to quantify the individual percentage, a clip tool was used to extract the values for all milli watersheds.

Results and Discussion

Past pluvial flood incidences

A susceptibility map using previous flood events has been generated using GIS spatial analysis techniques (Figure 3). The attribution procedure began with a comprehensive flooding events database with geocoded records from historical flood reports and municipal flood data to ensure spatial and temporal accuracy. Each recorded flooding event was then converted into geospatial point data by mapping the exact locations where flooding was observed, using GIS tools to create a dataset of flood-prone points. These points are subsequently aggregated within predefined spatial units (milli watersheds). Each milli watershed was graded for susceptibility based on the density and distribution of flood event points within its boundaries, considering additional factors like topography, soil infiltration, and historical flood frequency. The susceptibility value calculated for each watershed was added to the layer's attribute table under the field name "Susceptibility". This value was determined based on the watershed area and the number of flood points. The layer was then visually represented using graduated colours, with "Susceptibility" as the selected field, and classified into five vulnerability levels — very high (0.0165-0.019); high (0.014-0.0165); moderate (0.01-0.014); low (0.004-0.01); and very low (0.002-0.004) — using the natural break method. It was observed that the milli watershed labelled 9 has been facing repetitive flooding conditions with a total count of 33 instances.

The susceptibility analysis results indicated that milli watershed 9 is the most vulnerable among the milli watersheds, with a susceptibility value of 0.018, placing it in the very high category (Table 1).

Percentage of built-up area in milli watershed

The vulnerability has been assessed based on the percentage distribution of impervious and pervious surfaces. Morphological factors like built-up, impervious surfaces and land use hugely affect urban hydrology (Pauleit and Duhme 2000). Impervious

surfaces increase the runoff and decrease the stormwater infiltration rate (Miller et al. 2014, Sun et al. 2018, Lamichhane and Shakya 2019), causing water to stagnate.

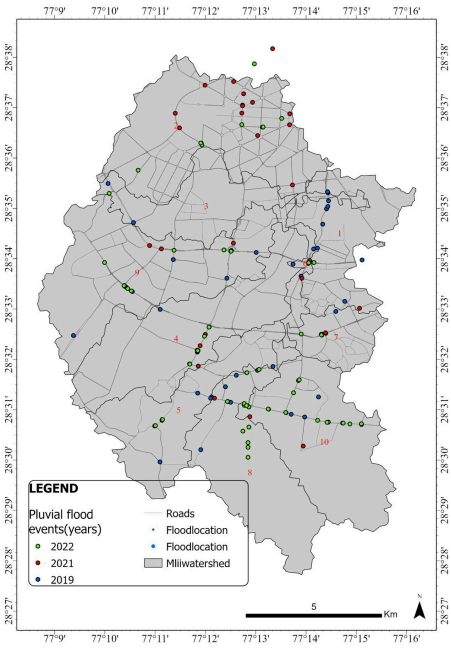

Figure 3a: Previous flood events

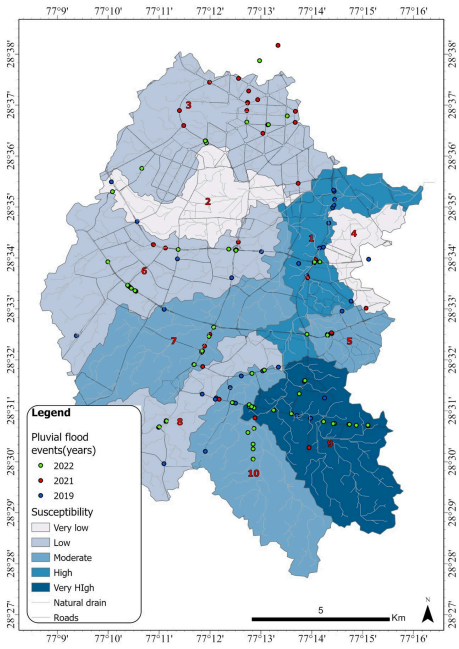

Figure 3b: Flood susceptibility map

Figure 3. Flood susceptibility in the study area

Table 1. Flood susceptibility results

Milli-watershed number	Area (ha)	No. of flood points	Flood susceptibility	Susceptibility level
1	1209.053	19	0.015715	High
2	999.6123	3	0.003001	Very Low
3	2250.973	22	0.009774	Low
4	457.7394	1	0.002185	Very Low
5	458.233	6	0.013094	Moderate
6	2258.642	24	0.010626	Low
7	1778.364	25	0.014058	Moderate
8	1229.05	12	0.009764	Low
9	1764.606	33	0.018701	Very High
10	1568.863	21	0.013385	Moderate

The second stage of the vulnerability assessment focused on identifying the milli-watershed at risk due to built-up density. Several authors (He et al. 2010, Varshney 2013, Bhatti and Tripathi 2014) developed an accurate method for calculating built-up areas, where the original built-up can be estimated by combining NDBI and NDVI.

NDVI is an algorithm designed to quantify the vegetation density (USGS) using red and near-infrared (NIR) values.

The percentage of built and unbuilt were estimated (Table 2) and updated to the new fields in the attribute table of the vulnerability map. As a result, we developed the vulnerability map based on the built-up percentage (Figure 4a). The milli watershed map was classified into five levels of vulnerability: very high, high, moderate, low, and very low. The milli watershed with label 9 (Figure 4b) had the highest built-up percentage of 16.26% of the total built-up area of 6567.49 ha.

Table 2. Results of the Built-up assessment

Watershed number	Built (%)	Unbuilt (%)	Vulnerability level
1	13.853205	4.0217231	High
2	5.8941842	8.3018347	Low
3	13.014345	18.827021	High
4	5.5622244	1.217315	Very Low
5	5.2154082	1.5435289	Very Low
6	15.926662	16.377866	Very High
7	8.5930469	16.438852	Moderate
8	9.4709661	8.1966331	Moderate
9	16.262528	9.3951273	Very High
10	6.2074305	15.680099	Low

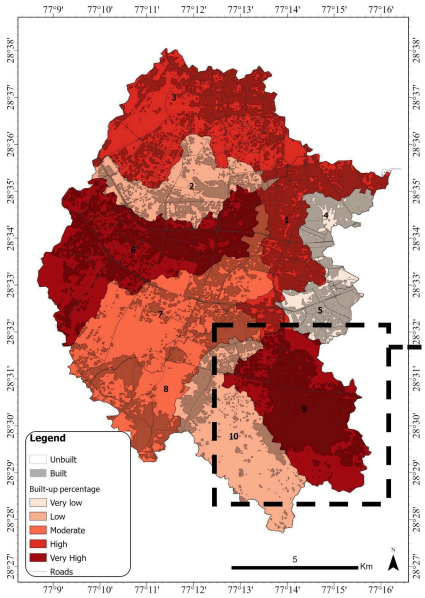

Figure 4a: Pluvial flood vulnerability based on the built-up percentage

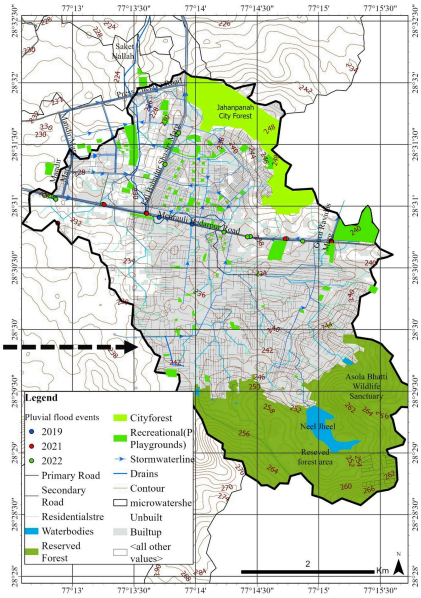

Figure 4b: Land use map of milli watershed number 9

Figure 4. Selection of local action area based on pluvial flood vulnerability

From the flood susceptibility map (Figure 3b), and the built-up percentage map (Figure 4a), it can be derived that the milli watersheds labelled as 9 lie at a very high level of vulnerability and hence they are the most vulnerable milli watershed (Table 3). It can be assumed that the built-up is one of the leading causes of increased incidents of pluvial floods. Thus, based on past flood incidences and the built-up percentage, the milli-watershed with label 9 has been selected as the local action area for the suitability assessment of nature-based planning strategies.

Table 3. Vulnerability levels for the indicators: past flood incidences, and built-up area

Milli watershed number	Flood susceptibility	Built-up %
1	High	High
2	Very Low	Low
3	Low	High
4	Very Low	Very Low
5	Moderate	Very Low
6	Low	Very High
7	Moderate	Moderate
8	Low	Moderate
9	*Very High*	*Very High*
10	Moderate	Low

Suitability Mapping of Nature-based Planning Strategies

The second objective of the study was to identify suitable locations for the implementation of nature-based planning strategies using specific indicators selected according to the literature (Table 4). Overlay techniques like count overlap in ArcGIS enabled to develop maps for the identified indicators, alongside the NBS suitability map (Figure 5).

Table 4. Information and data source for the NBS suitability map

Indicator	Rationale	Data	Source
Slope	The slope site can influence the performance of NBS by affecting the time of concentration, runoff travel time, and flow characteristics.	DEM 30 M	USGS
Elevation	The altitude affects the accumulation and aggregation of stormwater.	DEM 30 M	USGS
Distance to groundwater level	The distance between the bottom soil layer of NBS intervention and the water table level influences infiltration and surface ponding.	Groundwater level depth for January 2022 in meters below ground level	Groundwater yearbook (CGWB 2021)
Land use	The information on land use helps to comply with the regulations.	Land use types	Delhi draft land use plan (DDA 2021)
Soil infiltration	The proportion of sand, silt, gravel, and sand influences the potential for runoff formation and the pace of infiltration.	Soil infiltration rate in mm/h	Groundwater Management Plan of NCT Delhi (CGWB 2016)

Indicator	Rationale	Data	Source
% of imperviousness	Hard surfaces are known to increase runoff and to decrease the infiltration rate.	LANDSAT 8,2023	USGS
% of protected forest	Any new development will be strictly prohibited.	Area in m²	Delhi draft land use plan (DDA 2021)
% of the protected water body	Any new development will be strictly prohibited.	Area in m²	Delhi draft land use plan (DDA 2021)

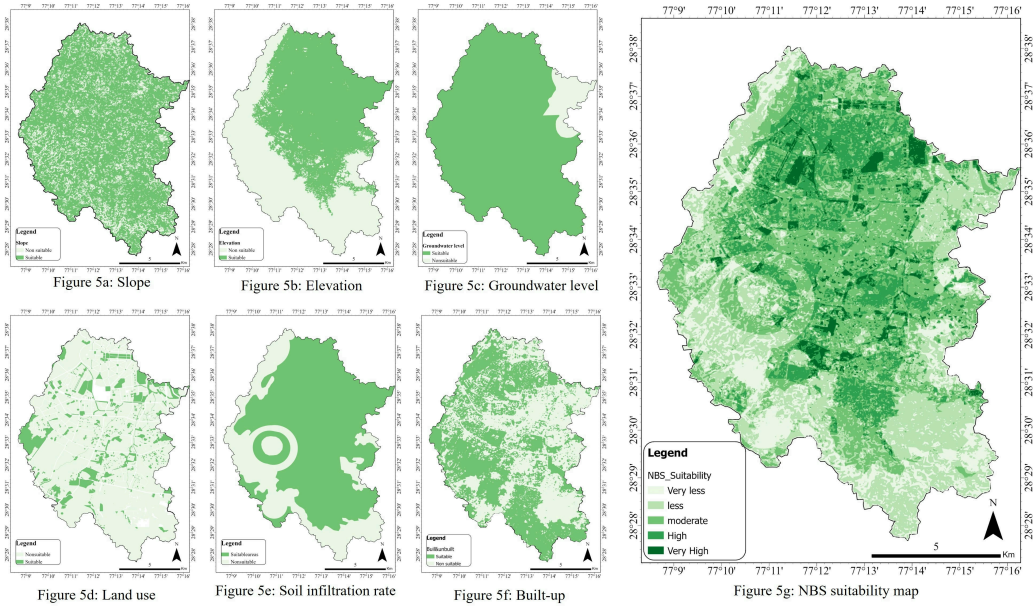

Figure 5. Assessing the NBS suitability in the local action area

The suitable areas for NBS were identified through literature studies ((Morgan et al. 2013, Frantzeskaki 2019, Chausson et al. 2020, Ekka et al. 2021, Kumar et al. 2021)) and they were represented as a map with suitable and non-suitable values. The process has been repeated, taking into account several suitability conditions and constraints that influence the implementation process (Pacetti et al. 2022, Sarabi et al. 2022). Ten indicators have been broadly grouped into three parameters and two aspects. In this study, the aspects serve as the broader classification of evaluation criteria, categorised into suitability and constraints (Table 5). Suitability encompasses the factors that support the site selection for NBS implementation, while the constraints identify the elements which limit or restrict the site selection. Within these aspects, the parameters function as thematic categories which group similar indicators. The three parameters include: (1) physical parameters, which consider topographic and hydrological factors

such as slope, elevation, and groundwater table depth; (2) planning parameters, which address land use and infrastructure considerations, including recreational spaces, road networks, and archaeological constraints; and (3) environmental parameters, which evaluate ecological and soil-related factors such as soil infiltration rates and the presence of protected forests or water bodies. This classification framework ensures a structured and systematic approach to assessing site suitability for NBS implementation while accounting for both enabling factors and potential restrictions.

Table 5. Analysis indicators and suitability conditions

Aspects	Parameters	Indicators	Suitability Condition
Suitability	Physical	Slope	Less than 6%
		Elevation	Suitable sites fall into the range of 153-186 m MSL
		NBS design values	N/A
		Distance to the groundwater level	Suitable sites fall into the range of 5-40 m and 40 m below ground level
	Planning	Land use	Recreational spaces, transportation, and road networks where NBS can be integrated with highly urbanised areas
	Environment	Soil infiltration	The recommended infiltration rate for NBS is usually greater than 12 mm/h
Constraints	Planning	Archaeological constraints	All ASI-protected sites were put into non-suitable areas for land use
		Imperviousness	Part of non-suitable sites
	Environment	Presence of protected forest and water body	Part of non-suitable sites in land use

A suitability map for the six indicators (elevation, slope, land use, distance to groundwater level, soil infiltration, archaeological, and environmental constraints) was generated (Figure 5), and it can be derived that areas colour-coded in green are the suitable locations for NBS implementation.

For the indicators under the physical parameters: 1) slope (Figure 5a) – areas with less than 6% were extracted from the slope map, which has been generated using a DEM and surface toolbox; 2) elevation (Figure 5b) – suitable sites within the sub-watershed fell in the range of 153-186 m MSL as the remaining area is part of the hilly terrain, which makes it unsuitable for NSB implementation; 3) groundwater level (Figure 5c) – the map was generated using the map provided by CGWB (2021), showing the depth of the water level recorded during January 2022, and the groundwater level for the study area lies between the range of 0-40 m b.g.l. (CGWB 2021).

Spatial planning, particularly land use (Figure 5d), was analysed using various parameters and indicators derived from primary and secondary sources. During the reconnaissance survey, opportunity areas for NBS implementation were identified within the sub-watershed, primarily in recreational zones. Based on these observations and the literature review (Sun et al. 2018, Majidi et al. 2019, Vojinovic et al. 2021, Pacetti

et al. 2022, Sood and Biswas 2022), suitable sites were selected and mapped using Delhi's draft land use map (DDA 2021). GIS layers were created for different land use categories and they were further classified into suitable and non-suitable areas.

The suitable locations were also identified using indicators under the environmental parameters like soil infiltration (Figure 5e) within the sub-watershed, using the aquifer mapping from the groundwater water management plan of NCT Delhi (CGWB 2016). The soil infiltration rate for the sub-watershed was identified by georeferencing the watershed boundary to the soil infiltration map of Delhi. Watershed areas with an infiltration rate of 2-270 mm/h were selected as suitable sites, while the rest were classified as unsuitable.

Several planning and environmental constraints have been considered while generating the maps. The built-up percentage (Figure 5f) within the catchment calculated for vulnerability assessment was used as one of the layers for analysis. All impervious surfaces were categorised as non-suitable areas. Separate maps were not generated for archaeological constraints, protected forests, and water bodies, as these were included in land use, and NBS design values were used as indicators. The generated maps were analysed using geospatial techniques like overlay. Based on the maximum overlaps of selected indicators, the suitability for NBS has been judged.

The NBS suitability map can assist in identifying suitable and non-suitable locations for NBS to reduce the risk of pluvial flooding. The map consists of five suitability levels: very low, low, moderated, high, and very high. Table 6 shows the percentage of the area of all suitable regions concerning the total count of overlap and the suitability class.

