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The Role of Public Administration Expenditures in Tourism Development – a Comparative Analysis of Two Valuable Geoheritage Areas

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ABSTRACT:

This study examines the relationship between public administration expenditure and the development of the tourism sector in four Administrative Territorial Units (ATUs) with high natural potential between 2000 and 2018. It first analyzes the public expenditures of the ATUs, classifying them by function and calculating the share of each expenditure in the total. Next, the study assesses local economies using the Classification of National Economic Activities (NACE) to determine the contribution of tourism. Finally, the two databases are correlated to explore the impact of public spending on tourism growth. The findings provide a foundation for developing new methodologies to assess public investment in tourism and raise awareness of its importance.

Keywords: tourism, revenues, expenditures, public administration, local economy

1. Introduction

The competition within the air transportation industry has greatly improved service quality and made global travel more accessible, thus positioning tourism as a dynamic sector that significantly contributes to employment and the global economy (Tufănoiu, 2023; WTTC, 2019). Despite these benefits, tourism remains highly competitive, influenced by various social and economic factors (Kavaliauske & Kocyte, 2014; Drăghici et al., 2015; Grecu et al., 2019). Research underscores tourism's potential to drive sustainable economic development, promoting growth in diverse regions (Song et al., 2012; Pablo-Romero & Molina, 2013; Brida et al., 2016, Herman et al., 2020).

Tourism is a complex phenomenon, interacting with numerous social and economic domains, making its definition and analysis challenging (Antolini, 2021). It generally refers to the activities of individuals traveling outside their usual environment for less than a year (Eurostat, 2014), though definitions of "usual environment" differ across countries. The complexity of tourism requires a broad approach to sustainable development that includes social, economic, and ecological considerations (Gios et al., 2006). Government support plays a critical role in protecting and nurturing the resources tourism depends on, especially natural heritage sites and geodiversity elements (Parga Dans & Alonso González, 2019; Gray, 2018).

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In tourism economics, various studies have explored the role of government policies in tourism development (Sakai, 2006). Government expenditure can enhance the productivity of private investments in tourism (Morozumi & Veiga, 2016), supporting the idea that such spending positively influences tourism growth (Nguyen et al., 2020). However, there are still gaps in the literature regarding the effects of public expenditure at the local level, particularly within Administrative Territorial Units (ATUs). While some studies have examined the role of government spending on tourism (Jucan & Jucan, 2013; Dogru & Bulut, 2018), there is little research focusing on local public administration's decisions and their impact on tourism.

The goal of this study is to create a methodology for evaluating how local public expenditure management influences tourism development. It will analyze how different types of public spending affect tourism across regions, aiming to uncover patterns that could guide future investment decisions. Specifically, the objectives include:

- Categorizing and analyzing local public expenditures.
- Assessing the impact of total and categorical expenditures on tourism sector growth.
- Providing recommendations for local governments on optimizing spending to boost tourism and economic growth.

The study poses two key research questions:

- How does the structure of local public expenditure affect tourism growth in different regions?
- Which categories of public spending are most effective in promoting tourism?

This research has both theoretical and practical significance. Theoretically, it fills gaps in understanding the impact of public expenditure on tourism at the ATU level and offers a new methodology for evaluating public spending effectiveness. Practically, it can help local administrations optimize their budgets to support tourism, thereby driving local economic growth. Furthermore, the proposed methodology can be applied in other contexts to evaluate public investment strategies.

The article is structured as follows: a literature review on public expenditure and tourism development, a description of the research methodology, an analysis of the study's findings, and finally, recommendations for policy and future research.

2. Theoretical Background

Several studies have explored fiscal sustainability from different perspectives (Buiter, 1985; Izquierdo & Panizza, 2003; Diaz Alvarado et al., 2004). At its core, fiscal sustainability boils down to a simple equation: public revenues must be sufficient to cover public expenditures. When revenues fall short, sustainability is threatened (Mişa & Kagitci, 2019).

Private capital investment is crucial for creating jobs and advancing economic development (Bom, 2018). Meanwhile, the state plays a key role in organizing and supporting tourism (Coles et al., 2014). Public finance theory emphasizes the importance of public expenditure for infrastructure development and the provision of essential goods and services, which are vital for economic activity and sustainable private sector growth (Bom & Ligthart, 2014).

While Eurostat outlines criteria for evaluating public spending, these criteria are applied inconsistently across countries (Antolini & Grassini, 2019). For accurate comparative analysis of sectors like tourism, homogeneous statistical information is crucial (Antolini, 2021).

The lack of a universally accepted definition of the "public sector" complicates the financial representation of policies and makes it difficult to measure the "quality" or "productivity" of public expenditure (Scriven, 1991; Oxman et al., 2010). Trends in accounting data from central and local authorities often reflect the need to assess policies funded by public administrations. Public policies generally aim to meet the needs of citizens, but understanding the impact of public spending on economic development requires knowing what these needs are (Mafrolla & D'Amico, 2016).

In developing economies, public expenditure must balance basic and non-basic needs. Non-basic services, increasingly expected by citizens, add complexity to government spending decisions (Osborne & Brown, 2005). For public spending to be effective, both central and local administrations must play vital roles, especially in tourism (Key, 1940). Tourism is shaped not only by economic activities but also by the landscapes and communities that define a region. Local policymakers need greater autonomy to promote tourism effectively.

However, many policies that influence tourism, such as transportation and infrastructure, are managed by central governments. Coordinating such policies across different levels of governance is a major challenge, particularly in countries with multilevel governance structures (Innes & Booher, 2018).

Despite the importance of tourism, the impact of government spending on this sector has received limited attention. Banerjee et al. (2015) found that a $36 million tourism investment in southern Haiti reduced unemployment from 26% to 23% and decreased poverty by 1.6 percentage points. Deskins and Seevers (2011) analyzed U.S. tourism promotion spending between 1985 and 2003, finding that increased public tourism promotion led to higher tourism and employment growth, especially in states with low initial tourism spending. Similarly, Cellini and Torrisi (2013) examined the effects of public spending on tourism in Italy, using cross-sectional regression analysis, and found positive results.

While numerous studies address tourism and public expenditure, there is a gap in the literature concerning the impact of spending at the Administrative Territorial Unit (ATU) level. Additionally, no standardized methodology exists for evaluating the effectiveness of public expenditure management at the local level, an issue this study aims to address.

The findings of this study can help local governments rethink their investment strategies to stimulate tourism and, by extension, local economic growth. They can also

serve as a foundation for new methodologies to evaluate public administration efforts in tourism development, raising awareness of the importance of investing in tourism.

3. Methods

There are three main parts in which the study was divided, as presented below (Figure 1).

3.1 The analysis of local public administration expenditure

This first stage of the proposed methodology involves a brief presentation of the revenues and expenditure balance of analysed local public administrations based on the data provided by the Ministry of Development, Public Works, and Administration for a period of 19 years (2000 – 2018). It consists in a detailed analysis of the expenditure made by the public administration at the level of Soveja and Tulnici ATU's in Vrancea county but also in Lopătari and Berca ATU's from Buzău county. During these analyses, the public expenditures were structured into major categories depending on the main directions in which the revenues from each local public administration were spent. The share of each major expenditure category in the total expenditure was calculated for each year of analysis. Evolution graphs that present the state of each local public administration resulted.

3.2 The economic analysis regarding the share of tourism in the local economy

The second phase of the study adopts the methodology employed by Tufănoiu (2023) in his research about how geomorphosites can influence local economic development. It involves analysing the administrative-territorial units (ATUs) from a tourism perspective over a 19-year period (2000-2018). This methodology uses four indicators (number of companies, number of employees, turnover and profit from the tourism industry) to calculate tourism's share in the overall economy of each ATU. An economic database was created to compute these indicators, based on each four-digit Classification of National Economic Activities (NACE) code. This step of the study would not have been possible without the economic data provided by The Research Centre for Integrated Analysis and Territorial Management (CAIMT). Once the database was established, it enabled the calculation of the share of tourism-related indicators in each ATU's total economy. The analysis was translated in evolution graphs showing the trends in tourism's contribution to the overall economy of each ATU.

3.3 The relationship between the local public administration expenditure and the tourism sector

The last phase of the study consisted of the correlation of results obtained in the first two stages with the aim of identifying the relationships between the direction of public administration expenditure and the evolution of the tourism sector during the 19 years of analysis.

