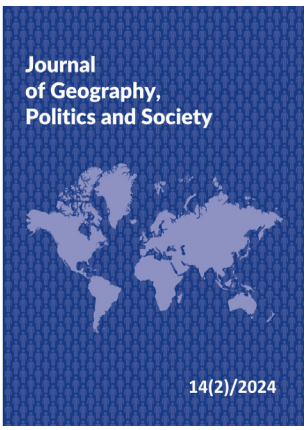

Journal of Geography, Politics and Society
2024, 14(2), 43–52
https://doi.org/10.26881/jpgs.2024.2.04

VALORIZATION OF ARCHEOTOURISTIC AXES IN TRANSILVANIA GIVEN BY ROMAN ROADS AND HYDROGRAPHIC AXES

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Citation
Gudea I.I., Pop C.C.., 2024, Valorization of archeotouristic axes in Transylvania given by the Roman roads and hydrographic axes, *Journal of Geography, Politics and Society,* 14(2), 43–52.

Abstract
In the last few years, history, culture and all the heritage that remained from the Antiquity has become an important factor in developing a type of tourism on the Romanian territory. This segment of tourism can be common in cities and big poles of development. Roman roads were built based on good geographical strategy. Most Transylvanian roads can be seen along main hydrographic axes crossing the rural part of the region. Based on the quantitative-qualitative method, which is common for tourism valorization, this research investigated specific indicators and sub-indicators. Moreover, one of the main purposes of the article was to highlight the fact that Roman road axes could be included in a sustainable development of archeotourism. In that case, the Hilary du Cross model was used with which each single road along the hydrographic axes was analyzed. Roman roads have long been studied in Romania and Transylvania, but no multidisciplinary research has been carried out that can highlight them in such manner, making them valuable for the culture.

Key words
archeotourism, axes, Roman roads, Transylvania.

Received: 31 May 2024 **Accepted**: 26 September 2024 **Published**: 31 December 2024

1. Introduction

Starting with the 4th century B.C. from the moment when the Roman conquests crossed the border of Italy, an exact program of building Roman roads was conceived and finalized with the aim of ensuring close geographical, economic and military connections that would civilize the various conquered regions and create cohesion. The construction of the Roman roads was carried out parallel to the new conquests and the concept applied by the Romans was that each of the known or conquered territories had to be linked to Rome (Fodorean, 2006).

1.1. Roman roads and history/archaeology

Roman roads acquired overwhelming importance in the history of the Empire from the moment when Rome became a true fountain of civilization, because their existence facilitated the systematic control of each province. These road axes gradually developed, branching and multiplying until, in the time of Emperor Domitian, Rome administrated 372 roads which today belong to 34 countries. In the imperial era, under Trajan domination, the length of the Roman road network was over 100,000 kilometers. Figure 1 provides a base example of the

overall picture of the Roman road network given by its importance. The classification of the Roman roads is vast and represents a very broad field of study. The complexity of the study is given by the connections that Roman roads have always had since they were intended only for military activities.

The roads ensured the unification of different settlements, reducing distances, and defined the Roman perception of space, giving cities an opportunity to interact with each other. All settlements created in the Roman Empire were developed in close connection with the road system or with the settlements that were close to the roads. Rural villas, cities, economic activities related to agriculture have always depended on the transport of people and goods. From this point of view, the road was a crucial element in the development of economic activities, agriculture and urban economy.

A look at the ancient language at this point is extremely useful, since it throws light on the economy and, more generally, on the civilization of Rome. Besides, this will enable understanding some of the very revealing place names, whose importance will be emphasized later.