Table 6. Estimated suitable areas

Overlap count	Suitability class	Area (ha)	Percentage area of sub-watershed
1	Very low	275.32	1.96
2	Very low	1725.98	12.29
3	Low	4441.90	31.65
4	Moderate	4557.38	32.47
5	High	2465.51	17.56
6	Very high	466.97	3.32
7	Very high	99.63	0.70

The results allowed an assessment of site suitability within a sub-watershed by overlap count, representing the number of favourable and unfavourable conditions in the milli watershed. Ranging from very low to very high, the suitability classification helped to determine the most and the least appropriate areas for implementing NBS. The most significant portion of the milli watershed was the moderate suitability class spanning 4,557.38 ha (32.48%), followed closely by the low suitability class at 4,441.90 ha (31.65%). These two categories made up nearly two-thirds of the total area, indicating that most sub-watersheds were moderately or less suitable for the intended application.

The high suitability class accounted for 2,465.51 ha (17.57%), while the very high suitability class covered only 466.97 ha (3.33%) and 99.63 ha (0.71%), totalling just over 4% of the total area. This suggests that the optimal locations for development or NBS implementation are highly localised and they require strategic planning.

Very low suitability areas were split into two groups: one covering 1,725.98 ha (12.30%) and the other 275.32 ha (1.96%). These areas might face multiple constraints —steep slopes, high imperviousness, proximity to protected areas, or poor soil infiltration—rendering them less ideal for NBS implementation. To conclude, a significant portion of the milli watershed had a moderate to low suitability. Careful planning is thus required to maximise the use of highly suitable areas while avoiding or mitigating the constraints in less suitable regions.

NBS can be categorised based on the type of issues and the scale of implementation (World Bank 2021), and various NBS can be retrofitted or constructed into the existing urban fabric. Out of the many varieties of NBS, swales (Xie et al. 2017, Shafique et al. 2018, Sood and Biswas 2022), rain gardens (Li et al. 2018), permeable pavement (Hu et al. 2018, Arora et al. 2023), stormwater pond (Waghwala and Agnihotri 2021, World Bank 2021), rejuvenation of open green spaces (Schuch et al. 2017, Kadaverugu et al. 2021), curb extensions, green filter strips, and stormwater planters (Kim 2021) were found to be most suitable, based on their application and their ability to reduce pluvial flood by effectively managing stormwater runoff.

Conclusions

The study focused on urban flooding caused by pluvial conditions, where excessive surface runoff results from increased rainfall, reduced permeability, and high-density settlements within catchment areas. The disruption of natural drainage systems due to rapid urbanisation exacerbated flood risks, leading to waterlogging and inundation, particularly in low-lying areas with poor drainage systems. The study identified the areas prone to pluvial flooding at a milli watershed scale, and it assessed the suitable locations for implementing NBS. By integrating geospatial techniques, the research developed a systematic methodology for the stakeholders to use for flood risk assessments and the strategic implementation of NBS to enhance urban flood resilience.

A key aspect of the study was the identifying of flood-prone areas based on various hydrological and urbanisation parameters. A primary contributing factor to pluvial flooding is the high density of built-up areas, significantly reducing natural infiltration and increasing stormwater runoff. The percentage of impervious surfaces directly influences flood susceptibility, as areas with higher imperviousness experience more significant surface runoff and lower groundwater recharge.

The study generated a susceptibility map highlighting the vulnerable watersheds by using the readily available spatial data and by analysing historical pluvial flood

occurrences alongside built-up density. The findings revealed a strong correlation between past flooding events and the extent of built-up areas, reinforcing the impact of urban expansion on flood risk. The analysis identified critical local action areas that exhibit very high vulnerability from both flood susceptibility and built-up area perspectives. These insights provide a foundation for targeted interventions, where NBS — such as permeable surfaces, green roofs, constructed wetlands, and urban forests — can be strategically implemented to enhance infiltration, to reduce runoff, and to improve the overall hydrological balance within urban environments.

Furthermore, the most suitable locations for implementing NBS were identified by using criteria like slope, elevation, NBS design values, distance to groundwater level, land use, soil infiltration rate, percentage of imperviousness, archaeological constraints, and percentage of protected water bodies and forest. NBS features, such as swales, rain gardens, permeable pavements, stormwater ponds, curb extensions, planters, and vegetative filter strips, can be adopted at suitable locations.

The study findings are instrumental in assessing pluvial flood vulnerability at various watershed levels and spatial allocation of NBS solutions for the most vulnerable catchment, further assisting in prioritising NBS implementation from most vulnerable to least vulnerable areas. The pluvial flood susceptibility map can help many stakeholders in decision-making towards resilience building, and the implementation of infrastructure projects to reduce the risk of pluvial floods, while prioritising the places for NBS implementation based on susceptibility levels.

References

ADDIS A. (2023) GIS—based flood susceptibility mapping using frequency ratio and information value models in upper Abay river basin, Ethiopia, Natural Hazards Research 3 (2), 247-256, https://doi.org/10.1016/j.nhres.2023.02.003.

AGRAWAL M. (2020) Multisector exposure and vulnerability to climate change in India: Case of National Capital Territory of Delhi, India, Disaster Prevention and Management 29 (5), 761-777, https://doi.org/10.1108/DPM-04-2020-0125.

ANSARI T. A., KATPATAL Y. B., VASUDEO A. D. (2016) Spatial evaluation of impacts of increase in impervious surface area on SCS-CN and runoff in Nagpur urban watersheds, India, Arabian Journal of Geosciences 9, 702, https://doi.org/10.1007/s12517-016-2702-5.

ARORA M., CHOPRA I., NGUYEN M. H., FERNANDO P., BURNS M. J., FLETCHER T. D. (2023) Flood Mitigation Performance of Permeable Pavements in an Urbanised Catchment in Melbourne, Australia (Elizabeth Street Catchment): Case Study, Water 15 (3), 562, https://doi.org/10.3390/w15030562.

ASHLEY R. M., BALMFORTH D. J., SAUL A. J., BLANSKBY J. D. (2005) Flooding in the future – predicting climate change, risks and responses in urban areas, Water Science & Technology 52 (5), 265-273, https://doi.org/10.2166/wst.2005.0142.

BĂNICĂ A., ISTRATE M., MUNTELE I. (2020) Towards green resilient cities in Eastern European Union countries, Journal of Urban and Regional Analysis 12 (1), 53-72, https://doi.org/10.37043/JURA.2020.12.1.4.

BHATTI S. S., TRIPATHI N. K. (2014) Built-up area extraction using Landsat 8 OLI imagery, GIScience &

Remote Sensing 51 (4), 445-467, https://doi.org/10.1080/15481603.2014.939539.
CENTRAL GROUND WATER BOARD (2016) Aquifer Mapping and Ground Water Management Plan of NCT Delhi, CGWB, Government of India, Retrieved from: www.cgwb.gov.in.
CENTRAL GROUND WATER BOARD (2021) Ground Water Year Book. National Capital Territory, Delhi (2020-2021), CGWB, Government of India, Retrieved from: www.cgwb.gov.in.
CHAUSSON A., TURNER B., SEDDON D., CHABANEIX N., GIRARDIN C. A. J., KAPOS V., KEY I., ROE D., SMITH A., WORONIECKI S., SEDDON N. (2020) Mapping the effectiveness of nature-based solutions for climate change adaptation, Global Change Biology 26 (11), 6134-6155, https://doi.org/10.1111/gcb.15310.
CHOWDHURY M. S. (2024) Flash flood susceptibility mapping of north-east depression of Bangladesh using different GIS based bivariate statistical models, Watershed Ecology and the Environment 6, 26-40, https://doi.org/10.1016/j.wsee.2023.12.002.
COHEN-SHACHAM E., WALTERS G., JANZEN C., MAGINNIS S. (eds.) (2016) Nature-Based Solutions to Address Global Societal Challenges, IUCN, Gland, https://doi.org/10.2305/IUCN.CH.2016.13.en.
DELHI DEVELOPMENT AUTHORITY (2021) Draft Land Use Plan for Delhi 2041, DDA, Government of India, Retrieved from: www.dda.gov.in.
DELHI DISASTER MANAGEMENT AUTHORITY (2023) Disaster management in Delhi, DDMA, Government of India, Retrieved from: www.ddma.delhi.gov.in.
DELHI TRAFFIC POLICE (2022) Compiled List of Water Logging Locations observed in the year 2021, Delhi Traffic Police, Retrieved from: traffic.delhipolice.gov.in.
DI SALVO C., CIOTOLI G., PENNICA F., CAVINATO G. P. (2017) Pluvial flood hazard in the city of Rome (Italy), Journal of Maps 13 (2), 545–553, https://doi.org/10.1080/17445647.2017.1333968.
EKKA S. A., RUJNER H., LEONHARDT G., BLECKEN G.-T., VIKLANDER M., HUNT W. F. (2021) Next generation swale design for stormwater runoff treatment: A comprehensive approach, Journal of Environmental Management 279, 111756, https://doi.org/10.1016/j.jenvman.2020.111756.
FERNANDO N. S., SHRESTHA S., KC S., MOHANASUNDARAM S. (2022) Investigating major causes of extreme floods using global datasets: A case of Nepal, USA & Thailand, Progress in Disaster Science 13, 100212, https://doi.org/10.1016/j.pdisas.2021.100212.
FRANTZESKAKI N. (2019) Seven lessons for planning nature-based solutions in cities, Environmental Science & Policy 93, 101-111, https://doi.org/10.1016/j.envsci.2018.12.033.
GAITAN S., VAN DE GIESEN N. C., TEN VELDHUIS J. A. E. (2016) Can urban pluvial flooding be predicted by open spatial data and weather data?, Environmental Modelling & Software 85, 156-171, https://doi.org/10.1016/j.envsoft.2016.08.007.
GUPTHA G. C., SWAIN S., AL-ANSARI N., TALOOR A. K., DAYAL D. (2022) Assessing the role of SuDS in resilience enhancement of urban drainage system: A case study of Gurugram City, India, Urban Climate 41, 101075, https://doi.org/10.1016/j.uclim.2021.101075>.
HACHOUMI I., PUCHER B., DE VITO-FRANCESCO E., PRENNER F., ERTL T., LANGERGRABER G., FÜRHACKER M., ALLABASHI R. (2021) Impact of green roofs and vertical greenery systems on surface runoff quality, Water 13 (19), 2609, https://doi.org/10.3390/w13192609.
HE C., SHI P., XIE D., ZHAO Y. (2010) Improving the normalized difference built-up index to map urban built-up areas using a semiautomatic segmentation approach, Remote Sensing Letters 1 (4), 213-221, https://doi.org/10.1080/01431161.2010.481681.
HU M., ZHANG X., SIU Y. L., LI Y., TANAKA K., YANG H., XU Y. (2018) Flood mitigation by permeable pavements in Chinese sponge city construction, Water 10 (2), 172, https://doi.org/10.3390/w10020172.
HUANG Y., TIAN Z., KE Q., LIU J., IRANNEZHAD M., FAN D., HOU M., SUN L. (2020) Nature-based solutions for urban pluvial flood risk management, WIREs Water 7 (3), e1421, https://doi.org/10.1002/wat2.1421.
INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE (2023) Climate Change 2023: Synthesis Report, IPCC, Geneva, https://doi.org/10.59327/IPCC/AR6-9789291691647.
JHA A. K., BLOCH R., LAMOND J. (2012) Cities and Flooding: A Guide to Integrated Urban Flood Risk

Management for the 21st Century, The World Bank, Washington, D.C., https://doi.org/10.1596/978-0-8213-8866-2.

KADAVERUGU A., NAGESHWAR RAO C., VISWANADH G. K. (2021) Quantification of flood mitigation services by urban green spaces using InVEST model: a case study of Hyderabad city, India, Modeling Earth Systems and Environment 7, 589-602, https://doi.org/10.1007/s40808-020-00937-0.

KARLO T., SAJNA N. (2017) Biodiversity related understorey stability of small peri-urban forest after a 100-year recurrent flood, Landscape and Urban Planning 162, 104-114, https://doi.org/10.1016/j.landurbplan.2017.02.012.

KHALEQUZZAMAN M. D. (1994) Recent Floods in Bangladesh: Possible Causes and Solutions, in: El-Sabh M. I., Murty T. S., Venkatesh S., Siccardi F., Andah K. (eds.), Recent Studies in Geophysical Hazards, Springer, Dordrecht, pp. 65-80, https://doi.org/10.1007/978-94-011-0976-5_4.

KIM H. Y. (2021) Analyzing green space as a flooding mitigation – storm Chaba case in South Korea, Geomatics, Natural Hazards and Risk 12 (1), 1181-1194, https://doi.org/10.1080/19475705.2021.1920478.

KUMAR M., SHARIF M., AHMED S. (2017) Flood risk management strategies for national capital territory of Delhi, India, ISH Journal of Hydraulic Engineering 25 (3), 248-259, https://doi.org/10.1080/09715010.2017.1408434.

KUMAR S., AGARWAL A., VILLURI V. G. K., PASUPULETI S., KUMAR D., KAUSHAL D. R., GOSAIN A. K., BRONSTERT A., SIVAKUMAR B. (2021) Constructed wetland management in urban catchments for mitigating floods, Stochastic Environmental Research and Risk Assessment 35, 2105-2124, https://doi.org/10.1007/s00477-021-02004-1.

LAMICHHANE S., SHAKYA N. M. (2019) Alteration of groundwater recharge areas due to land use/cover change in Kathmandu Valley, Nepal, Journal of Hydrology: Regional Studies 26, 100635, https://doi.org/10.1016/j.ejrh.2019.100635.

LIVESLEY S. J., MCPHERSON E. G., CALFAPIETRA C. (2016) The Urban Forest and Ecosystem Services: Impacts on Urban Water, Heat, and Pollution Cycles at the Tree, Street, and City Scale, Journal of Environmental Quality 45 (1), 119-124, https://doi.org/10.2134/jeq2015.11.0567.

MA Y., CUI Y., TAN H., WANG H. (2022) Case study: Diagnosing China's prevailing urban flooding—Causes, challenges, and solutions, Journal of Flood Risk Management 15 (3), e12822, https://doi.org/10.1111/jfr3.12822.

MAJIDI A. N., VOJINOVIC Z., ALVES A., WEESAKUL S., SANCHEZ A., BOOGAARD F., KLUCK J. (2019) Planning nature-based solutions for urban flood reduction and thermal comfort enhancement, Sustainability 11 (22), 6361, https://doi.org/10.3390/su11226361.

MAES J., JACOBS S. (2017) Nature-Based Solutions for Europe's Sustainable Development, Conservation Letters 10 (1), 121-124, https://doi.org/10.1111/conl.12216.

MILLER J. D., KIM H., KJELDSEN T. R., PACKMAN J., GREBBY S., DEARDEN R. (2014) Assessing the impact of urbanization on storm runoff in a peri-urban catchment using historical change in impervious cover, Journal of Hydrology 515, 59-70, https://doi.org/10.1016/j.jhydrol.2014.04.011.

MORGAN C., BEVINGTON C., LEVIN D., ROBINSON P., DAVIS P., ABBOTT J., SIMKINS P. (2013) Water sensitive urban design in the UK – Ideas for built environment practitioners, CIRIA, London.

MURRAY V., ABRAHAMS J., ABDALLAH C., AHMED K., ANGELES L., BENOUAR D., BRENES TORRES A., CHANG HUN C., COX S., DOURIS J., FAGAN L., FRA PALEO U., HAN Q., HANDMER J., HODSON S., KHIM W., MAYNER L., MOODY N., MORAES L., LEAL O., NAGY M., NORRIS J., PEDUZZI P., PERWAIZ A., PETERS K., RADISCH J., REICHSTEIN M., SCHNEIDER J., SMITH A., SOUCH C., STEVANCE A.-S., TRIYANTI A., WEIR M., WRIGHT N. (2021) Hazard Information Profiles: Supplement to UNDRR-ISC Hazard Definition & Classification Review – Technical Report, UNDRR, Geneva, https://doi.org/10.24948/2021.05.

NATARAJAN L., USHA T., GOWRAPPAN M., PALPANABHAN KASTHURI B., MOORTHY P., CHOKKALINGAM L. (2021) Flood Susceptibility Analysis in Chennai Corporation Using Frequency Ratio Model, Journal of the Indian Society of Remote Sensing 49, 1533-1543, https://doi.org/10.1007/s12524-021-01331-8.

NATIONAL DISASTER MANAGEMENT AUTHORITY (2008) National Disaster Management Guidelines: Management of Floods, NDMA, Government of India, Retrieved from: www.ndma.gov.in.

PACETTI T., CIOLI S., CASTELLI G., BRESCI E., PAMPALONI M., PILEGGI T., CAPORALI E. (2022) Planning Nature Based Solutions against urban pluvial flooding in heritage cities: A spatial multi criteria approach for the city of Florence (Italy), Journal of Hydrology: Regional Studies 41, 101081, https://doi.org/10.1016/j.ejrh.2022.101081.

PAULEIT S., DUHME F. (2000) Assessing the environmental performance of land cover types for urban planning, Landscape and Urban Planning 52 (1), 1-20, http://doi.org/10.1016/S0169-2046(00)00109-2.

PERVIN I. A., RAHMAN S. M. M., NEPAL M., HAQUE A. K. E., KARIM H., DHAKAL G. (2020) Adapting to urban flooding: a case of two cities in South Asia, Water Policy 22 (S1), 162-188, https://doi.org/10.2166/wp.2019.174.