In order to correlate the trend of the four major categories of expenditure with the trend of tourism sector share in the economy, the average tourism sector share trend was calculated using the formula:

$$Av = \frac{a + b + c + d}{4}$$

Av – average tourism sector share in the total economy of the ATU

a – tourism companies share in the total companies of the ATU

b – tourism turnover share in the total turnover of the ATU

c – tourism employees share in the total employees of the ATU

d – tourism profit share in the total profit of the ATU

The correlation was determined using Pearson's Correlation Coefficient which is given by:

$$r_{xy} = \frac{\frac{1}{n}\sum(x - \bar{x})\,(y - \bar{y})}{s_x s_y}$$

n – sample size

x – the individual values of the variable x

y – the individual values of the variable y

$\bar{x}$ – the average of all x values

$\bar{y}$ – the average of all y values

S_x – the standard deviation of all x values

S_y – the standard deviation of all y values

Once the coefficient was calculated, the correlation degree between the evolution of total expenditure in the local public administration, but also the share of each major category of expenditure and the trend of the tourism sector's contribution to local economies was determined. The obtained values were classified as follows:

red = no correlation ($-0.25 < r < 0.25$)
yellow = weak correlation ($-0.5 < r < -0.25$ or $0.25 < r < 0.5$)
blue = moderate correlation ($-0.75 < r < -0.5$ or $0.5 < r < 0.75$)
green = strong correlation ($r < -0.75$ or $r > 0.75$)
*according to Colton's rules (1974)

After establishing the degree of correlation between the previously mentioned data sets, in order to find out if, how, and in what way public administration expenditure affects the tourism sector share trend, the regression line equation was applied as follows:

$$y = a + b * x$$

x – the independent variable

y – the dependent variable

a – intercept (the value of y when x is 0)

b – the slope (the amount by which the value of „y" changes when the value of „x" is modified by one unit)

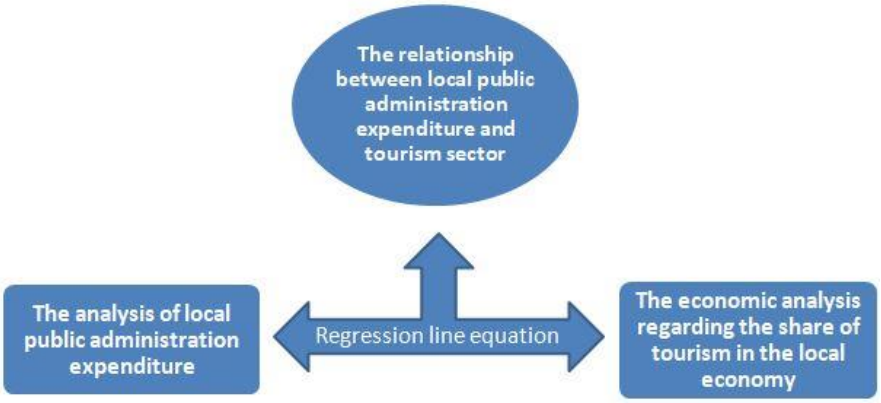


Figure 1. The main stages of the study.

The visual comparison map was created in order to have an overview of the results that allows a comparative analysis of the four ATUs.

4. Study area

The study area includes four Administrative Territorial Units (ATUs): Soveja and Tulnici from Vrancea County, and Lopătari and Berca from Buzău County. Soveja and Tulnici are mountainous regions with high natural potential for tourism development (Tufănoiu, 2023), while Berca and Lopătari are part of the Buzău Land UNESCO Global Geopark. During the study, these areas were analyzed for their potential to contribute to the geopark's development. Effective management of local revenues and expenditures in these ATUs can boost tourism, which in turn can enhance the local economy. (Figure 2).

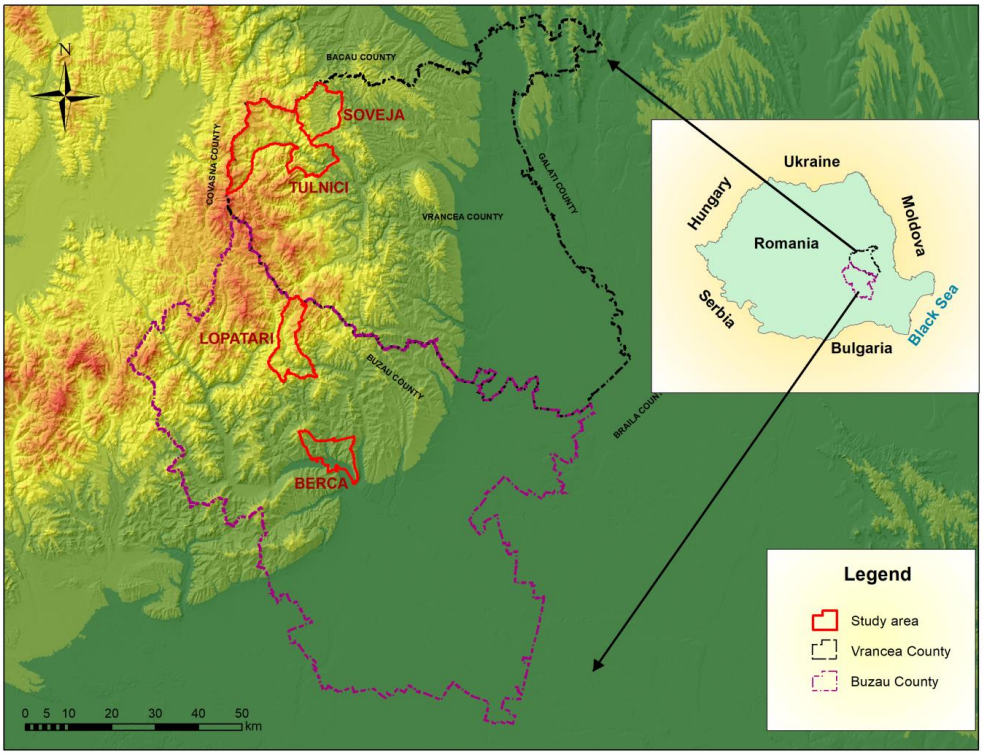


Figure 2. The geographic location of the study area.

Soveja and Tulnici are located in the northwestern part of Vrancea County, bordering Bacău and Covasna. The Vrancea Mountains, formed through alpine orogenesis, define the area's landscape. The region's diverse geology offers a strong foundation for tourism (Roman, 1989). The climate is temperate-continental, favorable for outdoor activities, while the area's dense forests add to its natural beauty. The presence of Putna-Vrancea Natural Park, a protected area with significant geomorphological and landscape potential, further enhances its tourism appeal (Tufănoiu et al., 2020).

Soveja, situated in the upper basin of the Şuşiţa River, was once a renowned resort due to the air's healing properties. However, tourism in the area declined during the communist era. Today, Soveja has around 2.000 residents who primarily engage in logging, animal husbandry, and agriculture. Tulnici, located along the national road DN2D, benefits from high accessibility, which is crucial for tourism. Its population of approximately 3.500 also depends on animal husbandry, agriculture, and wood processing.

Berca and Lopătari, situated in Buzău County, are part of the Buzău Land UNESCO Global Geopark (Andrasanu, 2010). The geopark covers 1.036 square kilometers in the Carpathian Bend region, a rural area that showcases the geological evolution of the Paratethys and Eastern Paratethys Seas over the past 40 million years (Toma et al., 2021). The geopark is geodynamically active, sitting at the junction of the

East European Plate, the Moesian Plate, and the Tisia-Dacia Block, making it one of Europe's most tectonically active regions (Buzău Land UNESCO application, 2020).

Berca is known for its proximity to mud volcanoes, which are significant geosites. The four main mud volcanoes—Beciu, Pâclele Mari, Pâclele Mici, and those in Berca commune—are part of Nature 2000 sites and attract many tourists (Melinte et al., 2016). These formations are the result of hydrocarbons escaping from salt diapirs through fault lines. The petroleum trapped beneath the area dates to the Neogene period (Frunzeti et al., 2012). Some researchers (Etiope et al., 2004; Bonini et al., 2016) suggest a link between seismic activity in the Vrancea Seismic Zone and the intensity of mud volcano eruptions. The mud volcanoes bring to the surface not only salt and fossil-bearing rocks but also methane and carbon dioxide, creating a unique landscape devoid of vegetation, except for some protected plant species like *Nitraria schoberi* and *Iris sintenisii ssp. brandzae*.