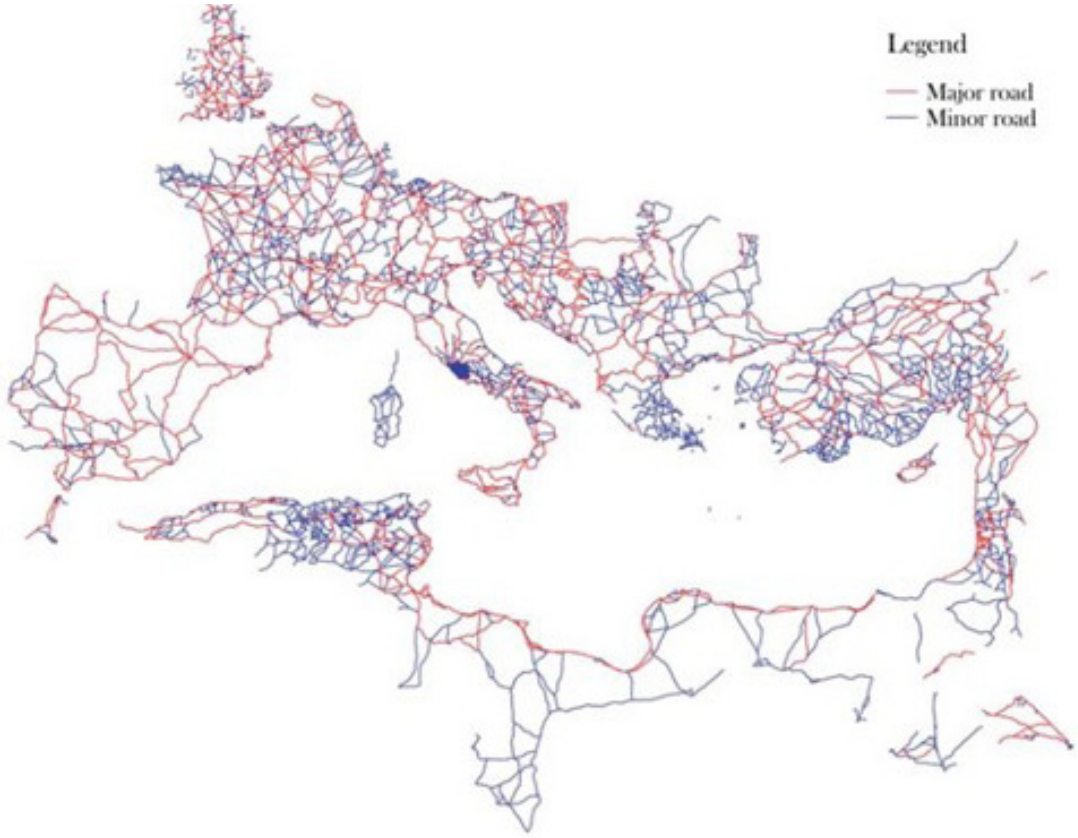

Fig. 1. Roman roads by importance: major and minor.
Source: DeBenedictis et al., 2018.

The roads in the Roman Empire were divided according to their nature:

- Via – a carriageway permitting two vehicles to pass;
- Vicus – a city street;
- Actus – a single lane road 1.2 m wide, originally used for riding animals;
- Agger – an embankment upon which a pavement was built;
- Ambulatio – a pedestrian town street;
- Clivus – A street on a hill;
- Pervium – a town street.

The word 'via' became used most commonly to denote long distance Roman roads and 'ruga' began to replace 'vicus' to describe town streets (Knapton, 1996).

In Romanian historiography, Nicoale Gudea attempted to classify the north-Danube road arteries. In his work entitled Porolissum. Vama romană. Monografie arheologică, he divided the roads into 3 categories: roads of major importance (primarily military roads which connected the camps and ensured rapid movement of troops from one place to another; commercial roads in general, ways of entry of import products and exit of products intended for export).

Secondary roads were generally those that connected main roads between different settlement and main arteries, rural settlements or roads that had acquired economic importance over time. Roads of lesser importance, branches that shortened distances on certain sections, roads built

by the owners of villas to have access to the main commercial roads (Fodorean, 2006).

As can be seen in Figure 2, the Roman road network is highlighted after the conquest of Dacia by the Romans. The main subject of this study is based on the roads in Transylvania located above the capital Sarmisegetusa, going north towards Apullum, Potaissa, Napoca to Porolissum and on the main roads on the Limes.

In other terms, to identify the Roman roads in Transylvania, based on the archaeological research made until today, types of Roman roads built in accordance with geographical aspects, relief and its benefits can be identified the on Transylvanian territory.

This paper mainly focuses on Roman roads in the Transylvania region, roads related to the major hydrographic axes.

