

SPATIAL AND TEMPORAL DISTRIBUTION OF LISTINGS ON AIRBNB AND BOOKING.COM AS SHARING ECONOMY PLATFORMS IN THE TOURISM DESTINATION OF MARAMURES LAND ROMANIA

Silviu Vasile BUMBAK* 

Babeş-Bolyai University, Faculty of Geography, Sighetu Marmatei Extention, Sighetu Marmatei, Romania, e-mail: silviu.bumbak@ubbcluj.ro

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Abstract: The innovations brought by the sharing economy model through digital booking platforms have produced changes in the dynamic of the accommodation supply in many tourism destinations. The fastness with which changes occur has left this market segment either largely unaccounted for statistically, or poorly regulated, and Maramureş Land, a known cultural and rural tourism destination with inherent regional and local particularities, is no exception. The study raises the issue of evidence regarding the level of adoption and the true scale of the accommodation supply in the area by focusing on listings from two of the most popular digital booking platforms – Booking.com and Airbnb, an aspect that can support policy-making adapted to its specific characteristics. These objectives were pursued through an empirical methodological approach to map the spatiotemporal distribution of listings from the area of Maramureş Land between 2010 and 2023. The methodology assumed the creation of an M.Excel database with all listings from the area, the extraction of descriptive variables and coordinates, the conversion of coordinates into vector point data, and the subsequent analysis using vector and attribute data processing instruments in QGIS.

Key words: sharing economy, digital booking platforms, Booking.com, Airbnb, Maramureş Land, accommodation establishments, level of adoption, spatiotemporal distribution

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INTRODUCTION

Mapping and understanding the spatial and temporal dynamics of certain phenomena in tourism such as the spatiality of short-term accommodation establishments from a particular region can shed light on its characteristics and help improve related decision-making processes, policy, and regulations. The dynamics of short-term accommodation rentals for tourism represent a phenomenon worth investigating in this fashion, due to the amplitude and speed with which changes happen under the influences of internet technologies. This is also valid for the area of Maramureş Land, one of Romania's best-known tourist destinations, even though in some aspects, it is considered remote and deeply rural and thus, less open and developed on that spectrum. The region is witnessing changes in the way people choose to interact either as tourists or as tourist service providers when it comes to accessing tourist services in the destination. This dynamic is influenced by the global digital innovations of recent years in the information and communication technologies field of smart devices and apps and the growing and improved accessibility of the internet as a service that, in their own right, has changed the way people live, work, interact, even when vacationing (Chamboko-Mpotaringa and Tichaawa, 2023; Tom Dieck and Jung, 2018).

The internet based digitalization has a long reach in tourism and this aspect was highlighted over the years in studies and reports assessing the impact it has on the domain in various parts of the world. For example, in a report concerning the opportunities and challenges of digitalization in tourism, Dredge et al. argue that the process of digitalization can incentivize creativity, and innovation, and create new business models or business ecosystems (Dredge et al., 2019) and opportunities (George, 2023). One type of business ecosystem that can offer digital access to practically a global market, is provided by the sharing economy concept through its dedicated platforms. The concept of a sharing economy is also referred to as a collaborative economy or peer-to-peer (P2P) economy (Botsman and Rogers, 2011). The rapid development of the sharing economy model was discussed, among others, in reports published by the OECD in 2016 (OECD, 2016) and 2022 (OECD, 2022). The reports state that the development of the sharing economy model in tourism represents an effect of major shifts in tourist behavior and resource accessibility, driven by economic changes such as rising cost of living and social and economic shocks such as the impact of pandemics, political instability, wars, and recessions.

The sharing economy or collaborative economy can also be seen as an alternative economic model empowered by the Internet (Egresi et al., 2020). It assumes that all these exchanges, from basic skills and services to physical resources such as housing and transportation, are possible by connecting interested parties via digital platforms (Dillahunt and Malone, 2015) that have profoundly changed the way we do many activities (Quattrone et al., 2016). In the tourism domain, main tourism services such as accommodation or tourism-related services like transport, dining, or travel services are marketized and, according to the conceptual model, sold for profit online by private stakeholders to individuals (Dreyer et al., 2022).

* Corresponding author

The latter business model has drawn the attention of statistical and regulatory bodies at a national and international level, driving actions to cover an otherwise poorly regulated market segment. For example, the European Statistical Institute – Eurostat, has established, since 2020, an experimental methodological protocol to compile statistics on short-term accommodation stays provided by four major booking platforms – Booking.com, Airbnb, Tripadvisor, and Expedia Group (Eurostat, 2024) because this market sector was until then, not represented thoroughly in statistical evidence, and therefore, hard to legislate. Unfortunately, the spatial scale at which data on this subject are collected by the above-mentioned statistical body does not complement the purpose of this empirical paper, as the data are available, from an administrative point of view, only at national, regional, and county levels. Maramureş Land does not represent a true administrative unit, but if data were available for the NUTS 4 level (the LAUs - Local Administrative Units), like other types of statistics on tourism, it would have offered the opportunity to statistically assess the amplitude of the phenomena in the area in question with official statistical data. On the academic level, the majority of the academic work done on the subject of the impact the digital platforms, empowering the sharing economy concept, are having is focused mainly on the urban environments of countries from the Western world (Quatronne et al., 2022), since the sharing economy model is considered to be a mostly an urban phenomenon, as in the cities there are more opportunities to valorize underused goods and services (Quatronne et al., 2022). As a consequence, there are few studies with a focus on how discourse around the sharing economy model is framed outside urban regions (Sagheim and Nilsen, 2021).