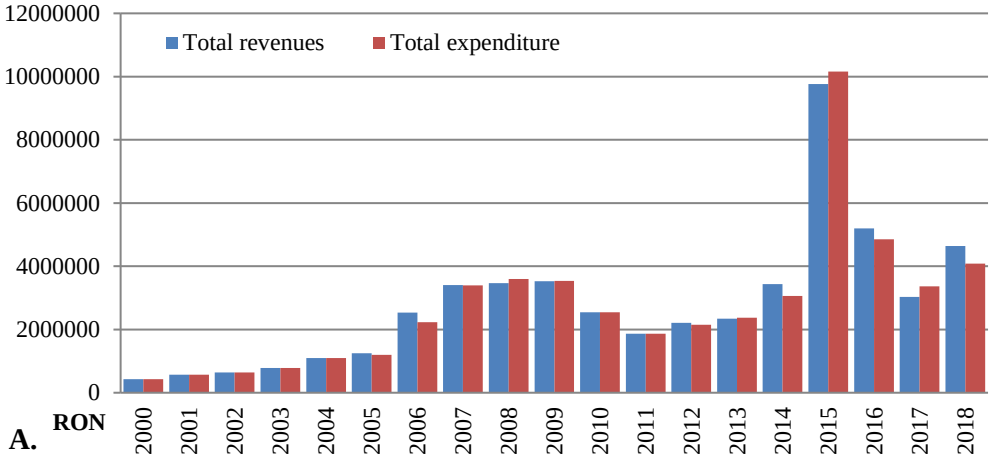
Lopătari covers 10.331 square kilometers and is characterized by the salt mountains that form the Meledic Plateau, the largest protected area in the geopark. The plateau, covering 136 hectares, features significant speological, geological, botanical, and zoological characteristics (Melinte et al., 2016). The salt formations, dating back to the Early Miocene period, were uplifted by tectonic processes, creating a landscape marked by exo- and endokarst features. Visitors can see sinkholes, dolines, and freshwater lakes formed in salt sinkholes, such as the Bottomless Lake and Castle Lake. The plateau also boasts 47 salt caves with a cumulative length of over 4.540 meters (Giurgiu, 1985).

Berca consists of 13 villages, covering 7.329 hectares, and has a population of 8.245. Lopătari comprises five villages with 2.999 inhabitants. Both ATUs play a vital role in supporting tourism and geopark-related activities, contributing to the region's economic growth.

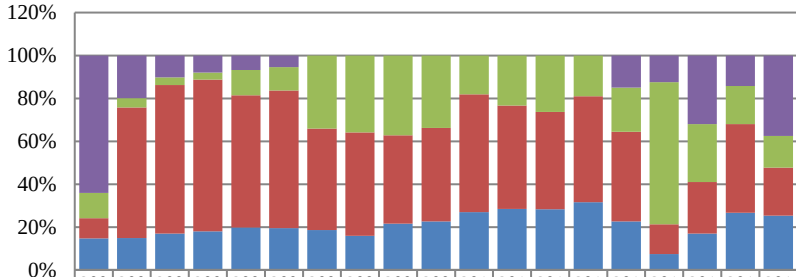
5. Results

5.1 The analysis of local public administration expenditure

The revenues from the local public administration of Soveja experienced a mostly positive evolution during the analysed period (Figure 3A). In 2000, they reached the value of 432.860 RON, so in the last year of analysis, the value was more than ten times higher. 1 EUR is approximately 5 RON (cursbnr.ro). The evolution trend is approximately the same for the expenditure. In the first year, they recorded a value of 432.790 RON, and in 2018, a value of 4.083.387 RON. In 2015, both indicators had a peak, with values that stand out compared to all other years (9.759.519 for revenues and 10.160.479 for expenditure). The total expenditure was divided into four major chapters, and the share of each chapter in the total was calculated (Figure 3B).



A.



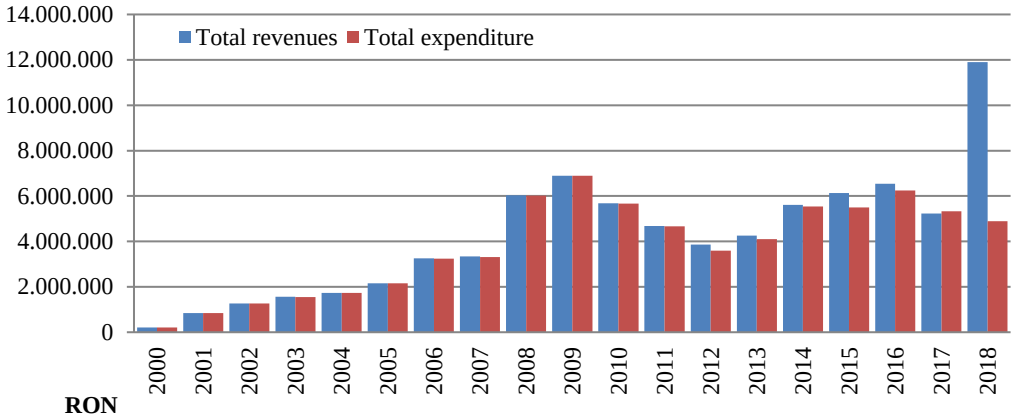
B.

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Economic actions	64%	20%	10%	8%	7%	5%	0%	0%	0%	0%	0%	0%	0%	0%	15%	12%	32%	14%	38%
Public development	12%	4%	4%	3%	12%	11%	34%	36%	37%	34%	18%	23%	26%	19%	21%	66%	27%	18%	15%
Socio-cultural expenditure	9%	61%	69%	71%	62%	64%	47%	48%	41%	44%	55%	48%	45%	49%	42%	14%	24%	41%	22%
General public services	15%	15%	17%	18%	20%	19%	19%	16%	22%	23%	27%	28%	28%	32%	23%	7%	17%	27%	25%

*Figure 3. **A**. The evolution of total revenues and total expenditure in Soveja, **B**. The share trend for each chapter of expenditure in Soveja*

Data source: Ministry of Development, Public Works and Administration, 2023.

In the case of Tulnici, the revenues started at 206.170 RON in 2000 and reached their highest value in the last year at 11.906.028 RON (Figure 4A). The expenditure followed approximately the same trend as in the case of revenues, except for the last year, when less than half of the revenues were spent (4.889.624 RON). The expenditure were also divided into major chapters, and the share of each was calculated (Figure 4B).



A.

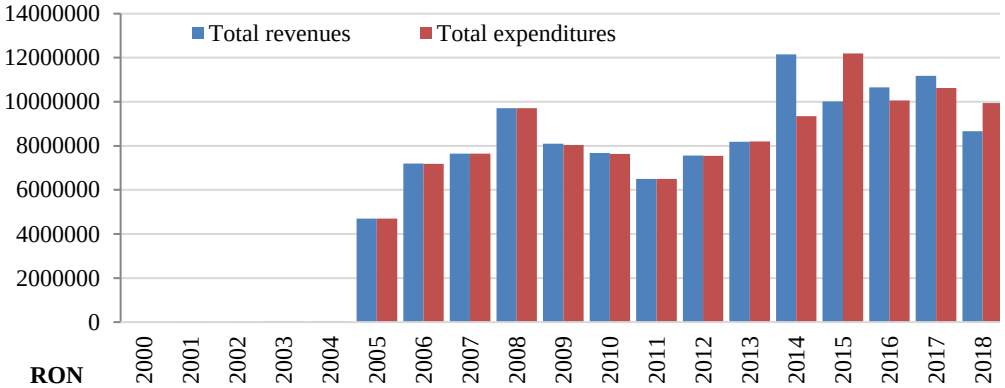
B.