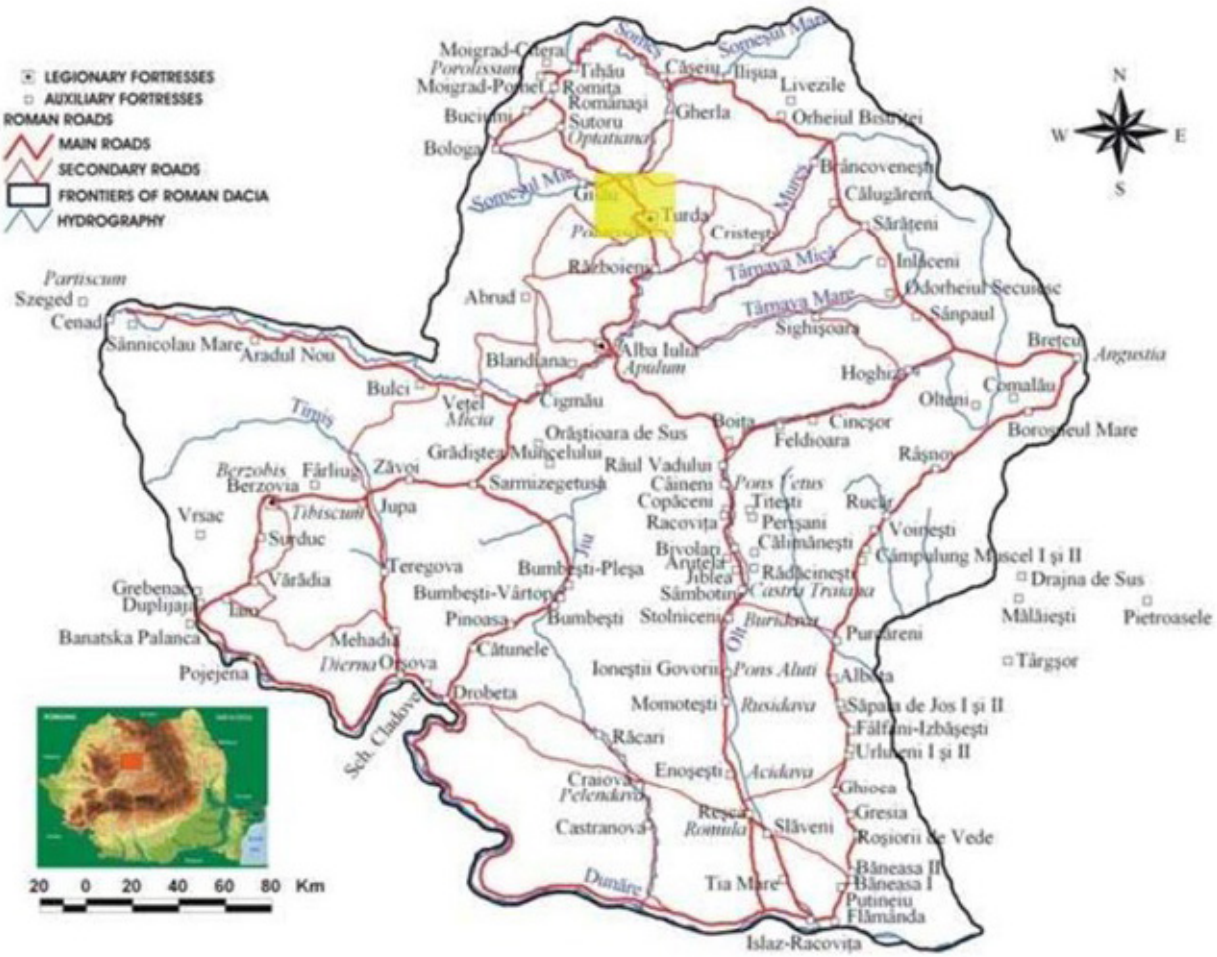

Fig. 2. Map of Roman Dacia.
Source: Fodorean et al., 2013.

1.2. Roman roads and geography

The relationship between Roman roads and geography may provide important information on why Roman roads are located in given areas and not in others, and on whether and how geography ruled the Roman road network. This adds another level of complexity to the issue of endogeneity discussed before. The omitted variables are one of the main sources of endogeneity, and to control for them helps avoid the drawbacks and weaknesses of inferential analysis. In an insightful paper, Ramcharan (2009) argues that landform can shape both the spatial distribution of the road infrastructure and economic activity within a country, and, if so, it represents a potential unobserved factor that is correlated with both road building and economic performance (DeBenedicts et al., 2018).

The geographical space analyzed in this article is the region of Transylvania. It can be considered the center of the orographic system of the Carpathian Mountains of Romania. Looking at the map of Europe, one can see how the arc of the Carpathian Mountains encompasses the middle of Romania, surrounding it like the outer wall of a circular fortress. Since ancient times, geographers and historians have described this region as "the mountainous crown of the Earth" (Mehedinți, 1986).