PRASHAR S., SHAW R., TAKEUCHI Y. (2012) Assessing the resilience of Delhi to climate-related disasters: a comprehensive approach, Natural Hazards 64, 1609-1624, http://doi.org/10.1007/s11069-012-0320-4.

QI M., HUANG H., LIU L., CHEN X. (2020) Spatial heterogeneity of controlling factors' impact on urban pluvial flooding in Cincinnati, US, Applied Geography 125, 102362, https://doi.org/10.1016/j.apgeog.2020.102362.

RUANGPAN L., VOJINOVIC Z., DI SABATINO S., LEO L. S., CAPOBIANCO V., OEN A. M. P., MCCLAIN M. E., LOPEZ-GUNN E. (2020) Nature-based solutions for hydro-meteorological risk reduction: a state-of-the-art review of the research area, Natural Hazards and Earth System Sciences 20 (1), 243-270, https://doi.org/10.5194/nhess-20-243-2020.

SARABI S., HAN Q., DE VRIES B., ROMME A. G. L. (2022) The nature-based solutions planning support system: A playground for site and solution prioritization, Sustainable Cities and Society 78, 103608, https://doi.org/10.1016/j.scs.2021.103608.

SCHUCH G., SERRAO-NEUMANN S., MORGAN E., LOW CHOY D. (2017) Water in the city: Green open spaces, land use planning and flood management – An Australian case study, Land Use Policy 63, 539-550, https://doi.org/10.1016/j.landusepol.2017.01.042.

SHAFIQUE M., KIM R., KYUNG-HO K. (2018) Evaluating the capability of grass swale for the rainfall runoff reduction from an Urban parking lot, Seoul, Korea, International Journal of Environmental Research and Public Health 15 (3), 537, https://doi.org/10.3390/ijerph15030537.

SHRESTHA S., CUI S., XU L., WANG L., MANANDHAR B., DING S. (2021) Impact of land use change due to urbanisation on surface runoff using GIS-based SCS–CN method: A case study of Xiamen city, China, Land 10 (8), 839, https://doi.org/10.3390/land10080839.

SOOD A., BISWAS A. (2022) Introducing Greenswales: A nature-based approach to preserve seasonal channels – Learnings from Chandigarh, India, Geographica Pannonica 26 (4), 385-395, https://doi.org/10.5937/gp26-40126.

STAVROPOULOS S., ZAIMES G. N., FILIPPIDIS E., DIACONU D. C., EMMANOULOUDIS D. (2020) Mitigating flash floods with the use of new technologies: A Multi-criteria decision analysis to map flood susceptibility for Zakynthos Island, Greece, Journal of Urban and Regional Analysis 12 (2), 233-248, https://doi.org/10.37043/JURA.2020.12.2.7.

SUN D., YANG H., GUAN D., YANG M., WU J., YUAN F., JIN C., WANG A., ZHANG Y. (2018) The effects of land use change on soil infiltration capacity in China: A meta-analysis, Science of the Total Environment 626, 1394-1401, https://doi.org/10.1016/j.scitotenv.2018.01.104.

TANAKA T., KIYOHARA K., TACHIKAWA Y. (2020) Comparison of fluvial and pluvial flood risk curves in urban cities derived from a large ensemble climate simulation dataset: A case study in Nagoya, Japan, Journal of Hydrology 584, 124706, https://doi.org/10.1016/j.jhydrol.2020.124706.

TOMAR P., SINGH S. K., KANGA S., MERAJ G., KRANJČIĆ N., ĐURIN B., PATTANAIK A. (2021) GIS-Based Urban Flood Risk Assessment and Management—A Case Study of Delhi National Capital Territory (NCT), India, Sustainability 13 (22), 12850, https://doi.org/10.3390/su132212850.

UN-HABITAT (2022) World Cities Report 2022: Envisaging the Future of Cities, UN-Habitat, Nairobi.

VARSHNEY A. (2013) Improved NDBI differencing algorithm for built-up regions change detection from remote-sensing data: an automated approach, Remote Sensing Letters 4 (5), 504-512, https://doi.org/10.1080/2150704X.2013.763297.

VOJINOVIC Z., ALVES A., GÓMEZ J. P., WEESAKUL S., KEERAKAMOLCHAI W., MEESUK V., SANCHEZ A. (2021) Effectiveness of small- and large-scale Nature-Based Solutions for flood mitigation: The case of Ayutthaya, Thailand, Science of the Total Environment 789, 147725, https://doi.org/10.1016/j.scitotenv.2021.147725.

WAGHWALA R. K., AGNIHOTRI P. G. (2021) Impact assessment of urbanization on flood risk and integrated flood management approach: a case study of Surat city and its surrounding region, ISH Journal of Hydraulic Engineering 27 (S1), 577-587, https://doi.org/10.1080/09715010.2019.1658548.

WAN MOHTAR W. H. M., ABDULLAH J., ABDUL MAULUD K. N., MUHAMMAD N. S. (2020) Urban flash flood index based on historical rainfall events, Sustainable Cities and Society 56, 102088, https://doi.org/10.1016/j.scs.2020.102088.

XIAO Q., MCPHERSON E. G. (2002) Rainfall interception by Santa Monica's municipal urban forest, Urban Ecosystems 6, 291-302, https://doi.org/10.1023/b:ueco.0000004828.05143.67.

XIE J., WU C., LI H., CHEN G. (2017) Study on storm-water management of grassed swales and permeable pavement based on SWMM, Water 9 (11), 840, https://doi.org/10.3390/w9110840.

YAO L., WEI W., YU Y., XIAO J., CHEN L. (2018) Rainfall-runoff risk characteristics of urban function zones in Beijing using the SCS-CN model, Journal of Geographical Sciences 28, 656-668, https://doi.org/10.1007/s11442-018-1497-6.

YU Q., WANG Y., LI N. (2022) Extreme Flood Disasters: Comprehensive Impact and Assessment, Water 14 (8), 1211, https://doi.org/10.3390/w14081211.

ZHA Y., GAO J., NI S. (2003) Use of normalized difference built-up index in automatically mapping urban areas from TM imagery, International Journal of Remote Sensing 24 (3), 583-594, https://doi.org/10.1080/01431160304987.

ZHOU T., PENNING-ROWSELL E. (2021) China's 'Sponge Cities': The role of constructed wetlands in alleviating urban pluvial flooding, Water and Environment Journal 35 (3), 1133-1146, https://doi.org/10.1111/wej.12705.

Residents' Perception on the Authenticity of Christmas Markets in Transylvania: The Case of Cluj-Napoca

Bianca-Sorina POP-RĂCĂȘAN, István Oliver EGRESI, Diana-Elena ALEXANDRU, Cristina BOLOG, Ștefan DEZSI, Gabriela ILIEȘ, Marin ILIEȘ, Marius George OPREA

Email: bianca.racasan@ubbcluj.ro

Babeș-Bolyai University, Cluj-Napoca, Romania

Abstract: Local events associated with religious holidays or holiday seasons provide a suitable context for the analysis of authenticity. In such regards, we conducted a survey among the visitors of the Christmas market held in Cluj-Napoca, Romania. The aim was to certify the authenticity of the elements of a local event as perceived by the visitors representing the local urban community. The analysis examined responses from 585 participants, exploring both qualitative and quantitative aspects. We identified seven key elements of authenticity defining the Christmas market. The study found no statistically significant differences in the perception of authenticity according to the demographic profile of the respondents. The overall opinion of the participants was that local traditional elements should predominate in an authentic Christmas market. This study could represent a ready-made tool for the decision-makers and event organisers, who should consider a participatory approach when engaging in the organisation of such events, ensuring the active involvement of the local community from the design to the implementation stage.

Keywords: authenticity; local products; winter traditions; community perception; Christmas market

Introduction

In a consumer society, the concept of authenticity has become so popular that it turned into a travelling motivation by itself (Brown et al. 2003, Heitmann 2011, De Bernardi 2019, Răcășan and Egresi 2019). Thus, the demand is constantly growing not only for authentic intangible experiences (Cohen 2007, Heitmann 2011, Croes et al. 2013, Ramkissoon and Uysal 2018, Domínguez-Quintero et al. 2019, Park et al. 2019, Domínguez-Quintero et al. 2020), but also for material objects (Healy 1994, Wang 1999, Schouten 2006, Sims 2009, Kolar and Zabkar 2010, Heitmann 2011, Torabian and Arai 2016, Park et al. 2019, Choi et al. 2020), or for tangible memories such as souvenirs (Collins-Kreiner and Zins 2011, Amaro et al. 2020, Light et al. 2024, Lupu et al. 2024).

Submitted: 22.07.2024; **Revised:** 27.02.2025; **Accepted:** 18.03.2025

Since tourists increasingly seek the sense of genuine and real (Beverland and Farrelly 2010, Heitmann 2011), or something that is credible, reliable, or sincere (Taylor 2001, Knudsen and Waade 2010), even original (Wang 1999, Heitmann 2011) and unique (Heitmann 2011, Torabian and Arai 2016, Lupu et al. 2024), traditional and local (Healy 1994, Collins-Kreiner and Zins 2011, Heitmann 2011, Light et al. 2024) within the visited destination, the quest for authenticity has been one of the main topics in tourism studies. However, most research papers investigate the tourists' perspective (Getz 1998, Chhabra 2005, Booth 2015, Zhou et al. 2015) while few studies discuss the residents' perceptions (Tucker 2003, Steiner and Reisinger 2006, Croes et al. 2013, Choi et al. 2020). Nonetheless, the locals have their own system of assessing authenticity (Zhou et al. 2015) and sometimes only they can certify whether an experience or an object is based on the local tradition or not (Getz 1998, Steiner and Reisinger 2006, Choi et al. 2020), and if it could also have a contribution to the local identity (Tucker 2003).

The purpose of this study is threefold: (1) to identify the key components of the Christmas Market (CM) held in Cluj-Napoca (Transylvania region, Romania); (2) to investigate the residents' perception toward the authenticity of the CM; and (3) to establish the differences in assessing the authenticity of the CM based on their socio-demographic characteristics.

New to the existing international studies on urban authenticity, CMs and even souvenir buying is the approach of this study, respectively the involvement of the local community through the collective perspective which emerged from the applied survey. Based on the population answers, we could lay the foundations of both key components of authenticity and of their share at Cluj-Napoca's CM. The locals' assessment results sheds light on what matters most in terms of authenticity, whether it is the CM seen as an event, or the sold products that could play the role of gifts and souvenirs, or the Christmas atmosphere. Alternatively, this research could be regarded by the organisers and decision-makers as a real guidance in developing similar future events with a participatory approach, starting from the design stage; foremost due to the fact that the residents are more entitled to judge if something is authentic or not, since they are more oriented towards preserving the local heritage and the originality of material or immaterial elements, as they link to the local pride (Croes et al. 2013).

Thus, the following sections debuted with a review of the literature focused on the concept of authenticity (types of authenticity, its assessment and perception), followed by presenting the evolution of CMs and their related perceived authenticity. Subsequently, the methodology is described, accompanied by the location map of the study area, the population sample and the research phases. Thereafter, the findings are being displayed and discussed, starting with the characteristics of the resident participants at the CM in Cluj-Napoca, and continuing with the qualitative and quantitative analysis of the research questions. Finally, a series of limitations and conclusions are being outlined, encouraging further research on the topic.

Literature review

The concept of authenticity

One can find numerous definitions of authenticity in the tourism literature (Taylor 2001). The problem is that authenticity is difficult to define as a concept and it is open to many interpretations (Getz 1998). The word "authenticity" originated from classical Greek and it referred to something true, sincere, or original in a historical context (Heitmann 2011). It was initially used in the context of museums when evaluating a material object (Heitmann 2011). Here, by "genuine" (or authentic), it was understood: "any piece made from traditional materials by a native craftsman for acquisition and use by members of local society (though not necessarily members of his own group) that is made and used with no thought that it ultimately may be disposed of for gain to Europeans or other aliens" (McLeod 1976: 31). Heitmann (2011: 45), also, pointed out that, for an object to be considered authentic, it should be "made by local hands". Moreover, it is often expected that the material of which the object is made is the original one (Heitmann 2011).

It is more difficult to assess authenticity when referring to immaterial elements – and here we could include festivals or tourism experiences in general (Salome 2010, Heitmann 2011). In these cases, authentic is often equated with traditional (Taylor 2001). By authentic, one could also understand something that is genuine, unadulterated, real and/or true (Beverland and Farrelly 2010, Heitmann 2011), or something that is credible, reliable (Knudsen and Waade 2010), or sincere (Taylor 2001) – something could be "considered as authentic if it is made, produced or enacted by local people according to customs and traditions or if the presentation or performance has a connotation of traditional culture and origin – a sense of genuine, real or unique" (Heitmann 2011: 45). Given this ambiguity, Steiner and Reisinger (2006) criticised the use of the term authenticity for being too pretentious and they proposed the use of simpler words, such as: genuine; actual; real; or true.

In the case of immaterial elements, such as cultural, religious or heritage festivals or performances, these were often modified and adapted to appeal to the visitors' taste. This process can be seen as a negotiation of authenticity (Booth 2015). While this may diminish the experience of some visitors, most of them have moderate expectations in terms of the authenticity of the encountered cultures. They can have an authentic experience even without gazing at authentic sights (Cohen 2007). And what visitors experience is often "staged authenticity" (MacCannell 2013): cultural products are "staged" for tourists who are under the impression that they are authentic. In time, even cultural products that were conceived specifically for tourist consumption may eventually be accepted as authentic products of a local group or a region, leading to what is known as "emergent authenticity" (Cohen 1988).

Authenticity can be conceptualised in different ways. For example, Selwyn (1996) distinguished between two types of authenticity: cool authenticity, referring to something that is real, original or genuine; and hot authenticity, representing a fake version of authenticity that is still being enjoyed by the visitors. Park et al. (2019) conceptualised authenticity as either object-related (objective authenticity) or experience-related (subjective authenticity). The latter includes both constructive and existential authenticity (Park et al. 2019). In the classical understanding, whether an object was or not authentic used to be determined by an expert in the field (Cohen 2007). This is known as objective authenticity and it refers to an object that is original or genuine (Wang 1999), or at least, a perfect imitation of it (Kolar and Zabkar 2010).

Constructive authenticity, as part of the subjective authenticity (Park et al. 2019), recognises that authenticity is, in fact, a social construct (Beverland and Farrelly 2010). Thus, constructive authenticity refers to something that, in time, acquired social recognition as authentic (Wang 1999). The evaluation of the authenticity of a product, location or a non-material element is subjective and it is based on an individual's perception (Beverland and Farrelly 2010). People have their own subjective personal view of authenticity based on their history with the object, place or event under analysis, or based on cultural biases (Budruk et al. 2008). The constructive view of authenticity is relevant mainly to the residents (Richards 2007).

Existential authenticity, also part of the subjective authenticity (Park et al. 2019), is based on the visitors' openness to their experiences. It can also be viewed as a projection of tourists' own beliefs, expectations, and preferences (Wang 1999). The consumers' personal goals influence how they perceive authenticity (Beverland and Farrelly 2010). Also, place is important in existential authenticity (Rickly-Boyd 2013). Existential authenticity is relevant to both hosts and visitors (Cole 2007), and perhaps more to visitors (Richards 2007). Several studies have found a direct and positive influence of objective and existential authenticity on the tourists' experience satisfaction in a cultural context (Domínguez-Quintero et al. 2019, Domínguez-Quintero et al. 2020). In order to convince the visitors to revisit they have to be satisfied with the experienced constructive and existential authenticity (Park et al. 2019), especially when authenticity becomes the main motivation for travelling (Brown et al. 2003, Heitmann 2011, De Bernardi 2019, Răcășan and Egresi 2019).

People attend local festivals and events to escape the inauthenticity of their everyday lives and activities (Iso-Ahola 1982, Taylor 2001, Brown 2013, MacCannell 2013). People want to escape a world dominated by standardised products, dictated by the needs of globalisation and scale-economies, and they search for greater variety and more meaningful things (Richards and Wilson 2007). Thus, authenticity is often used as a counter concept to modernity (Olsen 2002), and it could only be found in other places and in times preceding modernity (MacCannell 2013). Usually, when people travel to a faraway destination and to hard accessible places that are highly probable to become a

priority on their preferences (Gaman and Răcăşan 2016), they also want to learn about the local culture and heritage (Heitmann 2011). Also, people are attracted to certain sites or festivals to discover how their ancestors used to live in the past (Chhabra et al. 2003). Thus, nostalgia is another important motivator for attending certain festivals and events. Scholars have documented an increasing demand for authentic experiences (Ramkissoon and Uysal 2018), and, the more people visit a site, the more they want that site to be authentic (Harkin 1995).

The concept of authenticity is also dynamic as people's perception of something being authentic can change in time (Croes et al. 2013), as the same way cultures are changing, being shaped by continuous construction through social processes (Bruner 1994). In fact, Duggan (1997) argues that an authentic culture cannot remain unchanged. Cultural elements have the ability to adapt in time. As such, what today is being perceived as inauthentic can become authentic over time. The understanding of authenticity can gradually change even among the locals (De Azeredo Grünewald 2006). This corresponds to what Cohen (1988) named as "emergent authenticity".