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Economic actions	9%	3%	5%	9%	16%	14%	18%	2%	12%	20%	33%	2%	4%	1%	1%	2%	0%	4%	17%
Public development	17%	5%	5%	8%	6%	5%	10%	13%	28%	30%	9%	44%	33%	32%	40%	37%	48%	20%	23%
Socio-cultural expenditure	31%	71%	74%	69%	64%	68%	51%	62%	42%	37%	45%	38%	47%	46%	39%	43%	36%	51%	22%
General public services	43%	20%	16%	14%	15%	13%	21%	23%	18%	13%	13%	15%	16%	21%	20%	18%	16%	25%	38%

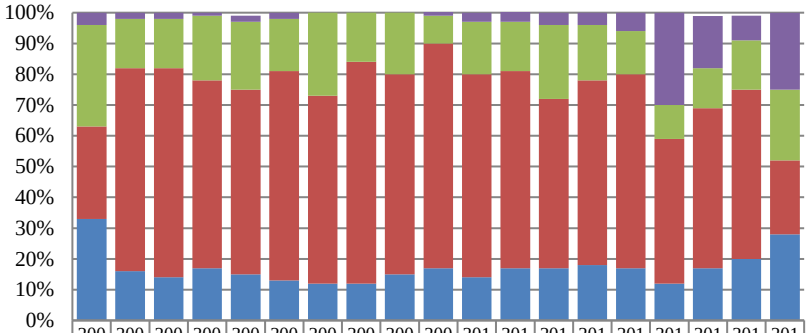
Figure 4. A. The evolution of total revenues and total expenditure in Tulnici and B. The share trend for each chapter of expenditure in Tulnici.

Data source: Ministry of Development, Public Works and Administration, 2023.

The revenues from the local public administration of Berca had a huge evolution between the years 2000-2018 (Figure 5A). In 2000, they were value of 5.088 RON, and in the last year of the analysis, they were 8.671.167, so almost two thousand times more. The evolution trend is almost the same for the expenditure. In the first year, they recorded a value of 5087 RON, and in 2018, a value of 9.946.764 RON. A peak for the revenues was registered in 2014, with 12.146.947 RON. In 2015 there was a peak of almost the same sum for expenses, which weren't corelated with the revenues. (10.012.038 RON for revenues and 12.199.651 RON for expenses). The total expenditure was divided into four major chapters, and the share of each chapter in the total was calculated (Figure 5B).



A.



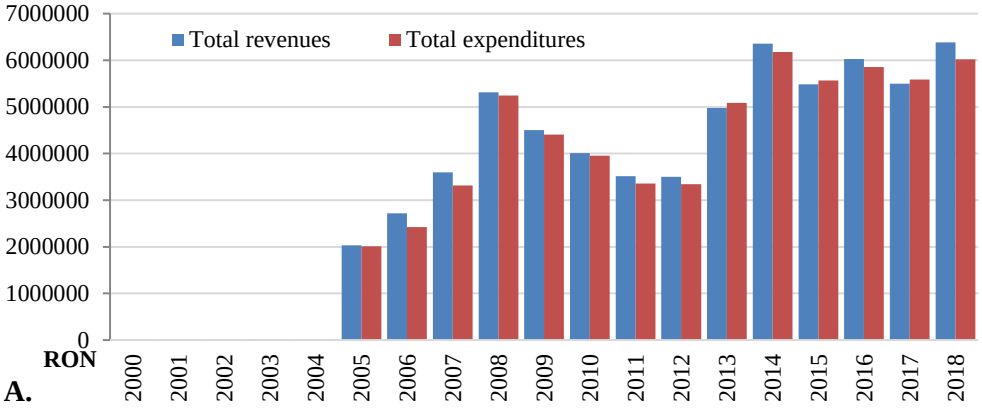
B.

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Economic actions	4%	2%	2%	1%	2%	2%	0%	0%	0%	2%	3%	4%	4%	4%	6%	30%	17%	8%	25%
Public development	33%	16%	16%	21%	22%	17%	27%	16%	20%	9%	17%	16%	24%	18%	14%	11%	13%	16%	23%
Socio-cultural expenditure	30%	66%	68%	61%	60%	68%	61%	72%	65%	73%	66%	64%	55%	60%	63%	47%	52%	55%	24%
General public services	33%	16%	14%	17%	15%	13%	12%	12%	15%	17%	14%	17%	17%	18%	17%	12%	17%	20%	28%

Figure 5. ***A****.The evolution of total revenues and total expenditure in Berca and* ***B****. The share trend for each chapter of expenditure in Berca*

Data source: Ministry of Development, Public Works and Administration, 2023

In the case of Lopătari, the revenues started at 1.408 RON in 2000 and reached their highest value in the last year at 6.385.433 RON (Figure 6A). The expenditure followed approximately the same trend as in the case of revenues, except the highest peak was reached in 2014, with 6.178.986 RON, and revenues of 6.358.694 RON. For Lopătari we also divided the total expenditure into four major chapters, and the share of each chapter in the total was calculated (Figure 6B).



A.

B.

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Economic actions	5%	0%	3%	4%	6%	1%	0%	0%	10%	4%	4%	2%	1%	24%	4%	5%	21%	3%	36%
Public development	5%	2%	2%	4%	5%	4%	4%	4%	1%	3%	6%	0%	1%	0%	0%	1%	1%	0%	0%
Socio-cultural expenditure	31%	80%	80%	77%	75%	75%	77%	77%	63%	71%	71%	71%	68%	57%	79%	72%	57%	70%	33%
General public services	58%	18%	16%	15%	14%	21%	19%	19%	27%	22%	19%	27%	31%	20%	17%	22%	21%	21%	31%

*Figure 6. **A**. The evolution of total revenues and total expenditure in Lopătari and **B**. The share trend for each chapter of expenditure in Lopătari*

Data source: Ministry of Development, Public Works and Administration, 2023

5.2 The economic analysis regarding the share of tourism in the local economy

Once the database was established, the share of tourism-related indicators in the overall economy of the targeted ATUs could be calculated. (Table 1, 2). Thus, with the resulting data, it was possible to generate the evolution graphs of the four indicators that characterize the tourism sector in the analysed ATUs (Figure 11, 12, 13, 14).

Table 1. Tourism companies/ turnover/ employees/ profit share trend for Soveja and Tulnici, 2000 –2018.

Year	SOVEJA				TULNICI			
	Companies (%)	Turnover (%)	Employees (%)	Profit (%)	Companies (%)	Turnover (%)	Employees (%)	Profit (%)
2000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

2001	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2002	3.7	1.8	0.0	0.0	0.0	0.0	0.0	0.0
2003	6.7	1.2	1.9	0.1	6.3	0.1	0.0	0.2
2004	6.7	1.2	6.2	0.0	4.6	1.4	2.0	6.3
2005	6.3	0.0	1.9	0.0	7.6	0.6	1.8	2.2
2006	6.5	1.7	1.6	1.3	10.0	1.3	1.6	1.0
2007	3.0	0.0	0.0	0.0	10.5	1.0	3.2	4.1
2008	2.9	0.1	0.0	0.0	9.6	1.5	3.4	2.6
2009	5.9	1.4	0.0	14.6	10.0	1.6	4.0	2.8
2010	5.6	0.4	0.0	0.0	9.5	0.6	5.0	0.0
2011	7.5	0.2	0.0	1.1	8.6	0.9	3.5	2.0
2012	5.7	0.4	1.8	0.7	8.3	0.6	3.5	0.5
2013	5.9	3.2	3.5	50.7	6.5	2.1	5.8	3.3
2014	6.3	1.6	0.0	2.7	6.9	1.2	4.2	1.3
2015	5.9	0.7	0.0	3.2	8.5	1.6	6.9	2.8
2016	6.3	2.1	5.0	11.2	10.3	1.8	10.1	3.1
2017	5.6	1.7	15.8	5.8	9.4	2.3	6.4	3.1
2018	6.1	2.3	7.1	0.0	8.9	4.6	6.1	13.0

Data source: Research Center for Integrated Analysis and Territorial Management, 2023.

Table 2. Tourism companies/ turnover/ employees/ profit share trend for Berca and Lopătari, 2000 –2018.