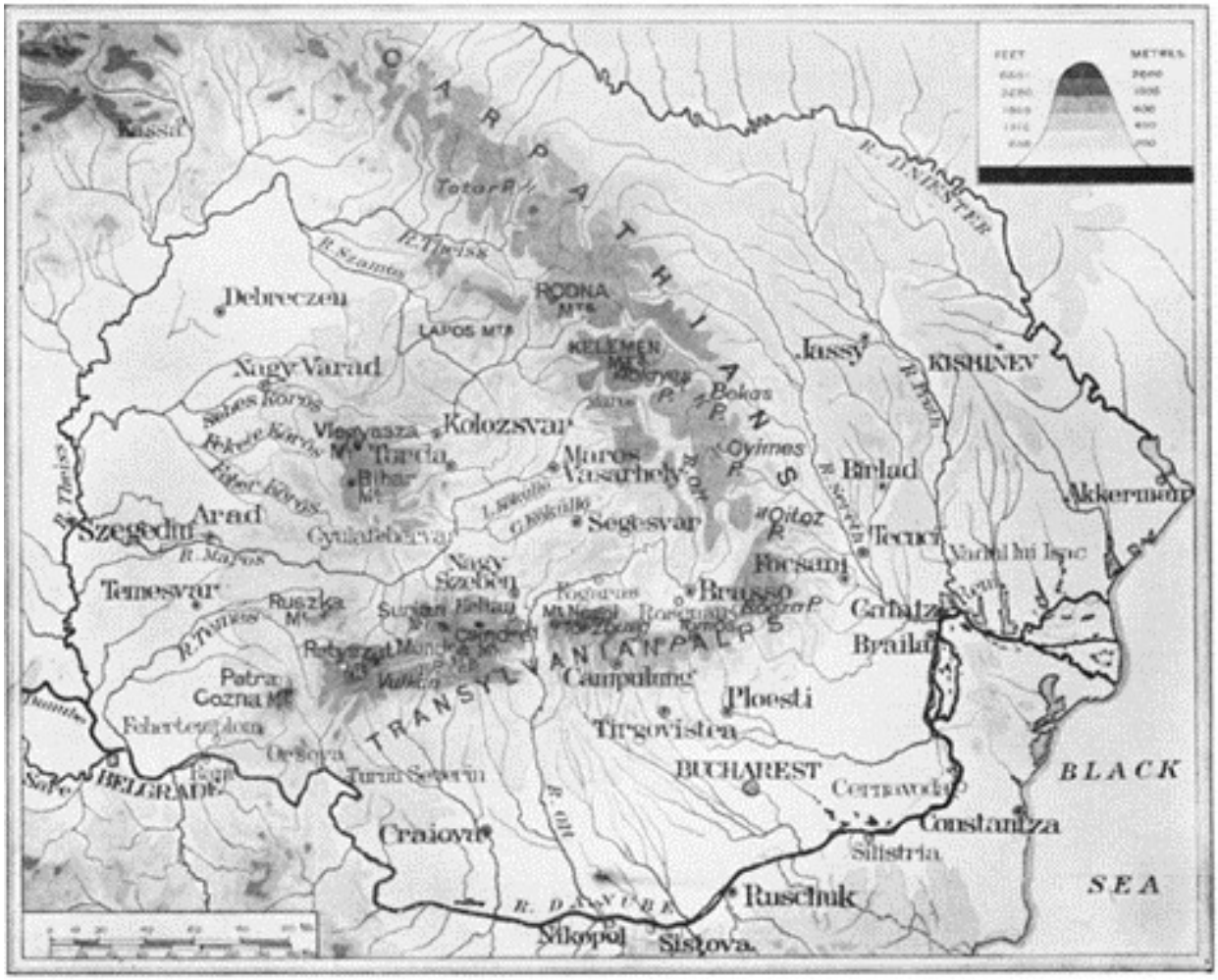

Fig. 3. Orographical sketch-map of Transylvania.
Source: Berry, 1919.