Concerning rural spaces, when it comes to data infrastructure development, level of connectivity, and access to a broad range of digital instruments, even though there is a digital divide between urban and rural areas that has been observed as a constant over the years in different areas around the world (Brandano et al., 2023; Malecki, 2003; Skerratt et al., 2012), it does not mean it should be seen as a penalty. As long as in a rural area there is infrastructure that provides internet access, the local stakeholders activating in tourism or other domains, will be incentivised to make their presence known online, to access new resources and broader markets. With the innovations brought by technological development, urban-rural divides are getting thinner, especially where the rural areas experiment with increased mobility or the development of rural tourism (Sagheim and Nilsen, 2021). Therefore, empirical works focusing on other areas that urban ones are necessary, especially in regions with a strong rural character that have developed as rural tourism destinations, do not pertain to a certain administrative nomenclature or are not favored by the territorial scale at which data are available. The necessity derives from the need to add nuance to the phenomenon, to understand its implications for the tourism dynamics, and to shed light on the effects that a changing, technology-incentivized tourism can bring to the accommodation sector in areas such as Maramureş Land.

The study aims to map the level of spatial and temporal distribution and thus the level of adoption of digital booking platforms such as Airbnb and Booking among traditional and non-traditional accommodation providers from the tourism destination of Maramures Land. This endeavor can contribute to a better understanding of the dynamics and changes in the accommodation sector, both quantitative and qualitative, and the possibility of revealing the true scale of the accommodation supply, to support policy-making adapted to the specific characteristics of the area in question.

LITERATURE REVIEW

Simplistically, the sharing or collaborative economy concept is an umbrella term that tries to define an innovative business model as a decentralized environment in which most assets, but also services, are produced and temporarily exchanged through sharing practices, directly between interested parties. The exchanges take place among private individuals who engage in collaborative actions to minimize resource allocation and distribution such as to maximize their use and functionality (Miguel et al., 2022). By itself, the sharing economy or the collaborative economy concept does not represent a true innovation, since it was applied in various forms in different times and spaces and at different scales according to the cultural traits and the needs of a certain group in a certain time. The novelty resides in the build-up of a model based on internet technology (Guttentag, 2015).

The integration of digital technologies into the construct through a series of digital instruments such as smartphones and applications has revolutionized the way people interact socially and economically, by eliminating or at least reducing the impact of the limitations implied by a lack of trust among people who do not know each other, the challenges of connecting and sharing physically, and the need for traditional intermediaries. The online platforms are also providers of complementary services (Weber, 2014) and the growth of these platforms is due to characteristics such as „network effects, near zero marginal costs, and reduced search costs” (Gyódi, 2019: 536; Zervas et al., 2016).

On the large, globally, the best-known sharing services upended by digital platforms are the sharing of cars and accommodation facilities (Badulescu et al., 2022). Nowadays, many sharing economy digital platforms are tourism-related and while some authors believe in the positive impacts that the digital platforms can bring, like stimulating the development of a destination by diversifying its range of offers and bringing together more players (Cesarani and Nechita, 2017), others perceive them as “disruptive innovations” because they transform economies and the ways of doing business (Ferrell et al., 2017) through exponential growth, unfair competition and exploitation of vacuums in legislation (Quatronne et al., 2019).

The digital platforms - principles and dimensions of the sharing economy applied to tourism

In an increasingly digitalized world, people are defined by the level of sharing, level of access, reputation, and community (Leadbeater, 2010) so, ideologically, the principles of the sharing economy – trust building among strangers, the valorization of idling or latent assets, critical mass, and belief in the commons (Botsman and Rogers, 2011) are believed to work in the advantage of communities (Gyódi, 2019). For the tourism domain, these principles apply as follows: the ability to build trust among people unknown to one another, by creating complex feedback functionalities instead of using quality certificates

(Badulescu et al., 2022). This innovation was the success upon which digital platforms applying this model began to thrive in the first place. The application of this principle implies a sense of community building by creating functionalities that allow people (aka the peers) who have engaged in an exchange, either as buyers or as sellers, to express opinions about their experience. These opinions are increasingly more important as they form pools of reviews that can influence future choices. The principle of idling assets valorization is best illustrated by the tourist accommodation sector (Moreno-Izquierdo et al., 2019).

The digital booking platforms for example have permitted people to exploit their housing potential by allowing them to easily rent out some of their property that was not thought to have a „productive purpose” in the first place (Moreno-Izquierdo et al., 2019:53), or were just underused accommodation spaces (Gyódi, 2019). The critical mass principle means that the booking platforms have allowed virtually any property owner to become a tourist accommodation host (Guttentag, 2015). The belief in the commons principle highlights the ability to create added value to a system that supports interactions and exchanges. This is explained by the exponential growth in popularity and adoption of sharing platforms.

However, there are two distinctive and dichotomized dimensions of what is considered to be a sharing economy model – the profit-oriented dimension, which encompasses monetary gains, and the altruistic one, based on non-remunerable exchanges (Miguel et al., 2022). The first one is considered a true economic model by being highly monetizable, networked oriented, transforming guests into clients (Oskam and Boswijk, 2016). From the many business models that comply with the sharing economy concept, commission-based booking platforms as a model include Airbnb and Booking.com (Ritter and Schanz, 2019). These digital platforms are fully dedicated to practically the same idea, of space sharing, but work on a commission-based philosophy by specializing in accommodation short-term rentals. The second one revolves at the core of what sharing means: exchanges based on trust that is not remunerated, such as the case of the many faces of sharing within a family household (Eckhardt and Bardhi, 2015). An early example of an online, but not-for-profit platform facilitating the share of spaces in private homes, including for tourism activities was Couchsurfing. This dichotomy raises an ethical issue highlighted by Schor in an essay published in 2014. The author states that the concept and the technology behind it have great potential in achieving the social and economic goals centered around sharing and allocating resources more fairly, but that this should not be done through platforms that capitalize them for profit (Schor, 2014).

Booking.com and Airbnb as digital booking platforms empowering the sharing economy concept

The innovative business model to which digital platforms such as Booking.com and Airbnb pertain started to take root around 2010, and in the time since, it managed to reach a wide variety of services and audiences (Quatronne et al., 2022). The model of Booking.com and Airbnb for example, assumes peers have access to commodities for a limited timespan using an intermediary. The intermediary develops flexible and efficient platform instruments that help meet the provider with the consumer expectations in a match (Badulescu et al., 2022). In exchange, the intermediary receives commissions for every successful transaction (Constantinou et al., 2017; Fink and Ranchordas, 2021; Ritter and Schanz, 2019).