Generally, authenticity, as opposed to fakes, is assumed to be positive (Zhou et al. 2018); however, scholars have also identified a type of negative authenticity, that is the situation when objects and phenomena are authentic but they are not considered fit or valuable enough to be exhibited neither by the locals nor by the tourists (Zhou et al. 2018). It could also be argued that an authentic experience is not necessarily a good tourist experience (Schouten 2006). Sometimes the visitors do not want local authenticity if they think that it will ruin their tourist experience (Bruner 1991), or, they ignore the reality of the local context in their search for authenticity (Du Cros and Mckercher 2020).

Assessment and perception of authenticity

Elements that form authenticity may vary as they are not based on absolute criteria, but rather result from negotiations among different stakeholders (Brown 2013). Tourists define authenticity in many different ways (Littrell et al. 1993). However, it is generally accepted that the lower the authenticity degree is, the smaller the associated value becomes (Răcăşan et al. 2016), regarding both tourist potential and attractiveness. Studying craft authenticity, Littrell et al. (1993) identify eight major themes, the most mentioned ones being the craft's uniqueness and originality. So, authenticity is especially important for the arts and crafts sector, generally very well represented at CMs (Bergadaà 2008), especially in Cluj-Napoca, where there is a strong tradition in craftsmanship (Bolog and Brie 2016). Also, in 2015, more than half of the organised events (58.2%) held in the rural-mountain area of Cluj County (representing one third of the county's surface) were cultural ones (such as festivals, traditional celebrations, folklore spectacles, concerts and fairs), exhibiting and promoting the local uniqueness as part of the destination's tourism supply (Răcăşan 2015).

Material authenticity is the easiest to assess (Schouten 2006). According to Revilla and Dodd (2003), people assess the authenticity of crafts based on five main factors: appearance/utility; tradition and certification; difficulty to obtain; local production; and its low cost (Revilla and Dodd 2003). Healy (1994) found that, in order to be considered authentic, crafts should be locally handmade, while Schouten (2006) argued that only objects made of traditional materials and with genuine decorations are authentic. Torabian and Arai (2016) agree with Healy (1994) and Schouten (2006) but also add the uniqueness of the object and the signature and hallmark of the artist to the criteria. Soukhathammavong and Park (2019) also opined that the assessment of a craft should take into consideration the origin of the product (it must be made in the region) and whether the object is handmade and if it reflects the place identity, craftsmanship, and local pattern.

When these objects are connected to several contexts and features, from cultural and social, to materiality and identity, involving consumption as well, and sometimes, globalisation, then we are dealing with souvenirs (Collins-Kreiner and Zins 2011, Amaro et al. 2020, Light et al. 2024, Lupu et al. 2024). While agreeing with Wilkins (2011) about the main reasons for buying souvenirs (i.e. to provide holiday memories; for evidence of travel; and as gifts for others), Lupu et al. (2024) shared new connotations of these objects, as they are an expression of religious and/or national identity, and a personal statement of identity.

The study of Light et al. (2024) draws attention to the fact that the products sold as souvenirs are found in many forms, from locally made handicrafts that reflect local traditions, to standard items that are mass-produced. Clearly, the latter category is raising questions about the authenticity of these products since they solely imitate the ones designed by the local craftsmen. While some sellers perceived authenticity in a more flexible way, others defended their souvenirs as being genuine, while helping them to sustain their skills and cultural identity (Kumar et al. 2022, Light et al. 2024). As Light et al. (2024) presented it, souvenir production and commercialisation is a major economic activity involving trade and consumption. Hence, it is also a cultural process where the sellers who spoke of pride intermediate the understanding of meanings about places and products which often exemplify national or local cultural traditions.

Although somewhat different from crafts and souvenirs, local food can also be used to feed the desire of the visitors for authenticity (Sims 2009). Local food can be conceptualised as authentic when it represents the culture of the place (Sims 2009).

Non-material authenticity is more difficult to assess. Camus (2010) attempted to develop a scale to measure authenticity. However, the scale does not capture the degree of existential authenticity as defined by Wang (1999). Chhabra et al. (2003) studied the authenticity of a heritage event held in North Carolina, USA, as perceived by the tourists and event organisers. They both perceived the event as being highly authentic due to: the Scottish food (by 60.4%); the outdoor recreation and spectacle (60.3%);

the information on Scottish heritage (57.4%); and the athletic competition (48.6%) (Chhabra et al. 2003)

The concept of "constructed authenticity" points to the fact that everyone is entitled to judge if something is authentic or not (Cohen 2007), which means that there are multiple authenticities rather than one (De Bernardi 2019). Indeed, authenticity may be interpreted differently from one person to another (Cohen 1988, Barker et al. 2006, Croes et al. 2013), and from one context to another (Belhassen and Caton 2006).

Perception of authenticity is influenced by the personal characteristics of those who evaluate it (Camus 2010). Several studies investigated the differences in the way tourists defined authenticity based on socio-demographic characteristics (Littrell et al. 1993). The perception of authenticity could vary based on the age and sex of the individual (Goulding 2000). For example, in a study of a restored historical neighbourhood in Australia, Waitt (2000) found significant differences in the perceived level of authenticity among population groups based on gender, place of residence, and age. The results pointed to the fact that males were more likely to perceive the restored neighbourhood to be authentic whereas females tended to be more sceptical (Waitt 2000). But, Littrell et al. (1993) found no differences in the authenticity definition between males and females but they found differences between younger and older visitors. Younger visitors defined authenticity mainly as associated with unique and original items whereas older visitors referred to the genuineness of the craft and its cultural and historic integrity (Littrell et al. 1993).

In addition, in the previously mentioned study of Chhabra et al. (2003), the highest income group gave authenticity the highest rating followed by the lowest income group. No significant differences were found among different age groups, although the younger participants tended to give higher ratings for authenticity (Chhabra et al. 2003). Similarly, no statistically significant differences in authenticity rating were found between men and women, although it was observed that women who had visited Scotland rated authenticity significantly higher than men who visited Scotland (Chhabra et al. 2003).

Also, different stakeholders have different definitions of authenticity (Cole 2007, Crespi-Vallbona and Richards 2007, Brida et al. 2012, Răcăşan and Egresi 2019). Three perspectives on authenticity must be reconciled – those of the organisers, the tourists, and the residents – when organising an event or a festival (Getz 1998). On the one hand, the tourists interpret authenticity in their own ways (Ramkissoon and Uysal 2018). They are not necessarily interested in objective authenticity and what they believe is authentic does not have to do with reality (Wang 1999). On the other hand, the host's perspective of authenticity may be exactly opposite to the tourist's perspective (Steiner and Reisinger 2006). While investigating a similar subject which considered the uniqueness of a destination that aims to promote itself through (brand) image and products, other scholars took into account the local authorities' perception

(Răcășan and Egresi 2019). Most of the answers included cultural heritage, referring to both material (traditional products derived from handicrafts, specific fabrics, culinary products) and immaterial aspects (Răcășan and Egresi 2019).

The literature generally focuses on the tourists' perspective (Chhabra 2005, Zhou et al. 2015) and only few studies examine the residents' perspective on authenticity (Croes et al. 2013). However, the tourists tend to be attracted to events which are popular with the locals (Getz 1998). Thus, it is important that not only the tourists but also the residents perceive the objects of tourists' gaze as being authentic (Croes et al. 2013, Choi et al. 2020). The locals are entitled to their own interpretation of authenticity (Zhou et al. 2015) and some even say that, whether or not an object or a cultural experience is based on the local tradition, it must be certified by the local community (Getz 1998, Choi et al. 2020), as: "it is no one's business to decide what constitutes authenticity except the local residents" (Steiner and Reisinger 2006: 312).

When assessing authenticity, the locals are taking into account both personal economic and emotional benefits, with the latter being the key factor (Zhou et al. 2015). The residents are more concerned than the visitors about keeping objects and traditions in their original form (Croes et al. 2013), and there are good reasons for this. On the one hand, a material or immaterial tourist attraction that is perceived as authentic by the residents could contribute to the local identity and pride (Tucker 2003, Croes et al. 2013). On the other hand, the lack of self-identity related to the objects or to the immaterial elements offered to the visitors (Choi et al. 2020) may make the residents to feel excluded (Swanson 2013) and it could lead to less support for tourism (Getz 1998, Croes et al. 2013).

Event managers plan and design events in such a way to appeal to a great spectrum of visitors, both tourists and residents. However, in order to attract as many tourists as possible, they often create a mass image of the event. This destroys uniqueness and it introduces inauthenticity, thus alienating the residents who resent their traditions/customs as being misrepresented just to appeal to the tourists (Lew 1989). In order to be successful, cultural events need the support of the local community. Even in situations when authenticity is staged, the locals need to identify themselves with the culture being staged (Brida et al. 2012), meaning that local traditions and customs need to be reproduced as accurately as possible (Getz 1998, McCartney and Osti 2007, Brida et al. 2012). Events, such as CMs, are expected to reveal local values, traditions and a sense of place for the community (Getz 1998).

Evolution of Christmas markets and perceived authenticity

CMs have a very long tradition going back to the medieval period (Haid 2006), and they have developed in three phases: a preindustrial, an industrialisation, and a globalisation period (Broeckerhoff and Galalae 2022).

The first CMs started in the fourteenth century in Germany, as small seasonal consumption spaces which operated as extensions of existing weekly markets, selling seasonal foods and handmade artefacts that could make Christmas gifts (Broeckerhoff and Galalae 2022). The first market which specifically focused on Christmas took place in the eighteenth century in Berlin (Haid 2006). Back then, Christmas was known as a time for giving presents in bourgeois society and CMs developed into the most important markets for toys (Haid 2006).

The second phase debuted with the industrial revolution (Broeckerhoff and Galalae 2022). Industrialisation and urbanisation dramatically transformed CMs across Europe (Perry 2014). With the introduction of department stores and shopping malls, CMs ended up being marginalised. Toys started to be sold in these new shopping centres (Haid 2006) and CMs became spaces for experiential consumption (Broeckerhoff and Galalae 2022). They were known for selling cheap trinkets to visitors and for displaying a carnivalesque culture (Perry 2014, Gibson 2019). They were not only places for shopping, but also included music, activities and other features in order to create a holiday atmosphere meant to encourage the visitors to spend money and to consume (Gibson 2019).

Over the last thirty years, CMs have regained much of their lost importance. The German format of the CMs started to be exported to many places in Europe and beyond (Jansen-Verbeke 1998). Over time, Christmas has become a family rather than a religious feast (Haid 2006, Prideaux and Glover 2015) and CMs have been transformed into places selling global cultural commodities (Broeckerhoff and Galalae 2022). Indeed, the commercial aspect has become "more prominent than the religious celebration of Christmas" (Bartunek and Do 2011: 803). In comparison to the past, today's celebration of Christmas is perceived as less authentic (Armstrong 2008) and it is criticised for being a consumerist and hedonistic activity, not complying with the traditional Christian ethic of altruism and generosity (Eldridge and Pappalepore 2019).

Since the 1990s, CMs around the Globe have seen tremendous success. However, this success is marred by a number of controversies. Firstly, there are tensions between the sacred and the secular, hedonistic celebrations of Christmas (Armstrong 2008, Eldridge and Pappalepore 2019). Secondly, there is a contradiction between the belief that Christmas customs represent local/national identity and the understanding that Christmas traditions are part of the transnational cultural heritage (Armstrong 2008).

Authenticity plays a significant part of the appeal of CMs (Casterán and Roederer 2013) as many people visit CMs specifically for their typical atmosphere (Brida et al. 2014). However, more recently, the authenticity of these events has come into question (Haid 2006). A number of studies have pointed out that the commercialisation of traditions could affect authenticity (Brida et al. 2017, Marcher et al. 2019). CMs are no longer sites where the parents go to buy toys for their children; rather they are perceived as places of consumption and of organised mass tourism (Haid 2006).

CMs have become a global icon for Christmas consumption behaviour (Broeckerhoff and Galalae 2022). The perception of event authenticity may induce increased spending (Chhabra et al. 2003, Osti et al. 2010, Brida et al. 2013). Several studies have found that the amount that the visitors spend may be connected to their perception of the market as being authentic or not. By using both quantitative and qualitative data, Casterán and Roederer (2013) attempted to understand how the perception of authenticity is constructed and how authenticity explains behaviour. They concluded that those who perceive the market as less authentic visit the CM much less frequently than those who perceive it as highly authentic (Casterán and Roederer 2013).

It could be argued that CMs are both about authentic rituals and commercialisation (Broeckerhoff and Galalae 2022). However, to increase their commercial appeal, new symbols were added in time, such as moose and reindeer, which, in some cases, even replaced old symbols (Hirschfelder 2014). Moreover, in some places, such as the South Tyrol, new customs and rituals were invented (Haid 2006).

CMs can be easily adapted across time and space (Broeckerhoff and Galalae 2022). In some countries, CMs are closely following the German traditions (i.e., in Great Britain), while in others they mix global and local Christmas traditions (Bloomfield 2010, Broeckerhoff and Galalae 2022). For example, while examining the CM in Strasbourg, Casterán and Roederer (2013) note that it includes many elements that are not local and which are not even linked to Christmas or to Christianity, thus, it has many elements that are not authentic. In fact, some scholars have compared the Strasbourg CM to Disneyland (Graillot 2001). Similarly, in Toronto, the organisers of the CM sought to recreate a Christmas "just like the one we used to know", while, simultaneously, trying to create "a Christmas like never before" (Gibson 2019: 82). This has led to an increase in carnivalization and commercialisation of CMs (Hirschfelder 2014) which, in turn, has affected their authenticity (Brida et al. 2017, Marcher et al. 2019). But this lack of authenticity does not seem to stop visitors. On the contrary, the number of visitors is on the rise, which means that the visitors are willing to accept inauthenticity in order to enjoy their consumption experiences (Casterán and Roederer 2013, Hietanen et al. 2020).

Many others, however, resent the commercial character of CMs. For example, the organisers of CMs in South Tyrol (Italy) have argued that CMs should be less about commercial advantages and more about following the local traditions (Haid 2006). In spite of commercialisation, tradition and nostalgia have remained very important reasons for visiting CMs (Gibson 2019). The creation of an authentic "Christmas feel" or Christmas atmosphere is important and it can be done through elements such as street and shop decorations, (decorated) Christmas trees, Christmas lights, Santa Claus, nativity scenes, Christmas carols, and special foods and drinks associated with the Christmas traditions (Prideaux and Glover 2015).

Casterán and Roederer (2017) investigated the dimensions of the experience that are activated within the visitors during their time at the CM. The authors concluded that the perception of authenticity at the CM is based on three dimensions: the hedonic-sensory dimension; the relationship with time; and the authenticity of the experience (Casterán and Roederer 2017). Similarly, Brida et al. (2012) investigated the motivation of the visitors to attend a CM, and, for most of them, shopping was not an important reason to be there. The results revealed that people generally go to a CM to sample the local products and to enjoy the Christmas atmosphere, both connected to their expectation of authenticity (Brida et al. 2012).

Thus, as shown above, CMs are deeply rooted into European traditions, often dating back centuries. They typically feature local crafts, foods, and customs, which help reinforce the local identity and to foster a sense of community and belonging among the residents. By examining these winter markets, the study also aims to highlight how urban spaces can preserve and promote cultural heritage, thereby enhancing the authenticity of the city. This preservation of tradition in a modern urban setting creates a unique blend of historical continuity and contemporary relevance.

Also, while CMs are inherently local in nature, they possess a global appeal. This study investigates how these markets balance local authenticity with the demands of global tourism. This balance is crucial for cities that seek to maintain their unique character while benefiting from tourism. The dual role of serving both the locals and the visitors underscores the importance of such markets in maintaining urban authenticity. So, this study can provide valuable insights into how urban authenticity is maintained and enhanced through cultural traditions, local identity, and tourism. CMs serve as a microcosm of broader urban authenticity, offering lessons that can be also applied to other aspects of city life and development.

Methodology

This research was conducted in the north-western part of Romania, more precisely in the city of Cluj-Napoca, the capital of Transylvania region (Figure 1). Being the largest city in the region and the second one at national level (286,598 inhabitants in 2022), it is one of the most vibrant cities in the country. Furthermore, Cluj-Napoca is an elite academic centre hosting several universities and over 100,000 students.

Data collection

Data collection involved predominantly quantitative methods using a survey that was carried out in 2019, during the first two weeks of December, in the city centre of Cluj-Napoca, in Transylvania, Romania (Figure 2), as the event occupied the entirety of the Union Square (the focal point of the city centre).