In order to make Transylvania's significance for the rest of Romania's territory even more obvious and explain why the Roman road network is situated here, the relief and the symmetry of the "natural fortress" in the Carpathians can be emphasized in Figure 3 and as follows:

- In its center there is a plateau of medium to high elevations;
- It is surrounded by mountain ranges with heights of more than 1000–15000 m from the central plateau;
- At the bottom of the mountains, on their outer side, ranges of hills decreasing in height follow, until they gradually merge with the outer plain;
- The plain itself is surrounded by a circle of waters and rivers: the Tisza, the Danube, the Black Sea and the Nistru river which form a circle surrounding the castles and fortresses dating from the ancient times.

The course of the Romanian rivers demonstrates most clearly that Transylvania is indeed the core of Romania. These terrestrial rivers make their way down to the plain that emerges from the Transylvanian Plateau where they originate and make their own ways to the surrounding mountains in a centrifugal manner (Mehedinți, 1986).

The study area for this research comprises the Transylvania Plateau and its major watercourses seen in Figure 4, which favored the development of the Roman roads network for military and commercial purposes.

The river Someș (Samus in Trajan's Dacia) springs from the mountains and follows its course to the north. Its "twin" branches (Someșul Mare and Someșul Mic) gather the streams and brooks of the Eastern Carpathian Mountains. This may mean that it attracts almost all the waters of Transylvania, and they flow together towards the low Tisa Plain. The Mureș river (the old Marisus) also gathers almost all of its waters from Transylvania to take them west, into the plains. It has no tributary once it reaches the plains. For the Romans, it was all but necessary to know the physical space and the territory they occupied or which they hoped to dominate, in order to overcome the obstacles posed by distance from the center of power to the periphery.

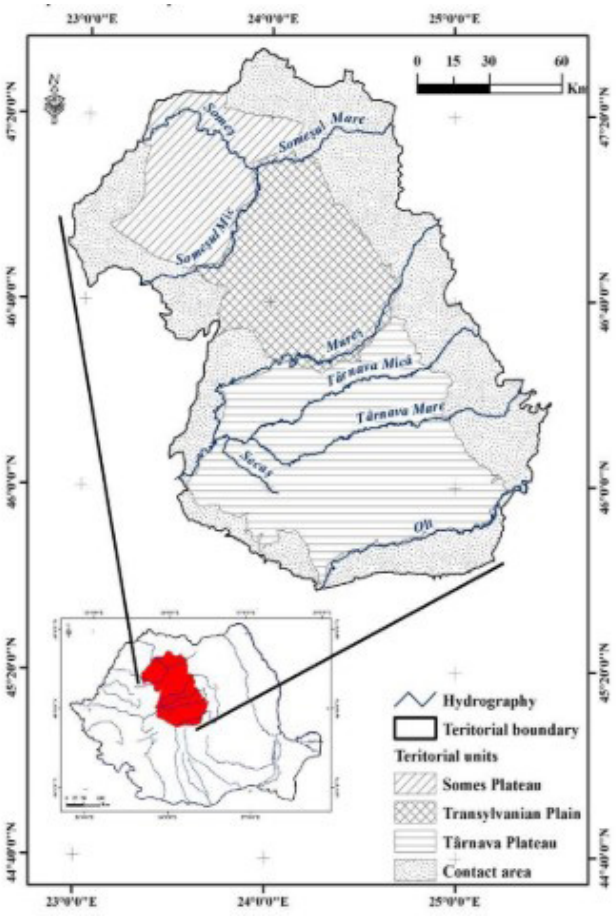

Fig. 4. Transylvania Plateau and its main watercourses.
Source: Petrea et al., 2014.

1.3. Roman roads and tourism

The road system created by the Romanians has favored an economic and social flow since Antiquity, in addition to the technical innovations they introduced over time. Because their roads created indispensable connections with everyday life, they unified a vast territory and were available to the entire Roman population, whether civilian or within the army. Since Antiquity, the Romans introduced the term travel because their roads were intended for commercial traffic, cultural trends, the transport of raw materials, things made by hand, people walking thousands and thousands of steps to get from one point to another, basically, traveling (practicing tourism). Yet, the biggest focus of the Romanian roads was indeed their military function. Throughout the last decades, Romanian roads have been the subject of many identification and valorization initiatives in order to bring back to the knowledge of their importance.

As part of international culture, archeological tourism has been gaining more and more interest throughout Europe in the last decade, becoming a point of interest for the current population that wants to know its past and history. The Roman roads as well as the traces of the roads can serve today an historic and cultural thematic route for a new type of tourism in continuous development.