The model is also focused on building a community based on reciprocal trust through rating systems and other standardized instruments such as the ability to express opinions through reviews. This aspect of digitalization opens the door to free expression and sharing of opinions online thus shaping the narratives over destinations and their people and having an impact on brand buildup and reputation for places, people, and businesses (Huerta-Álvarez et al., 2020).

On the positive side, in a study based on surveys with travelers from the US and Finland (Tussyadiah and Pesonen, 2016), the authors identified the appeal of the model impact expansion in a destination. Moreover, it was identified that travelers who buy accommodation services through such digital platforms are driven by attractive prices in otherwise cost-prohibitive destinations, have the desire to engage in more authentic experiences, tend to stay longer, travel more often, and diversify the activities they indulge themselves in in a destination. On the downside, the rise and rapid growth of these digital booking platforms have created a competitive environment with traditional accommodations (Egresi et al., 2020). The effects of the professionalization of rentals and the continued development of the platforms supporting this business model create market distress not just in the tourism and transport sectors (Eckhardt and Bardhi, 2015) but also in the real estate sector, putting pressure on the availability of long-term rental and real estate prices in many parts of the world (Grant, 2022). In academia, this type of distress was coined almost 20 years ago as a “disruptive innovation” (Christensen, 1997: 15; Christensen et al., 2015). The theory proposed by Christensen describes how a new business model can influence and shape a market (Guttentag, 2015). Some authors since have used the theoretical framework to explain perturbations associated with the sharing platforms (Ferrell et al., 2017; Ritter and Schanz, 2019), either by exploiting legislation vacuums (Gyódi, 2019) that are outdated by the pace of technological advances, or by unconstrained development. The latter is considered to have positive effects on slow-growing destinations, but harmful ones on booming destinations with a large share of professionalized accommodation providers (Oskam and Boswijk, 2016).

The importance of understanding the spatial distribution of listings on digital sharing platforms

These are some of the reasons why studies have focused on clarifying these issues (Quatronne et al., 2020; Quatronne et al., 2022). To do so, some authors have been keen to differentiate between professional and non-professional accommodation providers to better understand the impact that properties bought as second homes or just as an exploited investment (Gyódi, 2019) are having on destinations and local communities.

Another direction of academic focus is towards the empirical understanding and even modeling of the level of spatial penetration of such platforms in different countries (Adamiak, 2022), settings, and at different scales, especially large, urban areas or regions with a developed tourism sector. These studies raise the issue of evidence regarding the presence of digital booking platforms in an area to better support policy-making adapted to their specific characteristics. However, these papers have highlighted the spatial dynamics of properties listed mainly on the Airbnb platform.

For example, in an empirical study based on geolocated Airbnb listings from cities in Spain, a top tourist destination, concentrating on geographic, social, and economic variables related to neighborhoods, the authors have identified that many listings are located in working-class areas, because of the great investment potential as property prices are lower in these parts. The authors have also identified trends regarding the „commodification of housing”, especially in consecrated touristic hotspots, and the effects it has on the „intensive touristification of urban areas” (Gutiérrez and Domènech, 2020: 98). In another study concentrated on the issue of spatial penetration and distribution of listings in 8 large cities around the world, the authors have identified a spatial pattern with clusters of listings aggregated near city centers and, this time, in neighborhoods described as bohemian. As in the above-mentioned paper, the authors have used geographic variables of the cities in question and historical data from other cities, to analyze the relationship of the variables with the level of spatial distribution of listings on the Airbnb platform. The authors stated that the pattern can represent a model of prediction of geographic penetration of digital booking platforms. It can be used to substantiate policy and regulatory processes, such as stimulating working schemes for anticipating development in areas that are estimated to suffer low penetration or implementing restrictions in areas with Airbnb inflation (Quattrone et al., 2018). In a similar study focused this time only on European cities, the conclusion was that the majority of listings are professional (or commercial), while the true sharing economy offer represents just a minority (Gyódi, 2019).

In empirical studies that excluded large, tourist cities, and concentrated instead, on a regional scale, on medium and small municipalities, such as in the region of Catalonia (Morales-Pérez et al., 2022) and the region of Valencia (Sagheim and Nilsen, 2021), both from Spain, the authors conclude that, the professionalization of the accommodation sector is proportional with the level of touristification of the areas in question (case of Catalonia province, excluding the city of Barcelona) and that it highlighted an older, organically grown renting phenomena that was unknown to authorities (the case of Valencia province). Studies like these highlight the fact that digital booking platforms, besides factual or relative advantages and disruptions, contribute by making the accommodation market more visible and transparent (Moreno-Izquierdo et al., 2019). This is also the case for destinations like Romania. In a comparative study regarding the usage of digital booking platforms such as Airbnb in regions from Italy and Romania, the authors stated that for the Romanian market, where many establishments run unclassified, statistical data about the listings on digital platforms can be the starting point for the evaluation of the true potential of the accommodation sector (Cesarani and Nechita, 2017).

The study area – general description

Maramureș Land represents a land-type region (Ilieș, 2007) and a known tourism brand (Ilieș and Ilieș, 2015) from the north of Romania, bordering Ukraine, one of several land-type entities from the Romanian territory.

Having no true administrative boundaries, it covers over 3200 km² from the predominantly mountainous, north-eastern area of the Maramureș county (Figure 1), around a central depression that concentrates 36 settlements and over 210.000 inhabitants (Tempo Online-statistical data, 2023). The area has a predominantly rural character and, due to its unique cultural heritage highlighted through agricultural landscapes, cherished traditions, wooden gates, and churches, Maramureș Land has become over the years a tourism destination.