Year	BERCA				LOPĂTARI			
	Companies (%)	Turnover (%)	Employees (%)	Profit (%)	Companies (%)	Turnover (%)	Employees (%)	Profit (%)
2000	1.7	0.0	0.3	0.0	0.0	0.0	0.0	0.0
2001	1.6	0.0	0.4	0.0	0.0	0.0	0.0	0.0
2002	1.4	0.1	0.2	0.2	0.0	0.0	0.0	0.0
2003	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2004	2.3	0.0	0.1	0.0	0.0	0.0	0.0	0.0
2005	1.9	0.0	0.1	0.0	0.0	0.0	0.0	0.0
2006	2.6	0.0	0.1	0.5	2.3	0.0	0.0	0.0
2007	2.2	0.6	2.4	0.0	1.9	0.1	0.0	1.8
2008	1.9	1.2	2.3	2.2	3.0	0.2	0.0	0.0
2009	2.5	1.6	2.7	0.4	3.1	0.0	0.0	0.0
2010	2.1	2.8	3.1	0.3	3.0	0.0	0.8	0.0
2011	3.5	3.1	3.4	0.2	1.5	0.0	0.0	0.0
2012	2.7	4.1	3.0	0.4	1.6	0.0	0.0	0.0
2013	4.1	6.5	4.9	5.7	0.0	0.0	0.0	0.0

2014	4.5	6.8	5.8	3.0	0.0	0.0	0.0	0.0
2015	3.0	5.8	6.1	2.4	0.0	0.0	0.0	0.0
2016	1.8	4.9	7.3	1.4	0.0	0.0	0.0	0.0
2017	1.7	5.0	7.1	0.9	0.0	0.0	0.0	0.0
2018	1.8	4.2	6.3	0.8	0.0	0.0	0.0	0.0

Data source: Research Center for Integrated Analysis and Territorial Management, 2023.

In the first two years of analysis, the share of all indicators was zero; there was no active tourism company in Soveja. Starting with the year 2002, there was at least one tourism company at the level of Soveja until the end of the analysis period (Figure 7). The highest number of tourism companies was reached in 2011, when three such companies were active in the ATU. This is also the year with the highest value of the tourism companies share out of total companies, at 7.5%. The highest value of turnover resulting from tourist activities was 133.567 RON; this peak was reached in 2009. Even if the highest value of tourism turnover was in 2009, the biggest tourism turnover share was recorded in 2013 (3.2%). For the third indicator, the share reached its maximum value in 2017 with 15.8%, even if the biggest number of tourism employees was in 2004, when there were four such employees. The tourism profit share recorded the maximum in 2013, and the value of 50.7% stands out easily on the evolution graph (Figure 7). Even in the case of profit, the peak reached by the share does not match that reached by its own value, which was in 2009 with 80.654 RON.

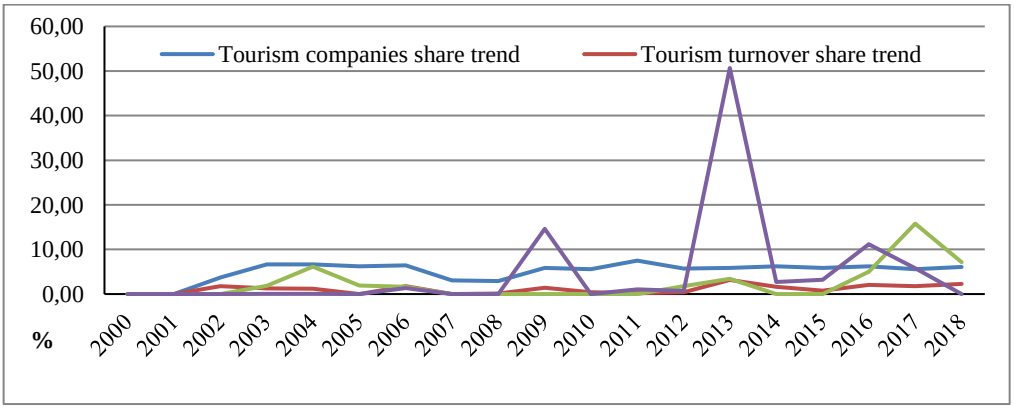


Figure 7. Tourism companies/ turnover/ employees/ profit share trend for Soveja, 2000 – 2018. Data source: Research Center for Integrated Analysis and Territorial Management, 2023.

In the case of Tulnici, the influence of the tourism sector on the local economy seems to be more prominent compared with the first ATU (Figure 12). If in the first year of analysis there was not even one active tourism company at the level of Tulnici ATU, starting in 2003, the tourism field began to exist for the local economy. In 2003, there were only two tourism companies, a value that changed to eleven in 2016 and nine in 2018. The tourism companies' share reached its maximum value in 2007 with 10.5%. For the second

indicator, the maximum value of the share was recorded in the last year, which is also the year with the biggest turnover of the entire period (1.881.747 RON). The number of tourism employees increased from zero in 2000 to twenty-two in 2016 and then decreased to twelve in 2018. The share of this indicator reached its peak in 2016 with 10.1%. For profit, the highest value was recorded in the last year with 862.282 RON, which represents 13% of the total (Figure 12).

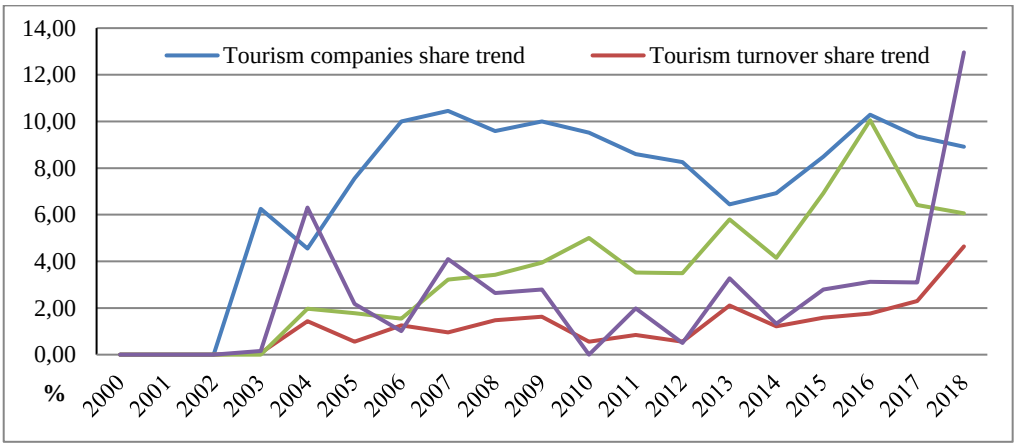


Figure 8. Tourism companies/ turnover/ employees/ profit share trend for Tulnici, 2000 – 2018. Data source: Research Center for Integrated Analysis and Territorial Management, 2023.

In the first two years of analysis, there was just one tourism company in Berca and didn't make any profit. Starting with 2006 there were three active tourism companies, which made profit, but had only one employee registered. The values kept growing until 2014, when it was the peak of the tourism companies share in Berca, with 7 tourism companies, and 29 employees, but with a profit of 78.647 RON, lower than in 2013, when there were only 6 companies, but made a profit of 120.518 RON, the highest from the recorded period and had 29 employees. The highest number of employees in tourism was in 2017, 33 persons in only 3 companies which made a profit of 63.772 RON and had a turnover of 4.644.181 RON, the highest one for Berca in the recorded period, which doesn't coincide with the highest turnover share (6.8%), which happened in 2014 (Figure 9).

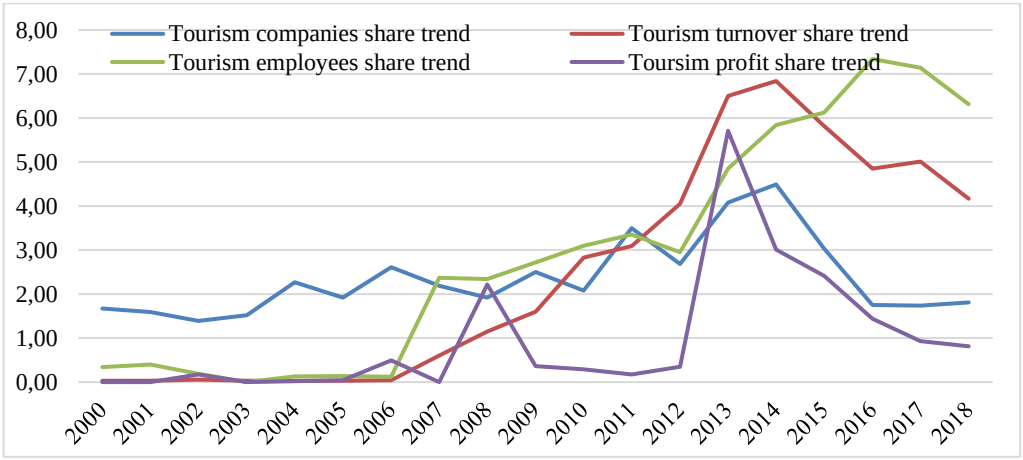


Figure 9. Tourism companies/ turnover/ employees/ profit share trend for Berca 2000 – 2018. Data source: Research Center for Integrated Analysis and Territorial Management, 2023

In the first six years for Lopătari, all the shares are 0, since there wasn't any tourism company active (Figure 10). The change came in 2006 when one tourism company was developed and the highest numbers were between 2008 and 2010 with two tourism companies, which made a profit only in 2007 with 12.666 RON. The highest turnover appears to be in 2008, 23.371 RON which coincides with the highest share of turnover (0,2%). There is only one employee in 2010, registered for the analyzed period.