The current work wants to bring a new contribution to the research of the specialists who dedicated themselves to the study of Roman roads together with those whose main subject of study is geography and its branches. The current study focuses on the research of limited space, namely the Transylvania region in Romania. Moreover, the work presents another very important legacy that the Romans left us after building the road network, namely, the economic role that we can benefit from. By means of the economic function that Roman roads offer, we can create a starting point for the development of archeotourism at the regional and national level in order to become as well-known as possible outside the country's borders.

So far, studies dedicated to Roman roads have mainly focused on the archaeological, historical-administrative and economic aspects. Much rarer are the works dedicated to the relationship between roads and tourism. Not all the road axes of the territory, however, will be taken into consideration, but only the most important ones for the tourism traffic.

2. Methodology and research methods

The subject of this article is multidisciplinary, covering knowledge from the field of history, geography and one of geography's branch, tourism, as the proposed 3 archeotouristic axes in Transylvania, Romania. The material of this research contains secondary data collected from specialized literature, bibliographic studies and other documents. The descriptive approach is used by presenting the research method.

The research is based on the quantitative-qualitative method which is commonly used in tourism valorification because it allows a fair amount of freedom in the evaluation based on indicators and sub-indicators (Božić, Berić, 2013). In the field of tourism there is no well-defined method of valorization.

Depending on the chosen subject, the indicators could differ, because the main aim is to establish the state of the existing resources and how to valorize them. It should be noted that in tourist valorization difficulties arise from the imperfection of the methodology used for the quantification of indicator values for valorization by giving them numerical scores. It should also be noted that different approaches lead to results with limited

reliability, since the assessment is based on the grader's subjective perception and evaluation, as is the case with this assessment (Božić, Berić, 2013).

The Hilary du Cros model is one of the scientifically recognized and complete models of tourist valorization of cultural resources. The main purpose of this model is to look at the possibility of including cultural objects in the sustainable development of tourism (Pobric et al., 2019).Du Cros introduced the process of tourist valorization of a destination, cultural tourist sub-indicators and the levels of their graduation, especially for the tourism sector and the cultural management sector (see Table 1).

Tab. 1. Hilary du Cros model for tourist valorization.

Tourism sector	Cultural management sector
Market attractiveness of cultural heritage	Cultural significance
Factors of importance in designing tourism product	Robustness

Source: Du Cros, 2000.

By their collection, the overall assessment of the sector of the management of the cultural goods is obtained. The obtained score is interpreted on the following scale: 0–20 (high sensitivity/small cultural value), 21–40 (medium sensitivity and cultural value) and 41–60 (low sensitivity/high cultural value). Based on the analysis, «the matrix of market appeal/robusticity» with 9 cells, marked by M (i, j) (i,j = 1,2,3) is constructed, as presented in Table 2 (Du Cros, 2000).

Tab. 2. The matrix of market appeal/robusticity.

Indicator	Market appeal			
Robusticity	Overall score	0–20	21–40	41–60
	0–20	M (3,1)	M (3,2)	M (3,3)
	21–40	M (2,1)	M (2,2)	M (2,3)
	41–60	M (1,1)	M (1,2)	M (1,3)

Source: Du Cros, 2000.

Cells are defined as follows:

- M (1,1) – high cultural significance/robusticity and low market appeal;
- M (1,2) – high cultural significance/robusticity and moderate market appeal;
- M (1,3) – high cultural significance/robusticity and high market appeal;
- M (2,1) – moderate cultural significance/robusticity and low market appeal;
- M (2,2) – moderate cultural significance/robusticity and moderate market appeal;
- M (2,3) – moderate cultural significance/robusticity and high market appeal;
- M (3,1) – low cultural significance/robusticity and low market appeal;
- M (3,2) – low cultural significance/robusticity and moderate market appeal;
- M (3,3) – low cultural significance/robusticity and high market appeal.

3. Results and discussion

In order to be more objective, three researchers participated in the ratings, in this case – the authors of the article. The average grades for robusticity of the above sub-indicators ranged between 13.5 and 21.5. The first limes Roman road has a total score of 13.5 (Table 3), the second one has as score of 14 (Table 4), and the section of the imperial road has an average of 21.5 grades (Table 5).

There are many cultural and tourist values to be analyzed in the study of the Roman roads given by the major hydrographic axes in Transylvania which testify about many stages of the Ancient history. Even if many of them are not well-maintained, the cultural heritage still exists. In this case, when the cultural heritage exists, the only thing that needs to be aroused is an interest in the fields.