Figure 1. Maramureș Land – geographical location

MATERIALS AND METHODS

The study concentrates on highlighting the level of adoption of digital booking platforms such as Airbnb and Booking.com among traditional and non-traditional accommodation providers from the tourism destination of Maramureş Land. It focuses on the spatiotemporal distribution of listings over a period of 13 years (2010-2023), and this objective was approached through a bottom-up, empirical methodological framework (Figure 2) that comprised several working stages, described synthetically bellow.

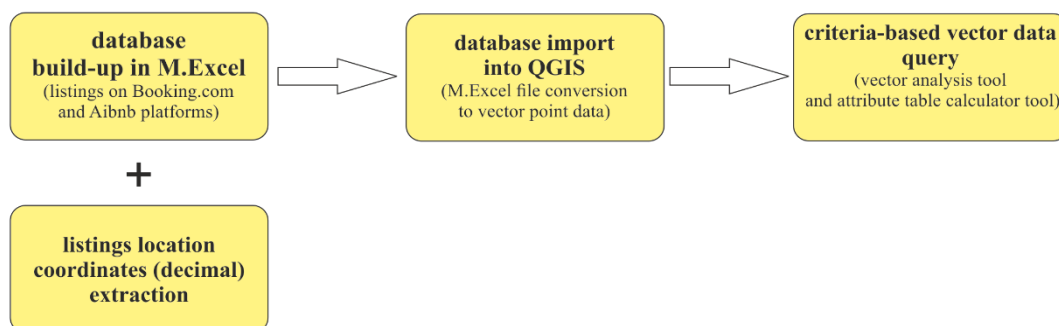


Figure 2. Flowchart presenting the methodological framework of the study

- Excel database build-up

The first methodological stage of the study assumed the compilation of an Excel database comprising statistical information about accommodation establishments from the entire region of Maramureş Land from the updated list of classified accommodation structures available on the Romanian Ministry of Economy, Entrepreneurship and Tourism website.

This was followed by the compilation of information on the accommodation establishments from Maramureş Land that were listed on Booking.com and Airbnb platforms. This triple compilation and cross-checking were important to gain insight into the true scale of the accommodation supply in the area under study and to verify, for those listings that were present in the list of classified accommodation structures, the periodicity of the information posted on the two booking platforms. Initially, for the identification of listings and the extraction of key variables, a scraping tool was selected to automate and speed up the process. However, in the end, the compilation work was done manually, as the data had to be triple-crossed to verify that the same listing was not double-counted or that it appeared under a different name. The compilation work was done between the beginning of November 2023 and the end of January 2024. For each listing, values for several key variables were noted, both quantitative and qualitative. The variables were – location (name of settlement), accommodation establishment name, location coordinates (decimal format) typology of establishment (official classification nomenclature), comfort category (official classification nomenclature), year of listing on Booking.com and Airbnb, number of rooms and bed-places (official numbers declared), number of rooms and bed-places declared on Booking.com and Airbnb.

- Location coordinates extraction

In the process of data compilation, the location data of each listing was identified using, in the case of Booking.com, the mentioned addresses, and, in the case of Airbnb, the „where you’ll be” feature that pinpoints the exact location of a listing on a map. In the case of Airbnb, the location of some listings is just relatively indicated on the map, as the owners did not choose to disclose the exact location beforehand. In these situations, if the accommodation establishments appeared in the official list of classified accommodation structures, the addresses were retrieved from there. In the situation in which they were not, the location was approximated using the Airbnb map.

Next, the addresses were introduced in the Google Maps search feature, followed by the retrieving of location data (latitude and longitude) in decimal values. In the case of listings from Airbnb for which the location was approximated, the coordinates were retrieved from Google Maps using the approximation. Due to the scale of the study that covers an entire region, we consider the location error for those listings as being marginal.

- Data import into the GIS environment

The next methodological stage assumed the import of the compiled M. Excel data spreadsheet into a GIS environment for further processing and analysis. For this study, the QGIS solution was used. The spreadsheet comprising the compiled data was saved as a CSV file as this format is compatible with QGIS. The import process assumed the conversion of the Excel spreadsheet into a discrete data set by creating a vector point layer representing the geolocations of the accommodation establishments using the decimal coordinates. The resulting vector point layer had the Excel spreadsheet attached as an attribute table. All cartographic outputs were generated using the WGS 84 coordinate reference system.

- Criteria-based statistical and spatial data query

In the next stage of the study, the attribute data from the main point vector layer containing all listings was queried using the attribute table calculator with designed expressions and a vector analysis tool that extracted values based on criteria. The expressions and criteria used for the query were written to answer the following questions:

How many properties are listed on the two platforms and how many accommodation establishments are presenting their offer on Booking.com and Airbnb simultaneously? How many listings represent classified accommodation establishments?

Is there a difference in popularity between the two platforms?

How many accommodation establishments were listed each year since 2010 on the two booking platforms and where were they concentrated? Is there a spatial distribution pattern of listings?

RESULTS AND DISCUSSION

Structure of the accommodation network in Maramureş Land

At the beginning of 2024, the region's tourist accommodation network comprised 776 classified tourist establishments with a total number of 10.455 bed-places. The analysis of the breakdown of the accommodation typology (Table 1), shows that the small to medium accommodation facilities such as tourism and agrotourism boarding houses, together with the apartments and rooms-for-rent account for 92 % of the total number of accommodations establishments and 80 % of the number of bed-places.