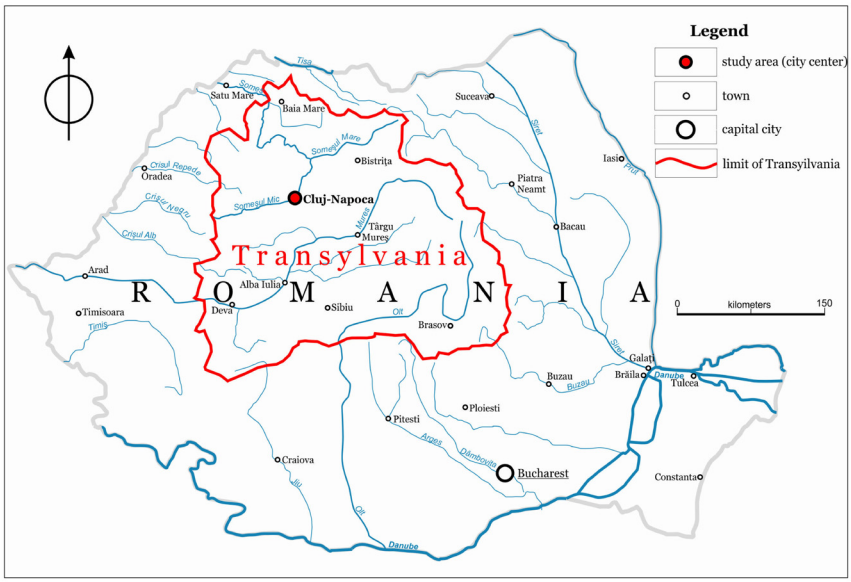

Figure 1. Location of the study area at national and regional level

Figure 2. Union Square during the Christmas market in Cluj-Napoca (Romania). Source: "Târgul de Crăciun Cluj-Napoca" Facebook page (2019)

This rectangular square, where the questionnaires were distributed throughout the area, was the spatial context for our research which was given ethical approval by the Faculty of Geography, Babeș-Bolyai University. We did not limit ourselves to specific stalls from the 97 ones, but we moved around the entire square, trying to find people interested in various aspects of the CM.

Although the CM started on 22nd of November and lasted until 31st of December, we did not conduct the research within the first 10 days of the event and also not during the last two weeks. First, we wanted to avoid the crowd which characterises nearly every day of the inauguration week and also the one before Christmas. Second, shortly after its inauguration, the Romanian national holiday celebrated on 1st of December, usually generates another context of agglomeration created by the participation of the locals to the related special program. For this reason, the overall feeling is rather patriotic during the first day of winter than associated with the Christmas spirit, and we also wanted to avoid that. The winter holidays atmosphere tends to install only afterwards at the CM in Cluj-Napoca (when our study began) and it tends to intensify starting from 5th of December (St. Nicholas' Eve), when the offering of gifts becomes the best way to celebrate this time of the year. This is when the highest amount of money is being spent on shopping and people seek for fulfilling experiences. This was the mood that we wanted to capture in the answers of our respondents, and continuing up until around December 24th-25th.

For souvenir sellers in Romania, it is also both the busiest (Light et al. 2024) and the best time to produce money due to the CM. However, our research focus in Cluj-Napoca CM was not on the sellers, but on some of the visitors. We were not interested in the domestic tourists, but in the local visitors, meaning the residents of Cluj-Napoca. Consequently, the first question of our survey allowed us to select the participants based on their residence, whether within the city of Cluj-Napoca or within its metropolitan area. After two weeks of approaching more than 1,000 adult visitors who attended the CM in Cluj-Napoca, at different times of the day (morning, afternoon, evening, and night), whenever the research team was available to conduct the survey, 585 respondents were qualified to engage in it.

The survey instrument was designed as a questionnaire organised into three parts. The first part included questions that evaluated the social impact of the CM on the local community. The results were published in another paper (Egresi et al. 2021). The other two parts were designed to assess the authenticity of the CM and to collect socio-demographic data of the event participants.

The authenticity assessment part was based on one open-ended question and on two close-ended ones. First, we aimed to examine the idea of what an authentic CM should look like in order to establish some key elements. Out of the 585 questionnaires, 91 lacked an answer to the open-ended question; thus, only 494 answers were processed in three phases: (1) identification of keywords and recurring opinions on the

authenticity of the event; (2) classification of the keywords into seven key elements/categories carrying authenticity; (3) analysis of the seven classes of authentic items to describe the level of authenticity that they carry according to the perception of the local participants, and to identify the deficiencies that should be covered/corrected by add-ons or changes in the layout, structure and content of the event.

The two close-ended questions comprised eight items which the participants had to rate on a 1 to 5 Likert Scale. The authenticity of the products sold derived from the first five items (authenticity as a quality; authenticity of the materials/ingredients; subordination to global Christmas traditions; subordination to local Christmas traditions; and subordination to national Christmas traditions). The last three items regarded the authenticity of CM overall, of the products and of the atmosphere of the CM in Cluj-Napoca compared to other CMs which the residents have visited elsewhere.

Descriptive statistics (including frequencies, mean, median, mode, and standard deviation) were employed to understand the residents' authenticity perception of the CM in Cluj-Napoca. Next, a Mann-Whitney U Test was run to determine if there were differences in the authenticity perception between men and women. Finally, the Kruskal-Wallis H tests were run to determine whether there were any statistically significant differences in the distribution of the authenticity perception scores among different socio-demographic groups, based on age, education and income.

Finally, the last part of the questionnaire collected the socio-demographic data of the event participants (gender, age, level of education and income). On average, the completion of the survey lasted for 15 minutes, due to the researchers who offered to read, to explain and to fill in each questionnaire according to the answers given by the residents. Although short, an important amount of data emerged.

Characteristics of the resident participants at the Christmas market

After being approached and presented with the purpose of the questionnaire, 585 residents had verbally expressed their willingness to participate in the survey. Of this sample, 308 were females (52.64%), which confirms previous research (Amaro et al. 2020, Lupu et al. 2024) showing that women are more likely to purchase different objects, even souvenirs, irrespective of place or event, and consequently, to participate in a higher number at a CM.

Regarding the age, we decided to split the sample into four broad age groups, from 18 years old to over 60 years old. The first group (18-29 years old) – the younger working-age respondents (269 people) – appeared to be the best represented segment (45.98%), followed by the 30-44 years old group (29.05%). The elderly population registered the lowest participation percentage (8.2%), mostly because of their lack of interest related to these kind of events and lower income rates, thus having less money to spend in places such as CM, associated with high consumption (Haid 2006, Broeckerhoff and Galalae 2022), and high expenditure rates (Chhabra et al. 2003, Osti et al. 2010,

Brida et al. 2013). This is also confirmed by the working status of the respondents, most of them (411 people) being in employment (70.25%), and 127 students (21.7%). Taking into consideration the above-mentioned reasons, the participation of the retirees had the lowest rate (8.2%).

On their education level, most of the residents (358 respondents) finished a form of higher education (61.19%), while 36.23% reported superior secondary education. Less than 3% of the respondents were lacking the previously mentioned levels of studies: 14 respondents have solely graduated from gymnasium (secondary lower education), and only one the primary education.

Finally, in order to investigate the income level, four groups were defined. More than half of the answers indicated the first two groups: 181 respondents with low income (30.94%), and 175 with a medium-low level of income (29.91%). Only 15.89% of the 585 participants in the survey declared high income values, while the remaining percentage reported medium-high ones. For a better understanding of these categories, one should consider that the typical salary in Romania is about 4000 lei (800 euro), and the domestic tourist usually spends up to 50 lei (10 euro) for material objects such as souvenirs (Lupu et al. 2024), which can be also found within CMs.

Results and Discussion

Qualitative analysis of the open-ended question

Keyword identification

Of the 585 returned questionnaires, 91 lacked an answer to the open-ended question (*What do you think an authentic Christmas market should look like?*); thus, only 494 answers were considered for the content analysis. Among the most frequently used words on the features of a CM (Table 1), two of the most recorded answers – traditional/traditions; and local – are also the quintessence of the previous scientific research (Cohen 1988, Healy 1994, Getz 1998, Taylor 2001, Revilla and Dodd, McCartney and Osti 2007, Donlon et al. 2010, Collins-Kreiner and Zins 2011, Heitmann 2011, Brida et al. 2012, Croes et al. 2013, Răcăşan and Egresi 2019, Choi et al. 2020, Light et al. 2024).

The words which we considered to be irrelevant to the international reader, such as names of specific Romanian carol singers or names of traditional Romanian dances, were replaced with more general words, such as artists or dances. Even so, the reiteration of the importance of musical moments leads us to the main point of the second phase of the evolution of CMs in Europe. As Perry (2014) and Broeckerhoff and Galalae (2022) described it, the influence of industrialisation and urbanisation defined a new holiday atmosphere, which nowadays is inseparable from the whole CM idea, and it is kept alive for both nostalgic and economic reasons (Gibson 2019).

Table 1. Keywords as reflected by the recorded questionnaire answers

No. of occurrences	Keywords (no.)
80-150	traditional (145), Christmas (85), market (82)
65-79	traditions (79), local (75), products (68)
60-64	authentic (61)
40-59	carols (56), food (49), specific (41)
25-39	Romanian (38), Cluj (36), activities (35), music (30), stalls/stands (30), children (26)
15-24	costumes (23), decorations (21), Christmas lights (21), concerts (19), dances (18), folk (18), houses (18), objects (18), customs (17), shows (17), dishes (16)
10-14	artists (13), adorned (11), city (10), handmade (10), holiday (10), ice rink (10)
5-9	Christmas tree (9), commercial (9), national (9), thematic (9), vibe (9), center (8), cultural (8), decorated (8), folklore (8), ornaments (8), affordable prices (8), Santa Claus (8), snow (8), songs (8), fun (7), merchants (7), mulled wine (7), people (7), Transylvania (7), bright (6), carolers (6), events (6), modern (6), programme (6), special (6), games (5), groups (5), original (5), scene (5), sweets(5)
4	authenticity, brand names, color, craftsmen, crowded, gifts, image, Nativity, souvenirs, tourist, workshops
3	artisanal, artistic, business, carousel, Christian, crafts, gastronomy, residents, participants, pork, regional, sketches, stuffed cabbage/cabbage rolls, typical, value
2	attractions, autochthonous, benches, cakes, colourful, community, culinary, exhibitions, festival, famous guests, interaction, international, paintings, park, producers, religious, rural, society, tables, villages, warm, the three wise man, workshop
1	bacon, celebrations, characters, chocolate, clay, collage, cotton candy, customised, drinks, elves, entertainment, fabrics, families, glass, globes, goodies, heritage, jewellery, kiosks, magic, mashed vegetables/vegetable spread, meat, minced meat rolls, mugs, Orthodox, photos, pig's trotters, profit, public, Romanian traditional handmade towels, sausages, smoked, sponge cake/sweet bread, sponsors, stores, tales, toys, Central Square, unique, wood

Identification of major themes

We identified seven key elements of authenticity: (1) entertainment; (2) arts and crafts; (3) active participation; (4) product attributes; (5) culinary products; (6) structural and functional zoning; and (7) visual aesthetics. From an emotional point of view, CM authenticity attributes were evaluated either as positive or negative. Thus, the negative authenticity that Zhou et al. (2018) associated with the elements that do not correspond to an authentic experience, encountered an echo in the answers of the participants in the survey.

Based on this evaluation, our respondents suggested a number of changes to make the CM in Cluj-Napoca more authentic. Included in the 494 responses, we found a total of 890 such suggestions, as many respondents had multiple recommendations, especially for better organisational practices. We also identified 292 comments that suggested adding new products and activities during the CM, proving the findings of Schouten (2006), who concluded that people prefer perceived authenticity to reality.

Finally, 80 of our survey participants (16.19%) declared that the event fulfilled their expectations and that "it was perfectly fine the way it was".

Content analysis

We structured the content of responses based on the seven aspects of authenticity previously identified, starting with the most mentioned theme (arts & crafts) and ending with the least mentioned one (active participation).

1. Arts and crafts

Of the 494 respondents who answered the open-ended question, 284 (57.48%) noted that an authentic CM should include elements such as: folklore, traditions, customs, craftsmen, and traditional costumes. Our findings on this particular component are similar to the results of Littrell et al. (1993), who conducted a study on craft authenticity that helped with the identification of eight major themes, out of which the most mentioned was the craft's theme, due to uniqueness and originality.

All this only certifies what Brida et al. (2012) remarked about people who need to link with the local culture and to establish connections with it. As some respondents affirmed: "[the CM] should contain more traditional elements [more than it already has]", and "several Romanian customs should be incorporated", while others suggested the need for "more local traditions", reinforcing the expectation of the community that Getz (1998) identified decades ago, in terms of display of traditions, local values and sense of place.

In the same train of thought, some residents opined: "more people should be dressed in traditional costumes", including salespeople, thus contributing to what Tucker (2003) referred to as local identity. Moreover, a wide variety of authentic handmade Romanian blouses – preferably locally handmade, as Healy (1994) indicated to be truly authentic – should be available for purchase at the CM, though attention should not be drawn to business, but to tradition itself.

Our findings align also with those of Soukhathammavong and Park (2019), who emphasised that handmade products show place identity, craftsmanship, and local patterns. Some participants suggested to the organisers to invite more craftsmen to demonstrate their trades and skills, reverberating that there is a strong and diverse tradition in craftsmanship in Cluj-Napoca (Bolog and Brie 2016). Unfortunately, many craftsmen would like to participate in the CM, but given "the precarity of income from selling souvenirs" (Light et al. 2024: 1451), they "are discouraged by the costly rent and finally give up participating before the event starts", as a respondent noticed.

Another suggestion was for the CM to "focus strictly on the Romanian heritage, not on the customs brought from abroad", otherwise "some of the customs end up being forgotten". These opinions sum up the situation that Booth (2015) observed as the "negotiation of authenticity"; in this context, the residents of Cluj-Napoca recommend

to escape from the trap of adapting solely to please the visitors' expectations. By avoiding it, people will not be exposed to the standardised products of globalisation (Richards and Wilson 2007).

2. Visual aesthetics

Approximately one quarter of the participants to the survey (131 out of 494; 26.51%) included comments regarding the Christmas decorations. According to the respondents, the place should have been more "adorned and bright". In few words, this summarises and strengthens the results of Prideaux and Glover (2015) that draw attention to the importance of an authentic "Christmas feel". As someone detailed in the comments, "more decorations and lights, a bigger and much more decorated Christmas tree" would have been more enjoyable. Also, it would have been more effective if the CM tree had occupied a "central position" in the configuration of the market square. Our respondents wished to see, as well, more "globes and more ornaments with Santa Claus", and "snowmen and artificial snow". The desire for "traditional Christmas ornaments, decorated in a traditional style" coincides with the assertion of Schouten (2006) who argued that objects made with genuine decorations are authentic or, at least, perceived as so.

Chromatic references were also made by some of the participants who recommended the use of "colours that respect the Christmas spirit or a colour palette close to Christmas", because the event seemed to be not colourful enough. Conversely, others felt the absence of the real religious elements, thus, someone suggested for the CM to focus more "on the theme of the Orthodox Christian Christmas (e.g. Nativity of Jesus) and not on the Christmas produced by Coca-Cola". Prideaux and Glover (2015) also emphasised the role of nativity scenes when approaching an authentic Christmas atmosphere, the more so as the event has been transformed over time. Thus, this study outlines the shifting from one key element (the religious connotation) to another one (the commercial connotation) in the evolution of CM, in the same way as Bartunek and Do (2011) and Broeckerhoff and Galalae (2022) put it. Nevertheless, most of the respondents agreed that there were "too many ads", accompanied by "very visible logos of sponsors", and, overall, the event appeared to be "far too commercial". The same amount of criticism was found by Eldridge and Pappalepore (2019), who noticed that Christmas events tend to become consumerist. This has been proven to have a negative effect on (perceived) authenticity (Cole 2007, Heitmann 2011, Brida et al. 2017, Marcher et al. 2019), and on the local culture (Donlon et al. 2010).

3. Entertainment

The entertainment (120 comments out of 494 answers; 24.29%) provided throughout the CM event consisted of music and dances performed mainly by the local artists. The importance of this component, ranking third in our list, based on the frequency

of the answers provided by the respondents, is consolidated in the paper of Chhabra et al. (2003), who examined the authenticity of an event held in North Carolina, where both tourists and event organisers gave the second highest rating for the outdoor recreation and spectacle, right after the food, since it succeeded to fulfil their requirement for authenticity.

Regarding the features of the entertainment program for the Cluj-Napoca CM, the respondents commented that it could have been extended ("a longer daily schedule"), and it could have been more diversified in order to meet the expectations of different types of public ("there should be artistic performances for everyone"). The socio-demographic profile of the public, reflected in the sample population of our survey, revealed a very heterogeneous one, whose perceptions of authenticity are most clearly affected by the personal characteristics of the evaluators (Camus 2010). There are several studies that show these discrepancies of opinion generated by age, sex, place of residence and level of income (Littrell et al. 1993, Goulding 2000, Waitt 2000, Chhabra et al. 2003, Camus 2010).

From the perspective of the participants at Cluj-Napoca CM, these artistic manifestations should combine "thematic celebrations and shows", "more folk ensembles", and "more traditional artists" (both local and national ones). The latter category was supported by specific examples, more precisely, Ştefan Hruşcă and Fuego, two famous artists of Romania whose repertoires include a wide range of Christmas songs and carols. Besides enjoying the performance of well-known artists, CM participants had the opportunity to listen to "carollers from various Transylvanian villages", and to "groups of children singing carols". However, a few respondents were somewhat disappointed because they expected to interact more with the artists on the stage.