In all three cases, the services that are related to tourism are almost non-existent even if access to the sites is relatively easy. The locations of the archaeological sites are favorable, and they can be accessed by car or on foot, and some of them are relatively close to railway stations.

The environment sub-indicator received high values, which means that the open area in which the archaeological sites are located is favorable, without high pollution, surrounded by forests and hills. A weak point in the analysis of these Roman roads is the fact that not all of them are considered an important national symbol. This means that even if it is a place with cultural heritage, it has not been sufficiently exploited to become known. The touristic axis Porolissum → Romita → Românași → Sutoru received almost high values in this sub-indicator due to the investments that were brought to the study of Porolissum area.

Concerning the final grades, we can identify 3 Roman road axes with touristic potential highlighted in Table 6. Two of them are limes axes and one of the axes is based on a part of the imperial Roman road. The first and the second axes are situated in the first part of result interpretation. That means that these axes have a low market appeal with high sensitivity and small cultural value. The third axis is framed in the moderate market appeal with medium sensitivity and medium cultural value.

Tab. 3. Grades for Limes Roman Road 1: Tihău → Căşeiu→ Dej → Ilişua

Grades (individual values)			
Sub-indicators	First researcher	Second researcher	Average grade
Market appeal			
Environment	**3**	**4**	**3.5**
Well-known outside the local area	**1**	**2**	**1.5**
An important national symbol	**0**	**1**	**1.0**
Differentiation from other objects	**2**	**1**	**1.5**
Attractive for special activities	**1**	**1**	**1.0**
Complementary with other tourism types	**1**	**2**	**1.5**
Tourist activities in the region	**3**	**1**	**2.0**
The destination is associated with culture	**1**	**1**	**1.0**
Overall rating	**12**	**13**	**12.5**
Important factors for forming tourist product			
Access to cultural heritage	**3**	**3**	**3.0**
Close to other cultural attractions	**2**	**3**	**2.5**
Service availability in the area	**2**	**1**	**1.5**
Additional facilities in the area	**1**	**1**	**1.0**
Overall rating	**8**	**8**	**8.0**
Cultural significance			
Esthetic value	**2**	**1**	**1.5**
Historical value	**3**	**3**	**3.0**
Scientific research value	**3**	**2**	**2.5**
Uniqueness of the cultural place	**3**	**2**	**2.5**
Overall rating	**8**	**8**	**8.0**
Robusticity			
Sensitivity	**2**	**2**	**2.0**
Actual state of the cultural place	**2**	**1**	**1.5**
Potential for investing	**4**	**5**	**4.5**
Existence of a management plan	**2**	**1**	**1.5**
Monitoring and maintenance	**2**	**2**	**2,0**
Possibility of negative impact of visitors on the physical condition of the heritage assets	**1**	**2**	**1.5**
Possibility of negative impact of modification on the physical condition of the cultural assets	**1**	**2**	**1.5**
Overall rating	**14**	**15**	**14.5**
Total rating	**42**	**44**	**43.0**

Source: Authors' own elaboration.

Tab. 4. Grades for Limes Roman Road 2: Războieni Cetate → Cristeşti → Brâncoveneşti

Grades (individual values)			
Sub-indicators	First researcher	Second researcher	Average grade
Market appeal			
Environment	**4**	**4**	**4.0**
Well-known outside the local area	**3**	**3**	**3.0**
An important national symbol	**1**	**2**	**1.5**

Differentiation from other objects	**2**	**2**	**2.0**
Attractive for special activities	**2**	**1**	**1.5**
Complementary with other tourism types	**3**	**1**	**2.0**
Tourist activities in the region	**2**	**1**	**1.5**
The destination is associated with culture	**1**	**2**	**1.5**
Overall rating	**18**	**16**	**17.0**
Important factors for forming tourist product			
Access to cultural heritage	**3**	**2**	**2.5**
Close to other cultural attractions	**0**	**2**	**1.0**
Service availability in the area	**2**	**1**	**1.5**
Additional facilities in the area	**1**	**1**	**1.0**
Overall rating	**6**	**6**	**6.0**
Cultural significance			
Esthetic value	**1**	**2**	**1.5**
Historical value	**2**	**3**	**2.5**
Scientific research value	**3**	**1**	**2.0**
Uniqueness of the cultural place	**3**	**2**	**2.5**
Overall rating	**9**	**8**	**8.5**
Robusticity			
Sensitivity	**2**	**2**	**2.0**
Actual state of the cultural place	**3**	**2**	**2.5**
Potential for investing	**4**	**4**	**4.0**
Existence of a management plan	**0**	**1**	**0.5**
Monitoring and maintenance	**1**	**0**	**0.5**
Possibility of negative impact of visitors on the physical condition of the heritage assets	**2**	**2**	**2.0**
Possibility of negative impact of modification on the physical condition of the cultural assets	**1**	**2**	**1.5**
Overall rating	**13**	**13**	**13.0**
Total rating	**46**	**43**	**44.5**