Table 1. Breakdown on classified accommodation establishments from Maramureş Land (Authorisation and Control-Romanian Ministry of Economy, Entrepreneurship and Tourism, 2023)

typology	classified units		share (%)		bed-places		share (%)	
hotels	15		1.9%		972		9.3%	
motels	5		0.6%		160		1.5%	
hostels	9		1.2%		321		3.1%	
tourism boarding houses (including urban tourism boarding houses)	174		22.4%		2715		26.0%	
	urban	rural	urban	rural	urban	rural	urban	rural
	37	137	4.8%	17.6%	556	2159	5.3%	0.7%
agrotourism boarding houses (including rural touristic boarding houses)	112		14.4%		1214		11.6%	
	urban	rural	urban	rural	urban	rural	urban	rural
	3	109	0.4%	14%	36	1178	0.3%	11.3%
touristic villas	5		0.6%		101		1.0%	
touristic chalets	5		0.6%		97		0.9%	
apartments for rent	40		5.2%		262		2.5%	
	urban	rural	urban	rural	urban	rural	urban	rural
	19	21	2.5%	2.7%	184	78	1.8%	0.7%
rooms-for-rent	388		50.0%		4164		39.8%	
	urban	rural	urban	rural	urban	rural	urban	rural
	105	283	13.5%	36.5%	1325	2839	12.7%	27.1%
house type units	15		1.9%		170		1.6%	
Campings (including camping spaces)	6		0.8%		228		2.2%	
bungalows	1		0.1%		27		0.3%	
touristic halting places	1		0.1%		24		0.2%	
TOTAL	776		100%		10455		100%	

The tourism and agrotourism boarding houses, the traditional accommodation establishment typologies in Maramureş Land for many years since rural tourism began to develop in the area, account for approximately 37%, while a relatively new accommodation type – rooms-for-rent – account for 50% of the total number of accommodation units. Except for hotels, which dominate the urban accommodation landscape (11 units, totalizing 676 bed-places), the majority of the classified units are located in rural settlements. This aspect highlights the predominantly rural character of the tourism accommodation sector in the area and thus, of the general orientation of the tourism phenomena. It also highlights the rising popularity of the rooms-for-rent typology which can be an indicator of a shifting trend in the way owners choose to classify their properties.

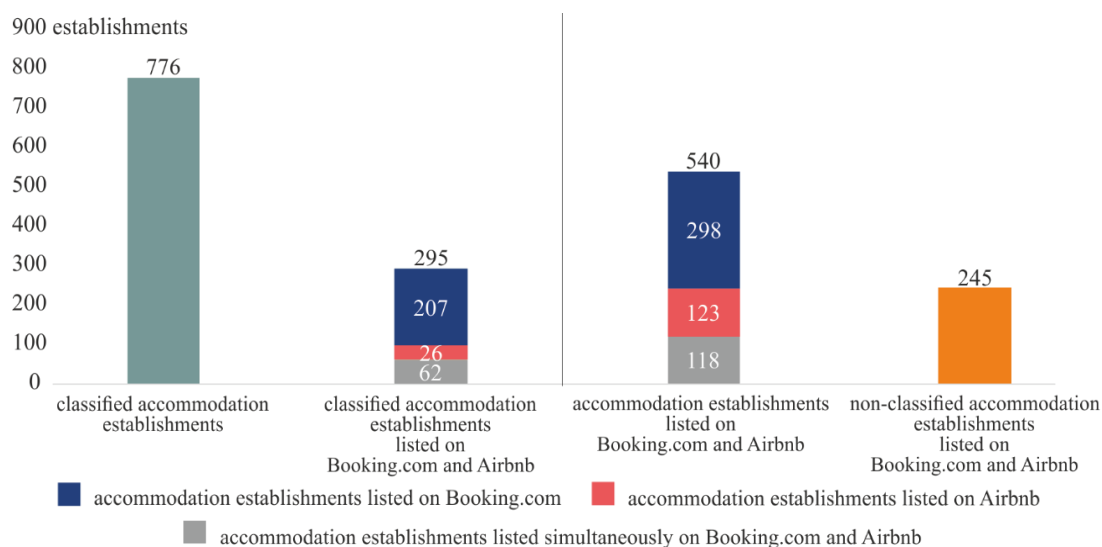


Figure 3. Breakdown of accommodation establishments from Maramureş Land with active Booking.com and Airbnb accounts (Authorisation and Control-Romanian Ministry of Economy, Entrepreneurship and Tourism, 2023; Booking.com, 2024; Airbnb, 2024)

Presence and spatial distribution of Booking.com and Airbnb classified and non-classified listings

Regarding the online presence of the accommodation establishments on the two digital booking platforms, from the 776 classified accommodation units, only 295 classified units have been listed on either one or both digital platforms (Figure 3),

even though the identification of listings showed that there were, in the interval in which the database was compiled, 540 accommodation establishments with active Booking.com and Airbnb accounts. That means there are at least 245 units that have been identified on the two platforms but were not subsequently identified in the official, updated list of classified accommodation units. These listings were tagged as non-classified accommodation establishments.

The majority of these 540 listings (Figure 4) are located in the area’s tourist hotspots such as the mountain and winter destinations of Borșa (123 units), Moisei village (52 units), Vișeu de Sus (81 units) where the famous Vaser Valley steam forestry railway is located, the historical and cultural Sighetu Marmăției (52 units), the spa resort of Ocna Șugatag (24 units) and the picturesque village of Breb (31 units).