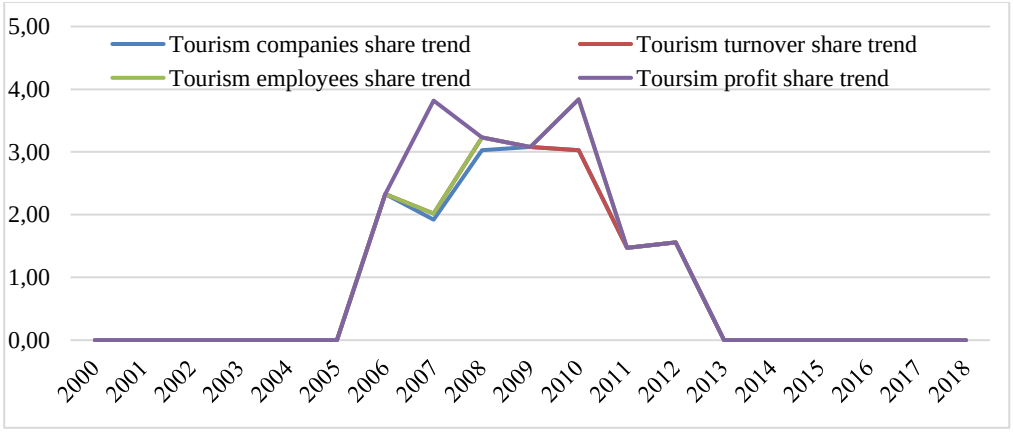


Figure 10. Tourism companies/ turnover/ employees/ profit share trend for Lopătari 2000 – 2018. Data source: Research Center for Integrated Analysis and Territorial Management, 2023

5.3 The relationship between the local public administration expenditure and the tourism sector

In order to correlate the evolution of the four expenditure chapters with the evolution of the tourism sector share, Pearson's Correlation Coefficient formula was applied, and the values presented in Table 3 and 4 resulted.

Table 3. The correlation coefficient between total expenditure trend/each expenditure chapter share trend and tourism sector share trend for Soveja and Tulnici, 2000 – 2018.

	Total expenditure	General public services	Socio-cultural expenditure	Public development	Economic actions
Soveja	0.1412	0.5090	-0.0452	0.0201	-0.1536
Tulnici	0.7675	0.0565	-0.5751	0.4941	0.1058

For the Vrancea county ATUs, it was found a strong correlation only in the case of the total expenditure trend with tourism sector share trend of Tulnici ATU. In the case of Soveja ATU, for the same data sets, no correlation resulted. Thus, for the four major expenditure chapters of Soveja ATU, three of the share trends (socio-cultural expenditure, public development, and economic actions) proved to have no correlation with the tourism sector share trend, and just one of them (general public services) turned out to have a moderate correlation (Table 3). For Tulnici ATU, two of the four major expenditure chapters share trends (general public services and economic actions) had no correlation, one has a weak correlation (public development) and one has a moderate correlation (socio-cultural expenditure).

The relationship between the evolution of total expenditure and the tourism sector share trend for both ATUs during the 19 years of analysis was determined with the help of the linear regression equation (Figure 11, 12).

Also, the relationships between the evolution of each expenditure chapter share and the tourism sector share trend were determined by using the same linear regression equation (Figure 17, 18, 19, 20, 21, 22, 23, 24).

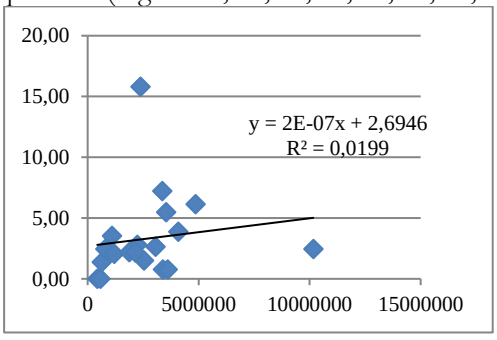


Figure 11. The relationship between the total expenditure trend and the tourism sector share trend for Soveja.

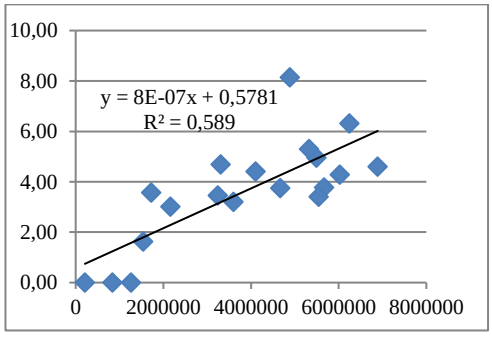


Figure 12. The relationship between the total expenditure trend and the tourism sector share trend for Tulnici.

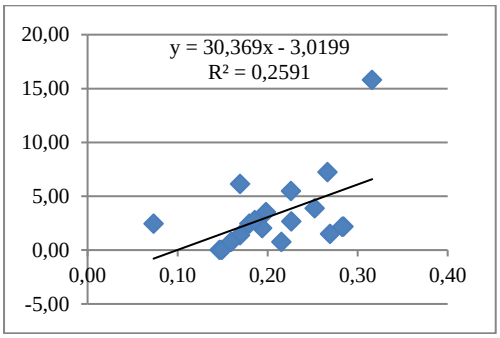


Figure 13. The relationship between the general public services expenditure share trend and the tourism sector share trend for Soveja.

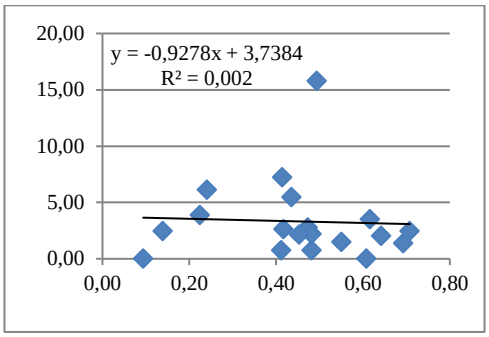


Figure 14. The relationship between the socio-cultural expenditure share trend and the tourism sector share trend for Soveja.

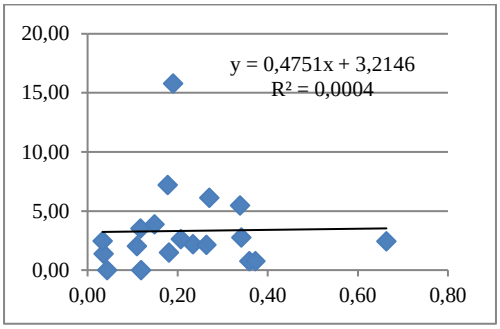


Figure 15. The relationship between the public development expenditure share trend and the tourism sector share trend for Soveja.

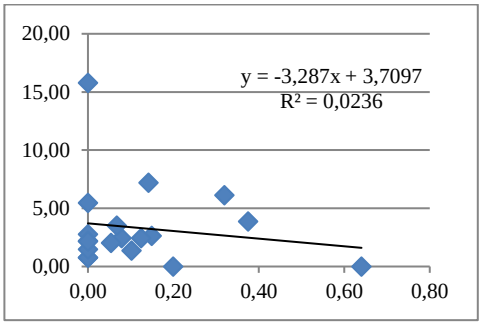


Figure 16. The relationship between the economic actions expenditure share trend and the tourism sector share trend for Soveja.

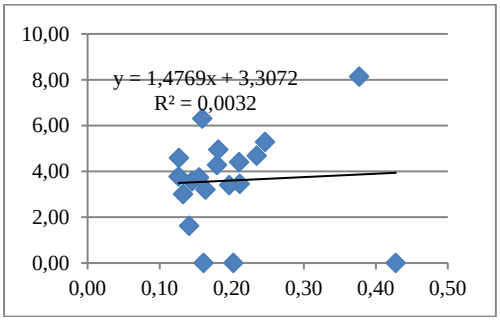


Figure 17. The relationship between the general public services expenditure share trend and the tourism sector share trend for Tulnici.