When organising a CM, it is essential for event planners to seek for the local community's perspective of authenticity because, as Steiner and Reisinger (2006) stated, it may be exactly opposite to the tourist perspective. This should not be a potential game changer for the design of the CM because, after all, those who establish the authenticity of the key components are the residents themselves (Getz 1998, Steiner and Reisinger 2006, Choi et al. 2020). Being aware of this, the suggestions of the participants gain in value for the decision-makers within the design and implementation process of the event.

For instance, some respondents recommended to the organisers to include "traditional, authentic dances on stage every night". CM participants could also take part in some of the dances (for example to the "hora", a traditional Romanian folk dance in which dancers hold each other's hands and spin in a circle). Finally, there were also recommendations about the music played at the CM. Some suggested that the organisers should give preference to "more traditional folk songs" (preferably from Cluj county – as added by another participant), and to Christmas carols ("only traditional Romanian carols"; "carols from all parts of the country"; or "collages of songs

in our native language"). These remarks reflected a general concern about the foreign music which has invaded Christmas holidays, leading to displaying a sort of repetitious, "monotonous carols", and, last but not least, to "songs that are not specific to a Christian holiday". Consequently, on the one hand, this situation can lead to authenticity loss in the future (Cole 2007, Heitmann 2011). On the other hand, the second risk is that, in time, these inadvertencies could pass for authentic aspects, leading to what Cohen (1988) presented as emergent authenticity.

4. Culinary products

Close to a quarter of our respondents (107 out of 494 people; 21.65%) mentioned authentic culinary products as a defining element of any CM. However, compared to the study of Chhabra et al. (2003), who investigated the event held in the USA, and whose findings ranked first the food component due to the 60.4% of visitors and event organisers that perceived it to be authentic, in our research, gastronomy was exceeded by other three components (mentioned before).

Our respondents wished to see "more stands with Romanian traditional dishes" and "stalls that promote local cuisine" – either "specific food from all over Transylvania", or "more foods and drinks from across the county" – because, local food, indeed, can be referred to as an authentic element when it represents the culture of the place (Sims 2009). Also, the CM participants wanted to see "more varied dishes", as well as "authentic and traditional dishes", based on "natural products". Since Romanian cuisine is quite popular and appreciated for its Christmas meals, the respondents criticised the sale of imported food and they commented: "there should be no more traditional dishes from another country but ours".

Some of the proposals included what Prideaux and Glover (2015) suggested by considering special foods and drinks which can complement the "Christmas feel" or the Christmas atmosphere. Concretely, the residents of Cluj-Napoca invoked the "stands with mulled wine", "smoked pork sausages, stuffed cabbage/cabbage rolls [sarmale] as well as pig's trotters [răcituri]", "minced meat rolls [mici]", "mashed vegetables/vegetable spread [zacuscă]", and the indispensable "pork rind [şoric de porc]", and "pork bacon [şuncă/slănină]", in order to add authentic flavours to the traditional recipes. Also, some people noticed the prevalence of sweets to the detriment of cooked food at the CM, which seemed to bother them ("there should be more cooked food instead of chocolate and croissants"), while others opined that "specific sweets, homemade cakes and sponge cake/sweet bread [cozonac]" should have been better represented at the CM.

Considering the viewpoints of researchers such as Getz (1998), Steiner and Reisinger (2006), and Choi et al. (2020), all these ideas that resulted from the questionnaire are worth taking into account for organising a successful CM, since solely the local community can decide whether something is authentic or not.

5. Product attributes

Some comments of the respondents (i.e. 100) referred to what we could group and label as product attributes (20.24%). These included both tangible and intangible elements of the merchandise sold at the CM, which, in one way or another, had been the subject of many studies (Healy 1994, Schouten 2006, Salome 2010, Collins-Kreiner and Zins 2011, Heitmann 2011, Soukhathammavong and Park 2019, Light et al. 2024).

The responses revealed that the participants of the Cluj-Napoca CM would have liked to see more "clay objects (e.g. pots, cups)", "typical Romanian wooden ornaments", and "handicrafts, clothes, fabrics" (including "authentic handmade Romanian blouses [ie]", and "Romanian traditional handmade towels [ştergar]"), known for their decorative design adorned with folk art motifs. These requirements lead us to the main points of Schouten (2006) and Torabian and Arai (2016), who argued that, besides traditional materials, the genuine decorations, the signature and hallmark of the artists ensure both the uniqueness and the authenticity of a product.

Correspondingly, the event participants asked for "more pieces of art" and for "more handmade objects", to be sold either by "several traders of traditional objects" or by "more people from rural areas [for the purpose] to promote their products", and "to sell more locally made souvenirs". This proposal attests once more the paramount role of traditional products and of their sellers who become cultural intermediaries (Light et al. 2024), while they are also responsible for a pertinent interpretation and real perception of the objects. It is even better if the products are handmade since they exhibit the local pattern and craftsmanship, and they depict the place identity (Soukhathammavong and Park 2019).

The intangible aspect of authenticity emphasises the importance of both traditionalness and localness ("more site-specific products are needed"), followed by regionalness ("there should be stands with handmade crafts made locally in Transylvania rather than merchandise imported from China"), and by, undoubtedly, nationalness ("more Romanian products"), as key qualities or attributes of the commercialised CM objects. These views underpin the findings of Soukhathammavong and Park (2019), who clearly listed the features of an authentic product, emphasising that it has to be produced in the region.

Furthermore, many respondents felt that some of the merchandise sold at the CM was not "compatible" with Romanian or local traditions and it was not even related to Christmas. This resembles a lot with the situation of CM in Strasbourg, where Casterán and Roederer (2013) identified many aspects that lack authenticity, thus, they are not local, and they are not even linked to Christmas or Christianity.

Corroborating the theoretical results of several researchers and the answers of our sample population, appreciating the authenticity of these attributes is a matter of subjectiveness (Beverland and Farrelly 2010) and personal beliefs derived from the

exposure to the product, event and place of interaction (Budruk et al. 2008). Finally, several respondents complained about the prices which they perceived to be too high. They wished for "cheaper products, so that those with lower incomes can actually buy something" and they believed that the event was too "business-oriented". The same issues were also discussed in the study of Haid (2006), who associated CMs with places of consumption where traditions started to fade away in favour of the commercial character and of financial advantages that people usually resent.

6. Structural and functional zoning

Under this label, we referred to all the organisational details and the arrangement of the CM place itself, from the layout of the stalls to the skating rink, and to the location of the carousel. The CM of Cluj-Napoca exhibited a mixture of local and global Christmas elements, as Broeckerhoff and Galalae (2022) noticed that most CMs do, in order to attract visitors and to encourage consumption.

We found that 86 responses (of all 494 responses; 17.4%) included comments that related to the setting and format of the CM. First, a few CM participants complained that the area was too crowded and noisy, and they suggested that, in the future, the event should be organised in some other place where there is more space for carrying out all these specific activities (such as the Central Park of Cluj-Napoca). Others suggested that the event should be organised concomitantly in multiple locations. Spreading out the event, the respondents contended that it would also solve the noise problem, at least for those living in the close proximity of the central square. These remarks reiterate the viewpoint of Gibson (2019), who firmly clarified that a CM is not a place for merely shopping, but it is also a place where people can enjoy the holiday atmosphere through specific activities and music.

The following issue was that car traffic intensified near the CM, which was not completely blocking the public square and it therefore impeded foot traffic and certain activities in the market.

Except for these remarks, the Union Square fulfilled the respondents' expectations in terms of CM location, given the fact that, by its size, it is one of the largest old markets in central and south-eastern Europe. Perhaps for this reason, the event participants wished for "more stands" in addition to the 97 existing ones. Yet, others complained that the market was too densely packed with stands. Considering the 55 stalls with souvenirs from the city centre and a nearby mall of Timișoara's CM, which were identified in the study of Light et al. (2024), we could only understand that this request is also a question of subjectivity. Last regarding the stands, some participants criticised their design, which was not "traditional enough", thus scarcely authentic, and they suggested using "various objects, in traditional style", resembling the miniature buildings within a tiny village with typical houses, "arranged in an arch shape",

with "benches and tables in the middle [of the square], and the carousel also positioned in the middle".

However authentic or not it may seem, these ideas should be taken into consideration, since the local community is entitled to its own perception of authenticity (Zhou et al. 2015), although this could change in time (Croes et al. 2013), or even from one socio-demographic group to another. For instance, having or not a carousel at the CM was very controversial, judging by the participants' comments. In contrast, the ice rink seemed to enjoy a great deal of popularity and appraisal since the residents agreed that "an authentic Christmas fair should have an ice rink", although, for some respondents, "a larger rink" would have been more satisfying.

Other suggestions referred to organising "more places where [visitors] could have fun", and at least one "playground for children" in order to keep them entertained. Some suggested having "workshops for the little ones", and "a space for children to meet Santa Claus and to take pictures". Judging by these final recommendations, the respondents were either dissatisfied with the place that hosted Santa and his helpers, or they missed the opportunity to interact with them, due to the short timetable and time of the day when visitors could have actually seen them on active duty.

Beyond all these suggestions for improvement in the planning of Cluj-Napoca's CM, one can witness the phenomenon that Duggan (1997) assumed decades ago, namely the fact that an authentic culture cannot remain unchanged. The constant readjustment of the cultural elements, as they are perceived by people, also changes the meaning of authenticity, making it extremely dynamic (Croes et al. 2013).

7. Active participation

Active participation (total comments: 62/494; 12.55%) focused on community engagement or at least on the way in which the participants wanted to experience the event on an interpersonal level. The findings revealed that more than half of the respondents emphasised the activities that could enhance the quality and the success of the CM. In the context of this type of event, people usually seek for opportunities of entertainment that are in contrast with the inauthenticity of their daily routine (Iso-Ahola 1982, Taylor 2001, Brown 2013, MacCannell 2013).

One third of surveyed residents mentioned the importance of organising and conducting "more activities for children" and, secondly, for adults and families. Thus, we confirmed the trend CMs followed for the last decades of becoming more a family event to the detriment of a spiritual manifestation (Haid 2005, Prideaux and Glover 2015).

The participants also suggested the need for "more non-commercial activities", hence, accentuating the remarks of Broeckerhoff and Galalae (2022) regarding the transformation of CM into a selling place of global cultural commodities. Instead, the residents proposed the engagement of all visitors in "more fun and relaxing activities", as well as in cultural ones, "that promote local and national traditions and customs". As

someone mentioned, "organising different, special, extraordinary activities, specific to Cluj" should be taken into account when planning the future CM.

Also, the organisers must consider both "activities in which the locals can get involved", and "activities that attract tourists", so as to fulfil experiences for all CM participants. This separation of activities testifies to the classification of authenticity by Wang (1999), Richards (2007), and Park et al. (2019). On the one hand, there are the residents whose interest is subordinated to the constructive view of authenticity, or in other words, to something that, in time, has already acquired social recognition (as being authentic). On the other hand, there are the visitors who are much more prone to existential authenticity, seen as projections of their preferences and expectations, thus, not necessarily genuine or cool authenticity (Selwyn 1996).

Quantitative analysis of close-ended questions

This section presents the results on the answers received to the two close-ended questions, with items evaluated according to a 5-point Likert Scale (1=strongly disagree; 5=strongly agree).

The authenticity of the products sold at the Cluj-Napoca Christmas Market

The question was: *How do you evaluate the level of authenticity of the Christmas Market held in Cluj-Napoca?* (1=strongly disagree; 5=strongly agree). On the one hand, the products sold at the CM and the materials/ingredients used to make these products were evaluated; and, on the other hand, to what degree the available CM products and services reflect the global, national and local Christmas traditions.

We found that most residents visiting the CM in Cluj-Napoca perceived it to be authentic, with the median being 4 (Table 2). Most people (69.1%) agreed with the statement that the products sold at the CM respect global Christmas traditions. Thus, the observations of Broeckerhoff and Galalae (2022) were validated, to a great extent – they described CMs as global icons for places where global cultural commodities are commercialised. Also, more than half of the respondents (54.5%) considered that the products sold at the stalls also respect the local traditions. This proves that the CM in Cluj-Napoca succeeds in blending global and local Christmas traditions like many other countries do (Broeckerhoff and Galalae 2022).

In an equal majority (55.8%), the participants of our survey judged the CM products as subordinated to national (Christian orthodox) customs for Christmas. Although CM religious significance has waned, Christian symbols and traditions are still present in the celebration of Christmas (Prideaux and Glover 2015), as our findings also revealed. Even though these events incorporate German and global, Christian and pagan traditions, which make them unlikely to be authentic when adapted to new locations, our results contradict the findings of Broeckerhoff and Galalae (2022). Otherwise, the CM

in Cluj-Napoca, which is also a mixture of traditions, would not have been perceived as being authentic with such a high median.

Table 2. Residents' perception of authenticity at the Cluj-Napoca Christmas Market

Perception of authenticity (n=585)	Products are authentic (%)	Materials/ Ingredients are authentic (%)	Product respect global Christmas traditions (%)	Products respect local Christmas traditions (%)	Products respect national Christmas traditions (%)
Totally disagree	2.6	5.0	1.9	3.9	6.0
Disagree	10.8	12.6	6.8	9.4	12.3
Neutral	30.1	30.3	22.2	32.1	26.0
Agree	30.9	33.5	35.9	30.9	29.6
Totally agree	25.6	18.6	33.2	23.6	26.2
Total	100.0	100.0	100.0	100.0	100.0
Mean	3.66	3.48	3.92	3.61	3.58
Median	4.00	4.00	4.00	4.00	4.00
Mode	4	4	4	3	4
Std. deviation	1.052	1.084	.996	1.066	1.173

A Mann-Whitney U Test was run to determine if there were differences in the authenticity perception between men and women. The distributions of the scores for males and females were similar as assessed by visual inspection. We found statistically significant differences in authenticity perception scores only for the statement that the used materials/ingredients are being authentic (U=47081.5; z=2.236, p=.025). In this case, the median perception score was statistically significantly higher for females (4) than for males (3).

This result disagrees with Waitt (2000), who observed that males are more likely to perceive authenticity compared to females, who tend to be more sceptical. But, on the other hand, it aligns with the research of Chhabra et al. (2003), who noticed that females who had visited Scotland rated authenticity significantly higher than males who did the same thing. For the other statements, we found no statistically significant differences in the perception scores between males and females. Generally speaking, neither Littrell et al. (1993), nor Chhabra et al. (2003) have found discrepancies between men and women in the perception of authenticity.

Further, Kruskal-Wallis H tests were run to determine whether there were any statistically significant differences in the distribution of authenticity perception scores among different demographic groups, based on age, education and income. None of these operations revealed any statistically significant differences among demographic groups (Table 3). The situation seems to interfere with the findings of Waitt (2000), who discovered significant differences among population groups based on age; the same as in the paper of Chhabra et al. (2003), where it turned out that younger visitors tend to give higher ratings for authenticity. Furthermore, Littrell et al. (1993) showed that, for younger participants, being authentic equals original and unique, as opposed to

older visitors, who associated authenticity with the genuineness of the craft and to its cultural and historic integrity.

Table 3. Differences in the residents' perception of authenticity among different demographic groups

Null Hypothesis (NH)	Sig. Age	Decision (retain NH)	Sig. Education	Decision (retain NH)	Sig. Income	Decision (retain NH)
The distribution of scores for *"Products are authentic"* is the same across categories	.085	Yes	.977	Yes	.148	Yes
The distribution of scores "*Materials/ingredients are authentic"* is the same across categories	.115	Yes	.653	Yes	.487	Yes
The distribution of scores for *"Products respect global Christmas traditions"* is the same across categories	.162	Yes	.977	Yes	.859	Yes
The distribution of scores for *"Products respect local Christmas traditions"* is the same across categories	.219	Yes	.123	Yes	.359	Yes
The distribution of scores for *"Products respect national Christmas traditions"* is the same across categories	.823	Yes	.581	Yes	.330	Yes

Asymptotic significance is displayed. The significance level is .050.

The authenticity of the CM in Cluj-Napoca compared to other CMs

The question: *If you had already visited other Christmas markets abroad, how would you assess the authenticity of CM in Cluj-Napoca compared to other CMs?* was only intended for people who had travelled abroad during CMs and visited them. Out of the 585 participants in our survey, 169 (28.88%) could not give any answer to this question, since they had not visited other CMs abroad. However, most of them (71.11%) had the possibility to rate the CM in Cluj-Napoca correspondingly comparing it to other similar events. They were asked to evaluate, on a scale from 1 to 5 (1=strongly disagree; 5=strongly agree), the following statements: (1) *Cluj-Napoca CM is overall more authentic than other CMs*; (2) *the products sold at Cluj-Napoca CM are more authentic than the products sold at other CMs*; and (3) *the festive atmosphere at Cluj-Napoca CM is more authentic than the one at other CMs*.

In terms of their level of authenticity, when asked to compare the CM in Cluj-Napoca (Figure 3) with CMs elsewhere, most respondents were neutral/undecided (Table 4). There could be several explanations for this situation. For instance, our respondents (residents of Cluj-Napoca and tourists when attended CMs abroad) assessed the authenticity of CMs based on memories and past experiences, and older perceptions of Christmas; therefore, their perception of authenticity is based on existential authenticity rather than on objective authenticity (Casterán and Roederer 2013). However, with or without gazing at authentic sights, the visitors can have an authentic experience (Cohen 2007), which most probably happened to a certain degree, since the respondents were neutral in their evaluation. The fact is that people are generally

willing to accept inauthenticity solely to enjoy their consumption experiences (Casterán and Roederer 2013, Hietanen et al. 2020).