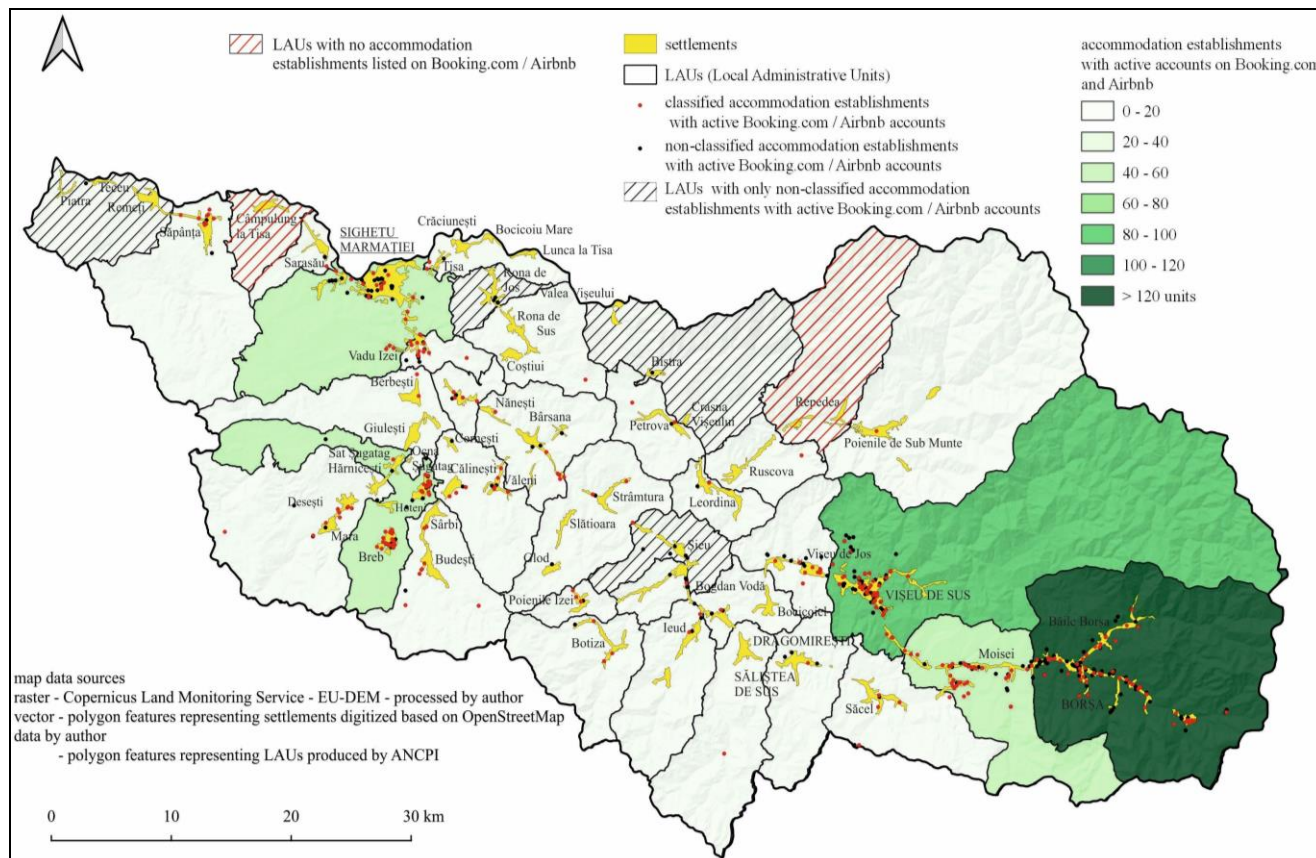


Figure 4. Accommodation establishments from Maramureș Land listed on Booking.com and Airbnb

The spatial distribution of the non-classified listings shows that there are 4 settlements where only this type of listings could be identified. In total, there are 11 listings distributed on the territory of the following villages - Remeți, Rona de Jos, Bistra, and Rozavlea. Except Rozavlea, all settlements are situated in the northern part of the area, next to or close to the Ukrainian border. In all instances, the touristic and accommodation infrastructure is poorly represented.

Table 2. LAUs with at least 5 non-classified accommodation establishments listed on Booking.com and Airbnb

LAU	classified units*	units listed on Booking and Airbnb	classified units listed on Booking and Airbnb	non-classified units listed on Booking and Airbnb
Borșa	109	123	56	67
Vișeu de Sus	80	81	44	37
Sighetu Marmăției	51	52	22	30
Moisei	63	57	37	20
Ocna Șugatag**	133	59	39	20
<i>Ocna Șugatag</i>	73	22	14	10
<i>Breb</i>	59	31	24	7
Vișeu de Jos	15	19	9	10
Vadu Izei	29	18	11	7
Rozavlea	6	5	0	5
Desești	21	14	9	5

*Authorisation and Control – Romanian Ministry of Economy, Entrepreneurship and Tourism
 **Ocna Șugatag LAU comprises 4 villages – Ocna Șugatag, Breb, Sat-Șugatag and Hoteni

On the other hand, there were two instances (Table 2) where the number of listed non-classified accommodation establishments was higher than the number of classified structures listed on Booking.com and Airbnb. In Sighetu Marmăției, from 52 accommodation establishments with active accounts on Booking.com and Airbnb, 30 are non-classified

establishments. In Borșa, from the 123 listings on the two platforms, 56 establishments are classified, while 67 are non-classified. The non-classified accommodation listings phenomenon was observed basically in every locality with at least 3 listed accommodation structures on the two platforms, being it either a tourist hot-spot, with developed accommodation infrastructure, or in those settlements where the number of accommodation establishments is reduced. This requires further investigation to determine the exact number of such instances, and their official status. Concerning the authorization situation, if the legality of these non-classified accommodation establishments that are listed on digital platforms such as Airbnb and Booking cannot be substantiated through further research, then these numbers have the potential to indicate a short-term rental dynamic that has grown organically over the years and is potentially unknown to local authorities.

Spatial dimensions and growth of listings on Booking.com and Airbnb

The situation of accommodation establishments listed on Booking.com and Airbnb at the beginning of 2024 reflects a growth that started slowly in 2010 with one property from Sighetu Marmăției city listed on Booking.com. Over the next two years, another 7 properties from Sighetu Marmăției and Borșa cities were listed on the same platform, together with just 4 accommodation establishments situated in the rural area around Sighetu Marmăției. By 2015, the listing on Booking.com had a predominantly urban character, with listings registered also in the city of Vișeu de Sus. These initial listings were consistent with the assumptions stated in the literature review that support the idea that this type of digital incentivization first begins in the cities, even though the three cities in question are small cities, with under 50.000 inhabitants.