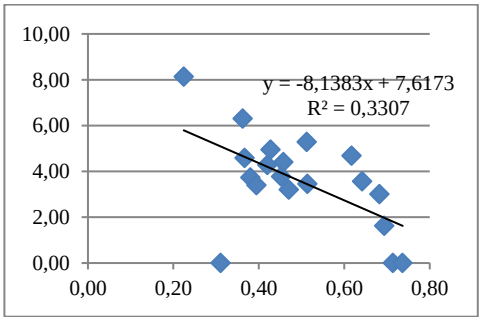


Figure 18. The relationship between the socio-cultural expenditure share trend and the tourism sector share trend for Tulnici.

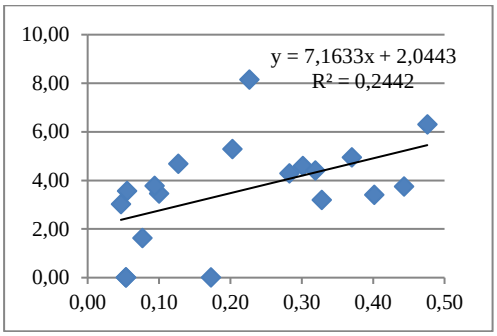


Figure 19. The relationship between the public development expenditure share trend and the tourism sector share trend for Tulnici.

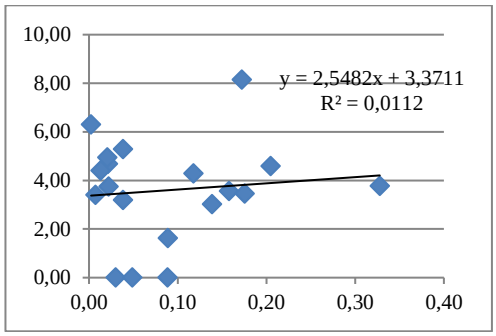


Figure 20. The relationship between the economic actions expenditure share trend and the tourism sector share trend for Tulnici.

Table 4. The correlation coefficient between total expenditure trend/each expenditure chapter share trend and tourism sector share trend for Berca and Lopătari, 2000 – 2018.

	Total expenditure	General public services	Socio-cultural expenditure	Public development	Economic actions
Berca	0,7833	0,0653	-0,2218	-0,3962	0,5554
Lopătari	0,1058	0,0082	0,1709	0,1182	-0,2574

In the case of Buzău county ATUs, it was found a strong correlation only in the case of the total expenditure trend with tourism sector share trend of Berca ATU. For Lopătari ATU, only the economic actions share trend has a weak correlation with the tourism sector share trend. No correlation resulted between three of the share trends (socio-cultural expenditure and public development) and the tourism sector share trend (Table 4). For Berca ATU, two of the four major expenditure chapters share trends (general public services and socio-cultural expenditure) had no correlation, one has a weak correlation (public development) and one has a moderate correlation (economic actions).

The relationship between the evolution of total expenditure and the tourism sector share trend for both ATU's of Buzău county during the 19 years of analysis was determined with the help of the linear regression equation (Figure 21, 22).

Both for Berca and Lopătari the relationships between the evolution of each expenditure chapter share and the tourism sector share trend were determined by using the same linear regression equation (Figure 23, 24, 25, 26, 27, 28, 29, 30).

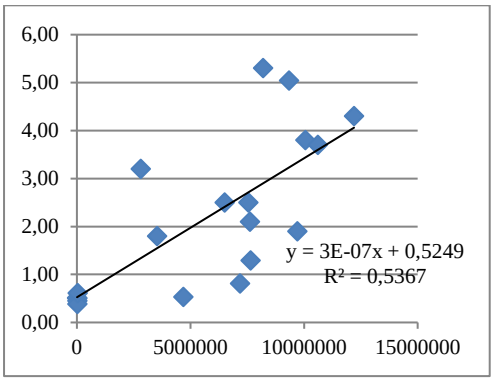


Figure 21. The relationship between the total expenditure trend and the tourism sector share trend for Berca

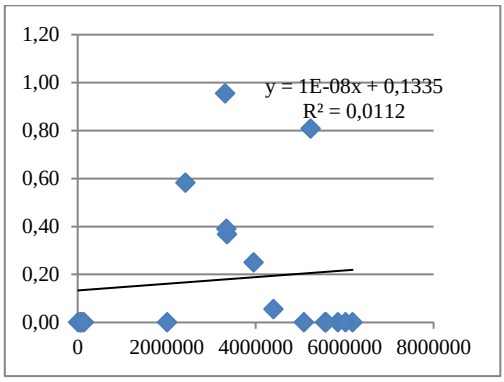


Figure 22. The relationship between the total expenditure trend and the tourism sector share trend for Lopătari

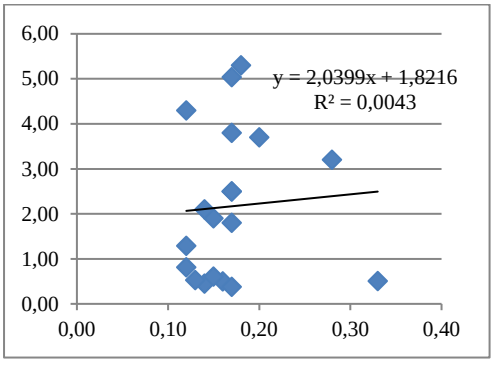


Figure 23. The relationship between the general public services expenditure share trend and the tourism sector share trend for Berca

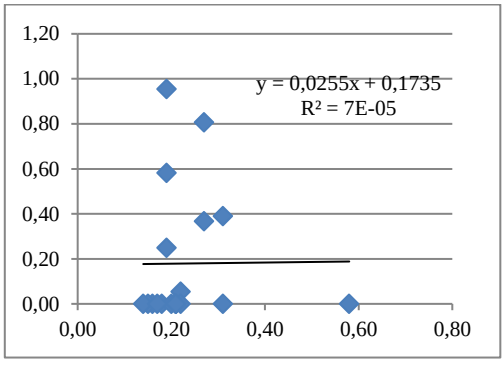


Figure 24. The relationship between the general public services expenditure share trend and the tourism sector share trend for Berca

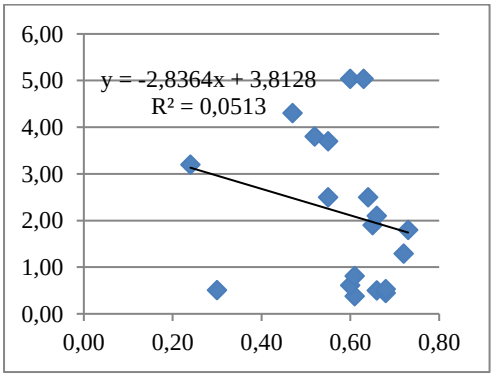


Figure 25. The relationship between the socio-cultural expenditure share trend and the tourism sector share trend for Berca

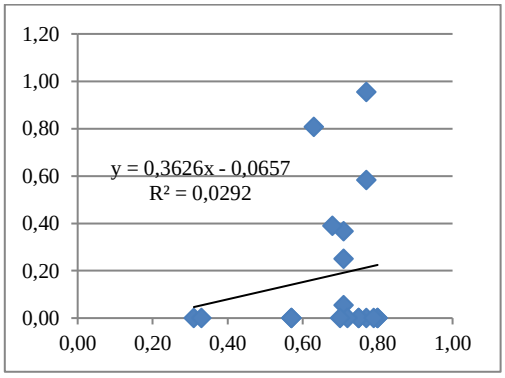


Figure 26. The relationship between the socio-cultural expenditure share trend and the tourism sector share trend for Lopatari

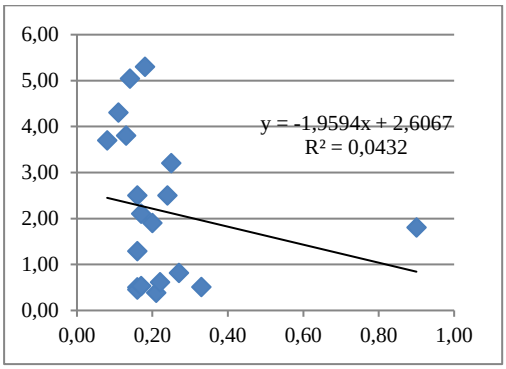


Figure 27. The relationship between the public development expenditure share trend and the tourism sector share trend for Berca