Source: Authors' own elaboration.

Tab. 5. Grades for the part of the imperial Roman Road: Porolissum → Romita → Românași → Sutoru

Grades (individual values)			
Sub-indicators	First researcher	Second researcher	Average grade
Market appeal			
Environment	**4**	**4**	**4.0**
Well-known outside the local area	**4**	**4**	**4.0**
An important national symbol	**3**	**4**	**3.5**
Differentiation from other objects	**2**	**3**	**2.5**
Attractive for special activities	**2**	**1**	**1.5**
Complementary with other tourism types	**2**	**2**	**2.0**
Tourist activities in the region	**3**	**3**	**3.0**
The destination is associated with culture	**2**	**3**	**2.5**
Overall rating	**22**	**24**	**23.0**
Important factors for forming tourist product			
Access to cultural heritage	**4**	**4**	**4.0**

Close to other cultural attractions	**2**	**3**	**2.5**
Service availability in the area	**3**	**2**	**2.5**
Additional facilities in the area	**3**	**2**	**2.5**
Overall rating	**12**	**11**	**11.5**
Cultural significance			
Esthetic value	**4**	**4**	**4.0**
Historical value	**3**	**4**	**3.5**
Scientific research value	**3**	**4**	**3.5**
Uniqueness of the cultural place	**4**	**3**	**3.5**
Overall rating	**14**	**15**	**14.5**
Robusticity			
Sensitivity	**3**	**4**	**3.5**
Actual state of the cultural place	**4**	**4**	**4.0**
Potential for investing	**4**	**5**	**4.5**
Existence of a management plan	**2**	**3**	**2.5**
Monitoring and maintenance	**3**	**3**	**3.0**
Possibility of negative impact of visitors on the physical condition of the heritage assets	**2**	**2**	**2.0**
Possibility of negative impact of modification on the physical condition of the cultural assets	**2**	**2**	**2.0**
Overall rating	**20**	**23**	**21.5**
Total rating	**66**	**73**	**69.5**

Source: Authors' own elaboration.

Tab. 6. Interpretation of the market appeal and robusticity

Axis	Robustness
Tihău → Căşeiu → Dej → Ilişua	M (3,1)
Războieni Cetate → Cristeşti → Brâncovenești	M (3,1)
Porolissum → Romita → Românași → Sutoru	M (2,2)

4. Conclusions

The values indicated in the tables in this study only reflect the reality to which discoveries from Antiquity are subjected. Roman roads have long been studied in Romania and Transylvania, but no multidisciplinary research has been carried out that can highlight them in such a manner as in our study. Through the present work, we wanted to create the archeotourism axes of the Roman roads along the main watercourses in Transylvania in order to emphasize the necessity of these archaeological discoveries.

It has been demonstrated that the cultural value is at a fairly low level, but through the potential of these archeological tourist axes, archaeological destinations can become an important element in what this country has to offer. The quality of the management of the spaces but also the need for investment in the tourist infrastructure can change the path of these things, so that the archaeological cultural patrimony could be visible at the national and international level.

The main problem facing the archaeological discoveries in the 3 axes is closely related to the lack of vision and strategies for the development of tourism. Even if the results obtained from the examination of the touristic valorization of the axes were average or favorable for one destination out of 3, it reflects a hope for the growth and development of this type of tourism. Therefore, it is necessary to adopt a new tourist strategy, a long-term plan that will be able to improve the level of the tourist infrastructure.

Because all these 3 axes are closely related to geography, they are located next to the main watercourses in Transylvania, not a random choice by the Romans when they built them. This creates an advantage for investors who can benefit from the location of these roads and create a complete visiting circuit.

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