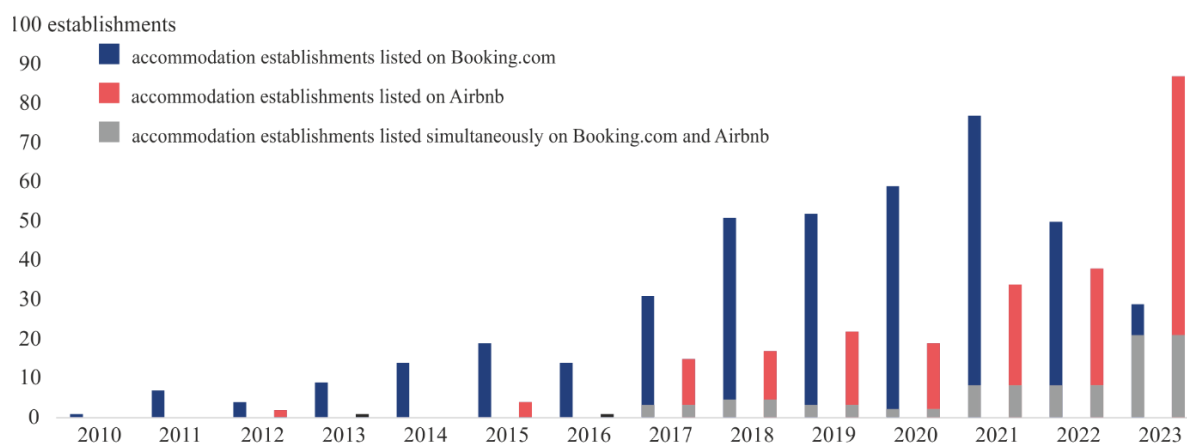


Figure 5. Yearly breakdown of growth of listings from Maramureș Land on Booking.com and Airbnb between 2010 and 2023 (Source: Booking.com, 2024; Airbnb, 2024)

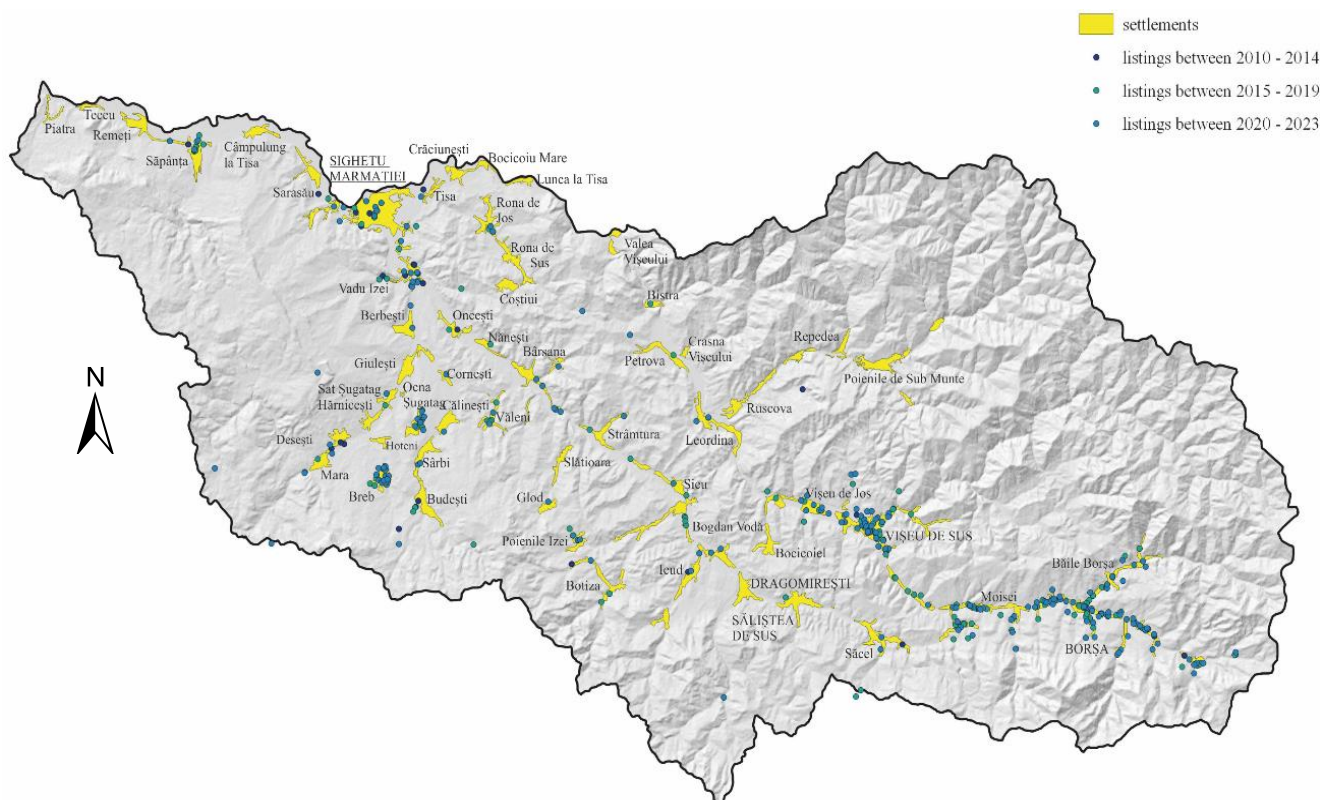


Figure 6. Adoption level and spatial distribution of accommodation establishments listed on Booking.com between 2010 and 2023 (Source: Booking.com, 2024)

On the other hand, the first listings on Airbnb appeared only in 2012 in the rural area (Figures 5 and 7), with two accommodation establishments from the village of Sarasău, a village situated a short distance from Sighetu Marmatei. Until 2017, Airbnb growth was limited to just 7 listings, and was mostly a rural phenomenon, with one property listed from the city of Vișeu de Sus. After this initial period, from 2017, the number of listings began to grow steadily, with listings on Booking.com representing properties situated mostly in urban, but also rural settlements, with defined clusters of accommodation establishments and tourist attractions, such as the villages of Săpânța, Vadu Izei, Breb, Ocna Șugatag, and Moisei (Figure 6). The positive growth of listings on Booking.com culminated in 2021, with over 70 establishments listed in that year alone.