Figure 3. Authentic elements at the Christmas Market in Cluj-Napoca, in the opinion of the residents. Source: "Târgul de Crăciun Cluj-Napoca" Facebook page, 2019

Table 4. Residents' perception on the authenticity of Cluj-Napoca Christmas market compared to CM elsewhere

	CM in CJ is overall more authentic than other CMs	Products sold in CJ CM are more authentic than those sold in other CMs	Atmosphere in CJ CM is more authentic than elsewhere
N Valid	416	416	416
N Missing	169	169	169
Mean	3.04	3.18	3.30
Median	3.00	3.00	3.00
Mode	3	3	3
Std. Deviation	1.243	1.182	1.276

Further, the Mann-Whitney U tests and the independent samples Kruskal-Wallis tests revealed, with one exception, no differences in the perception scores between demographic groups (Table 5). The explanation could consist of the motivation of visitors attending CMs in general, and abroad, in particular. As Brida et al. (2012) revealed, people who participate in a CM are not necessarily interested only in the shopping experience, but they wish to enjoy the Christmas atmosphere and to sample the local products in terms of their moderate expectation of authenticity.

Table 5. Differences in authenticity perception among socio-demographic groups (Cluj-Napoca Christmas market compared to other Christmas markets)

Null Hypothesis (NH)	Sig. Age	Decision (retain NH)	Sig. Education	Decision (retain NH)	Sig. Income	Decision (retain NH)	Sig. Gender	Decision (retain NH)
The distribution of scores for *"CM in CJ is overall more authentic than elsewhere"* is the same across categories	.504	Yes	.750	Yes	**.047**	**No**	.376	Yes
The distribution of scores *"Products sold in CJ CM are more authentic than products sold in other CMs"* is the same across categories	.827	Yes	.094	Yes	.186	Yes	.391	Yes
The distribution of scores for *"Atmosphere in CJ CM is more authentic than elsewhere"* is the same across categories	.437	Yes	.775	Yes	.419	Yes	.387	Yes

Asymptotic significance is displayed. The significance level is .050. Kruskal-Wallis H tests were used to determine if the distribution of scores was the same across age, education and income categories.

The only difference refers to the statement: *"CM in Cluj-Napoca is overall more authentic than other CMs"*. Here, the Kruskal-Wallis H test revealed statistically significant differences in the perception scores among income groups ($\chi^2(3)=7.947$, $p=.047$). A pairwise comparison showed that the statistically significant difference is between the "1500-2499 lei" (300-500 euro), and the "2500-3499 lei" (500-700 euro) groups (Table 6), with the first group displaying a higher authenticity perception score than the second one (Table 7). It is worth mentioning that Chhabra et al. (2003), as well, investigated the perceived authenticity among the groups of visitors based on their income, and they showed that the highest income group gave authenticity the highest rating.

Table 6. Pairwise comparisons of income

Sample 1-Sample 2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj. Sig.[a]
(2500-3499 lei)-(3500+ lei)	−15.806	18.692	-.846	.398	1.000
(2500-3499 lei)-(under 1500 lei)	26.530	15.964	1.662	.097	.579
(2500-3499 lei)-(1500-2499 lei)	**43.977**	**16.042**	**2.741**	**.006**	**.037**
(3500+ lei)-(under 1500 lei)	10.724	17.475	.614	.539	1.000
(3500+ lei)-(1500-2499 lei)	28.171	17.547	1.605	.108	.650
(under 1500 lei)-(1500-2499 lei)	−17.447	14.606	−1.195	.232	1.000

Each row tests the null hypothesis that the distributions of Sample 1 and Sample 2 are the same.
Asymptotic significance (2-sided tests) is displayed. The significance level is .05.
[a] Significance values have been adjusted by the Bonferroni correction for multiple tests.

Table 7. Differences in authenticity assessment (Cluj-Napoca CM vs. other CMs) based on income

Authenticity statement	Income	N	Mean Rank
CM in CJ is overall more authentic than other CMs	under 1500 lei	129	209.78
	1500-2499 lei	**126**	**227.23**
	2500-3499 lei	**91**	**183.25**
	3500+ lei	68	199.06
	Total	414	
Products sold in CJ CM are more authentic than products sold in other CMs	under 1500 lei	129	202.43
	1500-2499 lei	126	226.13
	2500-3499 lei	91	196.96
	3500+ lei	68	196.71
	Total	414	
Atmosphere in CJ CM is more authentic than elsewhere	under 1500 lei	129	201.16
	1500-2499 lei	126	221.24
	2500-3499 lei	91	206.26
	3500+ lei	68	195.74
	Total	414	

Supposing that the income level of the visitors is directly proportional to their expenditure, then our research links to those studies which found that the amount of money which the visitors spend at CMs may be connected to their perception of the market and of the products sold there as being authentic (Chhabra et al. 2003, Osti et al. 2010, Brida et al. 2013). Osti et al. (2010) found that the expenditure at the event is also influenced: by the location of the CM (in this situation, in Cluj-Napoca, or in a foreign tourist destination); by the respondent's place of origin; and by their length of stay (in our case, either as a resident of Cluj-Napoca, or as a tourist visiting CMs abroad).

Study limitations

The findings of this study should be seen in the light of some research limitations. First, we selected our survey participants based on their residence, meaning that they were supposed to be residents of the city of Cluj-Napoca, or of its metropolitan area. However, due to the history of Transylvania, Cluj-Napoca is a multi-ethnic and multicultural city, so that an authentic CM may be interpreted differently by a Romanian or by a Hungarian, for example. There may also be differences in how a Christian Orthodox perceives an authentic CM, as opposed to a Roman Catholic or a Protestant.

Second, Cluj-Napoca is one of the most important academic centres in Romania, each year attracting thousands of students from all over the country, and even from abroad. Many of these students become long-term residents, as they will remain in Cluj-Napoca after graduation, due to better job opportunities and to higher living standards. So, the study results are influenced by the fact that Romanians from the east and south of the country may define an authentic CM differently than how a native

Transylvanian Romanian would, due to growing up in a somewhat different historical and cultural environment (for example, for hundreds of years, Transylvania was part of the Hungarian Kingdom or the Hapsburg Empire, whereas southern and eastern Romania were under the Ottoman Empire, which means that some traditions may have evolved differently between the historical regions of Romania).

Third, the CM lasted for more than one month and it was open every day, from morning till late night. While we made every effort to have research assistants survey the participants at different days (both weekdays and weekends), and times of the day (morning, afternoon, evening and night), we did not have the budget and the logistics to be there all the time, so that we may have missed the opinions of many participants. Had we surveyed the participants during other days and other times, the results could have been different. Also, our sample is not representative for the population of the city and its metropolitan area, and we did not attempt to make it representative, as we used a convenience sampling.

Conclusions

The main objective of this study was to understand how the residents of Cluj-Napoca, Romania, view an authentic CM, and whether or not they perceive the local one to be authentic according to their definition, and compared to other CMs in Europe.

The study findings showed that the residents of Cluj-Napoca assign most value to traditions and products, food and activities which are specific for the region of Transylvania, and for Romania. Also, most of the residents included in this study opined that an authentic CM should predominantly be based on local traditional elements, such as crafts, customs, folklore and clothing. Thus, the residents equate "authentic" with "traditional", which is congruent with Taylor (2001)'s interpretation. The residents also imply that, in order to be authentic, crafts and other material elements must be made by the local people (Heitmann 2011), they must be made in the region, and they must reflect place identity (Soukhathammavong and Park 2019).

Another recommendation from the residents for an authentic CM was the use of Christmas paraphernalia (tree, lights, and decorations) to create the holiday atmosphere, which is consistent with the findings of Prideaux and Glover (2015). The residents also intimated that they would like to see more Christmas-related activities (including traditional music – and not just carols – and dances), and the selling of authentic and traditional, local and Romanian, food, drinks and dishes, as well as local crafts and souvenirs. This finding confirms the conclusions of Richards (2007), Sims (2009), and Camus (2010), stating that the residents prefer the event to be oriented towards the local, rather than the global culture.

Finally, another part of the understanding given by the residents for an authentic CM is that it should include non-commercial activities that engage the public. Similar

to the findings of Haid (2006), and Donlon et al. (2010), the residents of Cluj-Napoca do not want to see the commercialisation and festivalization of local customs and traditions, although this may popularise the event and it may increase the tourist flow (Choi et al. 2020).

The analysis also revealed that most residents perceived the CM in Cluj-Napoca to be authentic. Contrary to previous studies, we did not find massive differences in perception based on gender, age, education and income. The only difference that we found to be statistically significant was that women assessed the CM products and food ingredients to be more authentic than men did, which is contrary to the findings of Waitt (2000) that males are more likely to perceive higher authenticity.

Also, most of the residents found it difficult to compare the CM in Cluj-Napoca with other similar events organised in Europe. We found almost no statistically significant differences between different socio-economic groups on this matter. The only statistically significant difference was recorded for the income factor. We found that the lower income groups were more in favour of the Cluj-Napoca CM than the upper income groups, perhaps because their financial situation did not allow them to travel as much as the residents with higher incomes, so that they may have had fewer opportunities to visit CMs abroad and to compare them with the local one.

This research could represent a ready-made tool for the decision-makers and event organisers, firstly due to the seven key components that we identified and ranked based on what matters most in the perspective of the residents when it comes to the authenticity of the CM in Cluj-Napoca. Secondly, the event planners should consider a community-based approach when engaging in the organisation of such events. As proved by this study, the recommendations of the residents of Cluj-Napoca demonstrate a good knowledge and understanding of the subject, making their piece of advice a helpful guidance, from the design to the implementation stage of an authentic and attractive event, such as a CM in their home city. So, the urban managers should ensure the active involvement of the locals, not only because they are entitled to establish whether or not something is authentic, but also because they are the direct beneficiaries of the event as well, and they should enjoy it as much as the tourists do.

References

AMARO S., MORGADO FERREIRA B., HENRIQUES C. (2020) Towards a deeper understanding of the purchase of souvenirs, Tourism and Hospitality Research 20 (2), 223-236, https://doi.org/10.1177/1467358419848139.

ARMSTRONG N. (2008) England and German Christmas Festlichkeit, c. 1800-1914, German History 26 (4), 486-503, https://doi.org/10.1093/gerhis/ghn047.

BARKER T., PUTRA D., WIRANATHA A. (2006) Authenticity and commodification of Balinese dance performances, in: Smith M. K., Robinson M. (eds.), Cultural Tourism in a Changing World: Politics, Participation and (Re)presentation, Channel View Publications, Clevedon, pp. 215-224, https://doi.

org/10.21832/9781845410452-016.

BARTUNEK J. M., DO B. (2011) The sacralization of Christmas commerce, Organization 18 (6), 795-806, https://doi.org/10.1177/1350508411416400.

BELHASSEN Y., CATON K. (2006) Authenticity matters, Annals of Tourism Research 33 (3), 853-856, http://dx.doi.org/10.1016/j.annals.2006.03.009.

BERGADAÀ M. (2008) L'artisanat d'un métier d'art: L'experience de l'authenticité et sa réalisation dans les lieux de rencontre entre artisan et amateur éclairé (The craftsmanship of an artistic profession: The experience of authenticity and its realization in meeting places between craftsmen and enlightened amateurs), Recherche et Applications en Marketing 23 (3), 5-25, https://doi.org/10.1177/076737010802300306.

BEVERLAND M. B., FARRELLY F. J. (2010) The quest for authenticity in consumption: Consumers' purposive choice of authentic cues to shape experienced outcomes, Journal of Consumer Research 36 (5), 838-856, https://dx.doi.org/10.1086/615047.

BLOOMFIELD J. (2010) Birmingham's Frankfurt Christmas market: Innovative urban policy in action, Local Economy 25 (1), 74-80, http://dx.doi.org/10.1080/02690940903545430.

BOLOG C., BRIE R. G. (2016) Traditional craft in Cluj-Napoca: Between art, tradition, and sale, Territorial Identity and Development 1 (1), 23-44, http://dx.medra.org/10.23740/TID120162.

BOOTH A. (2015) Whose Diwali is it? Diaspora, identity and festivalization, Tourism Culture and Communication 15 (3), 215-226, http://dx.doi.org/10.3727/109830415X14483038034209.

BRIDA J. G., DISEGNA M., OSTI L. (2012) Perceptions of authenticity of cultural events: A host-tourist analysis, Tourism Culture & Communication 2-3, 85-96, https://doi.org/10.3727/109830413X13575858951121.

BRIDA J. G., DISEGNA M., OSTI L. (2013) The effect of authenticity on visitors' expenditure at cultural events, Current Issues in Tourism 16 (3), 266-285, http://dx.doi.org/10.1080/13683500.2012.674105.

BRIDA J. G., DISEGNA M., SCUDERI R. (2014) Segmenting visitors of cultural events: The case of Christmas market, Expert Systems with Applications 41 (10), 4542-4553, https://doi.org/10.1016/j.eswa.2014.01.019.

BRIDA J. G., MELEDDU M., TOKARCHUK O. (2017) Use value of cultural events: The case of Christmas markets, Tourism Management 59, 67-75, https://doi.org/10.1016/j.tourman.2016.07.012.

BROECKERHOFF A., GALALAE C. (2022) Christmas markets – marketplace icon, Consumption Markets & Culture 25 (1), 79-90, https://doi.org/10.1080/10253866.2020.1803845.

BROWN L. (2013) Tourism: A catalyst for existential authenticity, Annals of Tourism Research, 40, 176-190, http://dx.doi.org/10.1016/j.annals.2012.08.004.

BROWN S., KOZINETS R. V., SHERRY JR J. F. (2003) Teaching old brands new tricks: Retro branding and the revival of brand meaning, Journal of Marketing 67 (3), 19-33, https://doi.org/10.1509/jmkg.67.3.19.18657.

BRUNER E. M. (1991) Transformation of self in tourism, Annals of Tourism Research 18 (2), 238-250, https://doi.org/10.1016/0160-7383(91)90007-X.

BRUNER E. M. (1994) Abraham Lincoln as authentic reproduction: A critique of postmodernism, American Anthropologist 96 (2), 397-415, http://dx.doi.org/10.1525/aa.1994.96.2.02a00070.

BUDRUK M., WHITE D. D., WODRICH J. A., VAN RIPER C. J. (2008) Connecting visitors to people and place: Visitors' perceptions of authenticity at Canyon de Chelly National Monument, Arizona, Journal of Heritage Tourism 3 (3), 185-202, http://dx.doi.org/10.2167/jht045.0.

CAMUS S. (2010) L'authenticité d'un site touristique, ses antécédents et ses conséquences sur le touriste (The authenticity of a tourist site, its antecedents and its consequences on the tourist), Gestion 2000 27 (1), 101-117.

CASTERÁN H., ROEDERER C. (2013) Does authenticity really affect behavior? The case of Strasbourg Christmas market, Tourism Management 36, 153-163, http://dx.doi.org/10.1016/j.tourman.2012.11.