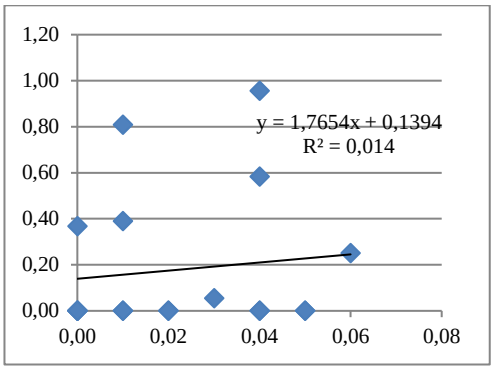


Figure 28. The relationship between the public development expenditure share trend and the tourism sector share trend for Lopătari

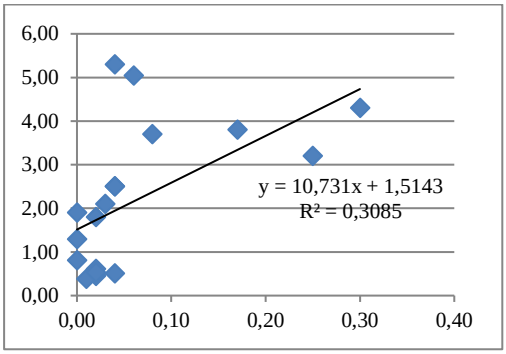


Figure 29. The relationship between the economic actions expenditure share trend and the tourism sector share trend for Berca

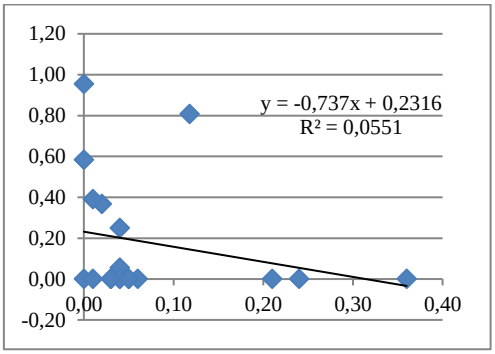


Figure 30. The relationship between the economic actions expenditure share trend and the tourism sector share trend for Lopătari

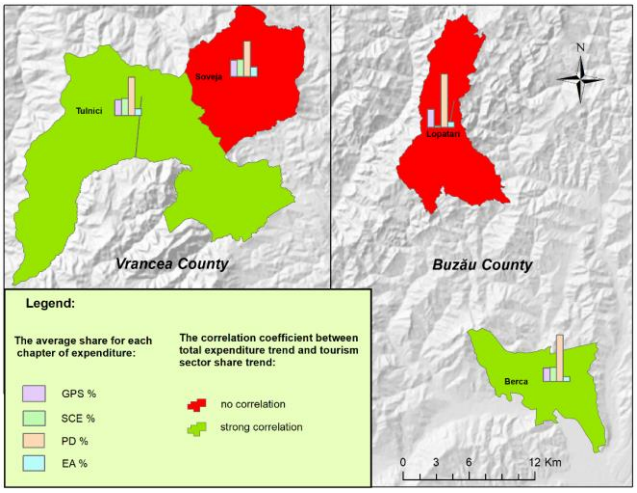


Figure 31. Visual comparison map - Soveja, Tulnici, Berca and Lopătari, 2000 – 2018

In the final part of the analysis, the visual comparison map of the four ATUs was made (Figure 31).

6. Discussion

The economic analysis of the four Administrative Territorial Units (ATUs)—Soveja, Tulnici, Berca, and Lopătari—highlighted how tourism impacts local economic development. In Soveja, tourism remains a minor component of the economy despite its potential, unlike Tulnici, where tourism has grown significantly over the past 19 years. The village of Lepşa in Tulnici has emerged as a key tourist destination in Vrancea County, benefiting from sustained growth in tourism.

In Buzău County, both Berca and Lopătari have seen positive tourism developments. Berca, in particular, has capitalized on its proximity to the Mud Volcanoes, which attract increasing numbers of visitors. There is a strong link between public administration spending and the tourism sector's growth, especially in Berca and Tulnici. However, no such correlation was found in Soveja, where public expenditures have had minimal influence on tourism.

The development of Buzău Land UNESCO Global Geopark has been a key driver for tourism in Berca and Lopătari. The success of this project reflects strong community engagement and strategic use of natural, cultural, and historical resources. In contrast, Soveja and Tulnici, though scientifically valuable, are not part of a geopark. This emphasizes the importance of community initiatives and focused public investment in driving tourism development.

The analysis further revealed differences in how public spending influences tourism. In Soveja, the lack of alignment between public expenditures and tourism needs has limited its economic impact. Instability in annual public spending has further hindered tourism from becoming a major economic force. In contrast, Tulnici's success is due to consistent public investment, particularly in Lepşa, where tourism has become a key economic driver. However, when socio-cultural expenditures dominate, they can negatively affect tourism growth, as seen in Tulnici, where a balanced approach is necessary.

Berca also demonstrated a strong correlation between public spending and tourism growth, with strategic investments in infrastructure supporting its rise as a tourist destination. Berca's success, especially around the Mud Volcanoes, highlights the importance of targeting public services that directly support tourism. Lopătari, on the other hand, showed no clear link between overall public spending and tourism growth, suggesting that public expenditures may not be adequately targeted toward tourism development. However, recent positive trends in socio-cultural spending suggest potential for future growth.

The creation of Buzău Land UNESCO Global Geopark began in 2007 through partnerships between the University of Bucharest and Buzău County Council, driven by strong community support. This bottom-up approach resulted in the geopark's formal establishment in 2020, and in 2022, it achieved UNESCO recognition. This initiative underscores the importance of local participation and strategic planning in promoting sustainable tourism.

The study's findings align with existing research that highlights the positive impact of targeted public investment on tourism, but it also adds new insights. In Tulnici and Berca, the correlation between public spending and tourism aligns with studies emphasizing infrastructure investment. However, the lack of correlation in Soveja and Lopătari suggests that inconsistent or poorly targeted spending can limit tourism's potential. Additionally, the negative impact of excessive socio-cultural spending in Tulnici offers a unique perspective, emphasizing the need for a balanced approach to public investment. Overall, this study contributes to understanding the relationship between public administration expenditures and tourism development at the local level, showing that strategic, consistent investment aligned with local needs is crucial for boosting tourism. Policymakers can learn from the success of the Buzău Land UNESCO Global Geopark project, which demonstrates how community-driven initiatives and well-targeted spending can lead to significant economic benefits from tourism.

7. Implications and further research

This paper examined the impact of public administration expenditures on tourism development in four ATUs in Vrancea and Buzău counties, revealing significant regional differences.

In Soveja, despite its tourist potential, the tourism sector remains underdeveloped, with public spending showing little impact, indicating a need for more targeted investment strategies. Tulnici, especially Lepşa village, displayed strong tourism growth linked to well-directed public spending, though the area's full potential remains untapped. Berca's tourism growth, driven by the Mud Volcanoes, highlights the role of natural attractions, while Lopătari showed mixed results, suggesting the need for more strategic spending. The success of Buzău Land's inclusion in the UNESCO Global Geoparks Network emphasizes the importance of community-driven initiatives and strategic partnerships in sustainable tourism development.

The methodology used together with other established methodologies in the fields of fractal analysis and territorial management (Peptenatu et al., 2012a, 2012b; Andronache et al., 2016; Diaconu et al., 2019; Grecu et al., 2019; Simion et al., 2021) can represent important elements in the development of effective management strategies for the sustainable use of local resources.

In summary, this paper underscores the need for tailored public spending strategies that consider local conditions and community involvement to effectively enhance tourism's role in local economic development.

The study has limitations. Relying on available data may exclude relevant variables like private investment or economic conditions. Focusing on four public expenditure categories may overlook other factors influencing tourism. Subjectivity in data interpretation and the study's limited scope—four ATUs in two counties—affect its generalizability. The 19-year period may not account for long-term trends like economic cycles or policy changes.

Future research should expand the study scope, explore additional variables, and use longer time frames. Qualitative research on community engagement, external factors, and the effectiveness of bottom-up approaches like the Buzău Land Geopark would

provide deeper insights. Further analysis of tourism's impact on other economic sectors within ATUs could also enhance understanding.

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