One particular situation was observed in the north-central area, comprising the village of Bârsana, another tourist brand of Maramureș Land, and the rural settlements around it. In this area, the number of listings is reduced, even though, in the case of Bârsana, there were, at the beginning of 2024, 23 classified accommodation establishments and 16 listings, out of which only 5 were for classified structures. This aspect indicates a potentially more traditional approach towards marketing and promotion, or different channels for booking reservations.

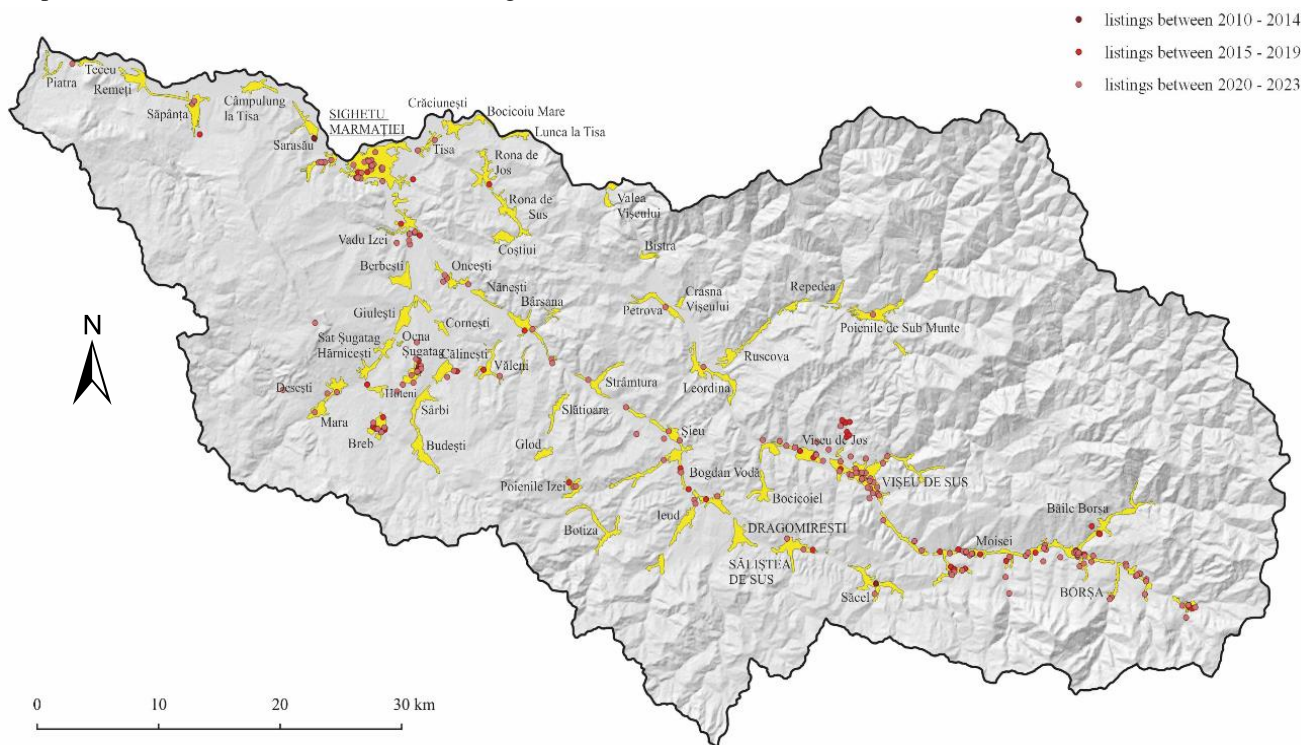


Figure 7. Adoption level and spatial distribution of accommodation establishments listed on Airbnb between 2010 and 2023 (Source: Airbnb, 2024)

As for the properties listed on Airbnb, until 2018, although number-limited, the listings were represented by rural accommodation establishments. This highlights a true particularity of the respective time frame, as it contradicted the consecrated theoretical approach that suggested that initial listings on digital sharing platforms are urban. The Airbnb urban listings have registered growth between 2020 and 2023, becoming more urban-concentrated.

The analysis of the data reveals another interesting aspect. After 2020, the number of accommodation establishments with accounts on both platforms has grown but still represents a marginal phenomenon. However, Booking.com remains the most popular choice among accommodation providers, even though 2023 was the year in which, for the first time since 2010, the number of Airbnb listings overpassed the number of listings on Booking.com.

CONCLUSION

The changes in the way accommodation service providers choose to interact with their potential clients by presenting their offer directly, on dedicated digital booking platforms developed on the principles of the sharing economy are seen almost everywhere where the tourism phenomenon is present. With the inherent regional and local particularities, Maramureș Land, a known cultural and rural tourism destination is no exception.

The study focuses on mapping the spatial and temporal dynamics of accommodation establishments from the tourism destination of Maramureș Land that were listed on two popular digital booking platforms – Booking.com and Airbnb, that subscribe to the for-profit, commission-based model of the digital economy concept. The main hypothesis of the study was that through Excel and QGIS capabilities the level of adoption of these platforms by local accommodation providers can be assessed while also revealing information about the true scale of the accommodation supply in the area in question. Covering a 13-year timeframe, from 2010 to 2023, and assuming several methodological stages, the study assesses the level of adoption and popularity of Booking.com and Airbnb among accommodation providers by highlighting the number of listings on the two platforms and their spatio-temporal evolution. The study also differentiates between officially classified

accommodation establishments with valid Booking.com and Airbnb and listings for which it was not possible to determine indirectly their authorisation status. It was found that out of 540 accommodation units listed on the two platforms, 245 accommodation establishments were not found among the total 776 authorized establishments from Maramureş Land, raising the question of the true accommodation supply in the area and the necessity for further investigation.

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