012.
CASTERÁN H., ROEDERER C. (2017) Same context, same experience? A latent class segmentation of Strasbourg Christmas market visitors based on the dimensions of the visit experience, in: Rossi P. (ed.), Marketing at the Confluence between Entertainment and Analytics, Springer, Cham, pp. 1111-1125, http://dx.doi.org/10.1007/978-3-319-47331-4_220.
CHHABRA D. (2005) Defining authenticity and its determinants: Toward an authenticity flow model, Journal of Travel Research 44 (1), 64-73, http://dx.doi.org/10.1177/0047287505276592.
CHHABRA D., HEALY R., SILLS E. (2003) Staged authenticity and heritage tourism, Annals of Tourism Research 30 (3), 702-719, http://dx.doi.org/10.1016/S0160-7383(03)00044-6.
CHOI S-H., IMON S. S., COUTO U. (2020) Negotiating with authenticity to ensure sustainability of traditional cultural festivals: Residents' perspectives about Macao's Drunken Dragon Festival, Sustainability 12 (3), 885, https://doi.org/10.3390/su12030885.
COHEN E. (1988) Authenticity and commoditization in tourism, Annals of Tourism Research 15 (3), 371-386, https://doi.org/10.1016/0160-7383(88)90028-X.
COHEN E. (2007) 'Authenticity' in tourism studies: *Aprés la lute*, Tourism Recreation Research 32 (2), 75-82, http://dx.doi.org/10.1080/02508281.2007.11081279.
COLE S. (2007) Beyond authenticity and commodification, Annals of Tourism Research 34 (4), 943-960, http://dx.doi.org/10.1016/j.annals.2007.05.004.
COLLINS-KREINER N., ZINS Y. (2011) Tourists and souvenirs: changes through time, space and meaning, Journal of Heritage Tourism 6 (1), 17-27, https://doi.org/10.1080/1743873X.2010.515312.
CRESPI-VALLBONA M., RICHARDS G. (2007) The meaning of cultural festivals: Stakeholder perspectives in Catalunya, International Journal of Cultural Policy 13 (1), 103-122, https://doi.org/10.1080/10286630701201830.
CROES R., LEE S. H., OLSON E. D. (2013) Authenticity in tourism in small island destinations: a local perspective, Journal of Tourism and Cultural Change 11 (1-2), 1-20, https://doi.org/10.1080/14766825.2012.759584.
DE AZEREDO GRÜNEWALD R. (2006) Pataxó tourist arts and cultural authenticity, in: Smith M., Robinson M. (eds.), Cultural Tourism in a Changing World: Politics, Participation and (Re)presentation, Channel View Publications, Clevedon, pp. 203-214, https://doi.org/10.21832/9781845410452-015.
DE BERNARDI C. (2019) Authenticity as a compromise: a critical discourse analysis of Sámi tourism websites, Journal of Heritage Tourism 14 (3), 249-262, http://dx.doi.org/10.1080/1743873X.2018.1527844.
DOMÍNGUEZ-QUINTERO A. M., GONZÁLEZ-RODRÍGUEZ M. R., PADDISON B. (2020) The mediating role of experience quality on authenticity and satisfaction in the context of cultural-heritage tourism, Current Issues in Tourism 23 (2), 248-260, http://dx.doi.org/10.1080/13683500.2018.1502261.
DOMÍNGUEZ-QUINTERO A. M., GONZÁLEZ-RODRÍGUEZ M. R., ROLDÁN J. L. (2019) The role of authenticity, experience quality, emotions, and satisfaction in a cultural heritage destination, Journal of Heritage Tourism 14 (5-6), 491-505, http://dx.doi.org/10.1080/1743873X.2018.1554666.
DONLON J. G., DONLON J. H., AGRUSA J. (2010) Cultural tourism, camel wrestling, and the tourism 'bubble' in Turkey, Anatolia 21 (1), 29-39, https://doi.org/10.1080/13032917.2010.9687088.
DU CROS H., MCKERCHER B. (2020) Cultural tourism, Routledge, London.
DUGGAN B. J. (1997) Tourism, cultural authenticity, and the native crafts cooperative: The Eastern Cherokee experience, in: Chambers E. (ed.), Tourism and Culture: An Applied Perspective, SUNY Press, New York, pp. 31-57.
EGRESI I. O., RĂCĂŞAN B. S., DEZSI S., ILIEŞ M., ILIEŞ G. (2021) Christmas markets in city centers: How do they impact local residents and businesses?, International Journal of Tourism Cities 7 (2), 391-409, https://doi.org/10.1108/IJTC-03-2020-0040.
ELDRIDGE A., PAPPALEPORE I. (2019) Festive space and dream worlds: Christmas in London, in: Smith A., Graham A. (eds.), Destination London: The Expansion of the Visitor Economy, University of

Westminster Press, London, pp. 183-203, https://doi.org/10.16997/book35.

GAMAN G., RĂCĂŞAN B. (2016) Transport accessibility as a factor for tourist flow augmentation. Case study: The Romanian health resorts, Journal of Settlements and Spatial Planning 7 (1), 65-77, http://dx.medra.org/10.19188/07JSSP012016.

GETZ D. (1998) Event tourism and the authenticity dilemma, in: Theobald W. F. (ed.), Global Tourism, Routledge, London, pp. 409-427, https://doi.org/10.4324/9780080507446.

GIBSON L. J. (2019) Unwrapping the Toronto Christmas Market: An Examination of Tradition and Nostalgia in a Socially Constructed Space, The University of Western Ontario, Retrieved from: ir.lib.uwo.ca/etd/6190.

GOULDING C. (2000) The commodification of the past, postmodern pastiche and the search for authentic experiences at contemporary heritage attractions, European Journal of Marketing 34 (7), 835-853, http://dx.doi.org/10.1108/03090560010331298.

GRAILLOT L. (2001) Le sémiotique comme analyse des comportements touristiques (Semiotics as analysis of tourist behaviour), Revue Française du Marketing 181, 7-27.

HAID O. (2006) Christmas markets in the Tyrolean Alps: Representing regional traditions in a newly created world of Christmas, in: Picard D., Robinson M. (eds.), Festivals, tourism and social change: Remaking the Worlds, Channel View Publications, Bristol, pp. 209-221, https://doi.org/10.21832/9781845410490-014.

HARKIN M. (1995) Modernist anthropology and tourism of the authentic, Annals of Tourism Research 22 (3), 650-670, https://doi.org/10.1016/0160-7383(95)00008-t.

HEALY R. G. (1994) Tourist merchandise' as a means of generating local benefits from ecotourism, Journal of Sustainable Tourism 2 (3), 137-151, http://dx.doi.org/10.1080/09669589409510691.

HEITMANN S. (2011) Authenticity in tourism, in: Research Themes for Tourism, Robinson P., Heitmann S., Dieke P. (eds.), CABI, Wallingford, pp. 45-58, https://doi.org/10.1079/9781845936846.0045.

HIETANEN J., MURRAY J. B., SIHVONEN A., TIKKANEN H. (2020) Seduced by "fakes": Producing the excessive interplay of authentic/counterfeit from a Baudrillardian perspective, Marketing Theory 20 (1), 23-43, https://doi.org/10.1177/1470593119870214.

HIRSCHFELDER G. (2014) Culture in the field of tension between tradition, economy and globalization: The metamorphoses of Christmas markets, Zeitschrift für Volkskunde 110 (1), 1-32.

ISO-AHOLA S. E. (1982) Toward a social psychological theory of tourism motivation: A rejoinder, Annals of Tourism Research 9 (2), 256-262, https://doi.org/10.1016/0160-7383(82)90049-4.

JANSEN-VERBEKE M. (1998) The synergism between shopping and tourism, in: Theobald W. F. (ed.), Global Tourism, Routledge, London, pp. 428-446, https://doi.org/10.4324/9780080507446.

KNUDSEN B. T., WAADE A. M. (2010) Performative Authenticity in Tourism and Spatial Experience: Rethinking the Relations Between Travel, Place and Emotion, in: Knudsen B. T., Waade A. M. (eds.), Reinvesting Authenticity: Tourism, Place and Emotions, Channel View Publications, Bristol, pp. 1-20, https://doi.org/10.21832/9781845411299-004.

KOLAR T., ZABKAR V. (2010) A consumer-based model of authenticity: An oxymoron or the foundation of cultural heritage marketing?, Tourism Management 31 (5), 652-664, https://doi.org/10.1016/j.tourman.2009.07.010.

KUMAR N., TRUPP A., PRATT S. (2022) Linking tourists' and micro-entrepreneurs' perceptions of souvenirs: the case of Fiji, Asia Pacific Journal of Tourism Research 27 (1), 1-14, https://doi.org/10.1080/10941665.2021.1998160.

LEW A. A. (1989) Authenticity and a sense of place in the tourism development experience of older retail districts, Journal of Travel Research 27 (4), 15-22, https://doi.org/10.1177/004728758902700403.

LIGHT D., LUPU C., CREȚAN R., CHAPMAN A. (2024) Unconventional entrepreneurs: the non-economic motives of souvenir sellers, Tourism Review 79 (8), 1442-1456, https://doi.org/10.1108/TR-09-2023-0655.

LITTRELL M. A., ANDERSON L. F., BROWN P. J. (1993) What makes a craft souvenir authentic?, Annals of Tourism Research 20 (1), 197-215, https://doi.org/10.1016/0160-7383(93)90118-M.

LUPU C., LIGHT D., CREȚAN R., VOICULESCU S. (2024) Souvenir practices of domestic tourists, Current Issues in Tourism, 1-12, https://doi.org/10.1080/13683500.2024.2385722.

MACCANNELL D. (2013) The tourist: A new theory of the leisure class, University of California Press, Berkeley.

MARCHER A., ERSCHBAMER G., PECHLANER H. (2019) Escaping from the event? Residents' perception of Christmas markets in Northern Italy, Event Management 23 (4-5), 599-611, https://doi.org/10.3727/152599519X15506259855715.

MCCARTNEY G., OSTI L. (2007) From cultural events to sport events: A case study of cultural authenticity in the Dragon Boat Races, Journal of Sport & Tourism 12 (1), 25-40, https://doi.org/10.1080/14775080701496750.

MCLEOD M. D. (1976) Limitations of the genuine, in: Shelton M.-D., Fakes, Fakers, and Fakery: Authenticity in African Art, African Arts 9 (3), pp. 31 & 48-51, https://doi.org/10.2307/3335107.

OLSEN K. (2002) Authenticity as a concept in tourism research: The social organization of the experience of authenticity, Tourist Studies 2 (2), 159-182, https://doi.org/10.1177/146879702761936644.

OSTI L., DISEGNA M., BRIDA J. G. (2010) The effect of authenticity on tourists' expenditure at cultural events, SSRN, 1-16, https://dx.doi.org/10.2139/ssrn.1674830.

PARK E., CHOI B.-K., LEE T. J. (2019) The role and dimensions of authenticity in heritage tourism, Tourism Management 74, 99-109, http://dx.doi.org/10.1016/j.tourman.2019.03.001.

PERRY J. (2014) Christmas in Germany: A cultural history, The University of North Carolina Press, Chapel Hill.

PRIDEAUX B., GLOVER P. (2015) "Santa Claus is coming to town" – Christmas holidays in a tropical destination, Asia Pacific Journal of Tourism Research 20 (9), 955-970, http://dx.doi.org/10.1080/10941665.2014.951061.

RAMKISSOON H., UYSAL M. S. (2018) Authenticity as a value co-creator of tourism experiences, in: Prebensen N. K., Chen J. S., Uysal M. S. (eds.), Creating Experience Value in Tourism, CABI, Wallingford, pp. 98-109, https://doi.org/10.1079/9781786395030.00.

RĂCĂȘAN B. S. (2015) Prospecting Event Tourism within the Rural-Mountain Area of Cluj County by Means of Online Promotion, Journal of Settlements and Spatial Planning 4, 199-209.

RĂCĂȘAN B. S., EGRESI I. (2019) Tourism, Branding and Territorial Identity in the Rural Space. Local Authorities' Perspective, Territorial Identity and Development 4 (2), 18-38, http://doi.org/10.23740/TID220192.

RĂCĂȘAN B. S., POTRA A. C., GAMAN G. (2016) Tourism Potential Value Assessment Model for Rural-Mountain and Boundary Contact Areas. Case Study: Cluj County, The District of Ciceu and the Balneal Area of Bacău County (Romania), Journal of Environmental and Tourism Analyses 4 (1), 74-96.

REVILLA G., DODD T. H. (2003) Authenticity perceptions of Talavera Pottery, Journal of Travel Research 42 (1), 94-99, http://dx.doi.org/10.1177/0047287503253906.

RICHARDS G. (2007) Culture and authenticity in a traditional event: The views of producers, residents, and visitors in Barcelona, Event Management 11 (1-2), 33-44, http://dx.doi.org/10.3727/152599508783943228.

RICHARDS G., WILSON J. (2007) Tourism, creativity and development, Routledge, Abingdon.

RICKLY-BOYD J. M. (2013) Existential authenticity: Place matters, Tourism Geographies 15 (4), 680-686, http://dx.doi.org/10.1080/14616688.2012.762691.

SALOME L. (2010) Constructing authenticity in contemporary consumer culture: the case of lifestyle sports, European Journal for Sport and Society 7 (1), 69-87, http://dx.doi.org/10.1080/16138171.2010.11687846.

SCHOUTEN F. (2006) The Process of Authenticating Souvenirs, in: Smith M. K., Robinson M. (eds.), Cultural

Tourism in a Changing World: Politics, Participation and (Re)presentation, Channel View Publications, Clevedon, pp. 191-202, https://doi.org/10.21832/9781845410452-014.

SELWYN T. (1996) The tourist image: myths and myth making in tourism, Wiley, Chichester.

SIMS R. (2009) Food, place and authenticity: local food and the sustainable tourism experience, Journal of Sustainable Tourism 17 (3), 321-336, https://doi.org/10.1080/09669580802359293.

SOUKHATHAMMAVONG B., PARK E. (2019) The authentic souvenir: What does it mean to souvenir suppliers in the heritage destination?, Tourism Management 72, 105-116, http://dx.doi.org/10.1016/j.tourman.2018.11.015.

STEINER C. J., REISINGER Y. (2006) Understanding existential authenticity, Annals of Tourism Research 33 (2), 299-318, https://doi.org/10.1016/j.annals.2005.08.002.

SWANSON K. K. (2013) Souvenirs of the American Southwest: Objective or Constructive Authenticity?, in: Cave J., Jolliffe L., Baum T. (eds.), Tourism and Souvenirs: Glocal Perspectives from the Margins, Channel View Publications, Bristol, pp. 63-81, https://doi.org/10.21832/9781845414078-006.

TAYLOR J. P. (2001) Authenticity and sincerity in tourism, Annals of Tourism Research 28 (1), 7-26, http://dx.doi.org/10.1016/S0160-7383(00)00004-9.

TORABIAN P., ARAI S. M. (2016) Tourist perceptions of souvenir authenticity: an exploration of selective tourist blogs, Current Issues in Tourism 19 (7), 697-712, http://dx.doi.org/10.1080/13683500.2013.820259.

TUCKER H. (2003) Living with tourism: Negotiating Identities in a Turkish Village, Routledge, London.

WAITT G. (2000) Consuming heritage: Perceived historical authenticity, Annals of Tourism Research 27 (4), 835-862, http://dx.doi.org/10.1016/S0160-7383(99)00115-2.

WANG N. (1999) Rethinking authenticity in tourism experience, Annals of Tourism Research 26 (2), 349-370, https://doi.org/10.1016/S0160-7383(98)00103-0.

WILKINS H. (2011) Souvenirs: What and why we buy, Journal of Travel Research 50 (3), 239-247, https://doi.org/10.1177/0047287510362782.

ZHOU Q. (B.), ZHANG J., ZHANG H., LI X. (R.) (2018) Is all authenticity accepted by tourists and residents? The concept, dimensions and formation mechanism of negative authenticity, Tourism Management 67, 59-70, http://dx.doi.org/10.1016/j.tourman.2017.12.024.

ZHOU Q. (B.), ZHANG J., ZHANG H., MA J. (2015) A structural model of host authenticity, Annals of Tourism Research 55, 28-45, http://dx.doi.org/10.1016/j.annals.2015.08.003.

Aims & Scope

Urban and regional questions are crucial in understanding the present territorial conditions. From the World Bank's 'rediscovery' in its 2009 Report of the potential of cities in encouraging economic growth, to the multiple ways in which cities are being drawn into the processes of neoliberalism, to the dynamic growth of cities in the developing countries in Asia far out stripping the scale of cities in the older urbanized nations – everywhere there are signs of a rapidly changing urban condition. The same is true for the regions where 'old questions' of regional economic disparity and uneven development are being given a new twist as economic globalization impacts the national and local arenas.

JURA, the Journal of Urban and Regional Analysis, working as an Open-access journal (with two issues/ year, in April and in October - starting with 2023; previously annually publishing in June and in December, for the period 2009-2019), was launched as a response to the exciting world of urban and regional research emerging in reaction to these changes happening in the real world. JURA represents the initiative of the Interdisciplinary Center for Advanced Research on Territorial Dynamics (CICADIT) at the University of Bucharest working in collaboration with Ronan Paddison at the University of Glasgow, for the period 2009-2020. Starting with 2021, JURA is also supported by the Professional Association of Romanian Geographers (APGR). While the intention is that articles published by JURA will draw on examples throughout the world, particular emphasis will be given to urban and regional change as it is being experienced in Eastern Europe.

Transitional economies, and urban and regional shifts in the region since the end of the socialist regimes have been profound. The socialist regime had its particular effects on the regional economy and the cities, linked with structures that, in many ways, were very different from the trends apparent in Western Europe in the post- World War II period. Since 1990, change has been swift, challenging our theoretical understanding of the processes; for example, it is plausible to transport theories of contemporary urban change under neoliberalism developed in the advanced economies to the transitional economy. The legacy of the socialist regime, its imprint on the city physically and socially, provides further reason to suppose that urban (and regional) development in transitional economies is distinctive. These differences re-emphasise a consistent axiom underpinning the study of cities and regions: that if it is possible to point to broad theories that apply across different regions of the world, they often need to be modified taking into consideration the local conditions.

Though JURA is primarily concerned with looking at urban and regional change in the transitional East European economies, case studies exploring similar problems but in other parts of the world are certainly parts of the journal's agenda. The remit of the journal is emphatically interdisciplinary. The analysis of the urban and regional conditions needs to be interdisciplinary. Urban and regional researchers usually tend to belong to a discipline reflecting their training whether as sociologists, geographers, urban planners or any number of subjects concerned with the study of space and place. Our training very often endorses an appreciation of how other disciplines explore the city and the region. For the journal, the acknowledgement of the many disciplines that are concerned with understanding cities and regions will be indicated by the different disciplinary backgrounds reflected in the published papers. Articles will be published by geographers, sociologists, urban planners, economists, political scientists, to mention just a few of the scholars involved in the urban and regional study.

Edited by Prof. PhD. Ioan IANOȘ