



Original article

Motives for visiting the Krzemionki Archaeological Museum and Reserve in Świętokrzyskie Mountains (Poland) and its associated image as a post-mining tourist product

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ABSTRACT

Post-mining areas are increasingly being adapted as cultural and educational tourist attractions, contributing both to the preservation of industrial heritage and to regional development. The aim of this article is to identify the motives for visiting and to examine the perceived image of post-mining areas as a tourist attraction, using the case of the Krzemionki Archaeological Museum and archaeological-nature reserve. By “perceived image” the study understands visitors’ affective impressions and cognitive evaluations of the site. In the theoretical section, the broader term “tourism product” is used to denote the composite bundle of attractions, infrastructure, accessibility, services and experiences, whereas in the empirical part the Krzemionki site is treated as a tourist attraction within its destination. The study employed the diagnostic survey method. It was found that the main motive for visiting the Neolithic striped flint mines was the desire to learn and expand knowledge about prehistoric flint mining, Neolithic communities and their cultural heritage. Furthermore, the image the Museum formed among all visitors was strongly positive and did not significantly differ between the studied groups. A strong, positive image of the examined tourist attraction can become a hallmark of the region and contribute to its socio-economic development, especially for visitors from Ostrowiec County in the Świętokrzyskie region and those from outside the region.

KEY WORDS: tourist motives, cognitive image, emotional image, tourism product, UNESCO heritage, post-industrial revitalisation

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1. Introduction

Mining activities leave numerous technogenic (man-made) features in the landscape. The surface of Poland is dotted with sites where mineral resources have been extracted, particularly in the southern part of the country. These post-mining elements of the landscape serve as a tangible testimony to the country’s industrial history. Their presence reminds people of the industrial heritage of a given region and helps to build a local cultural identity. Thanks to various preserved elements of the mining landscape,

which are an important part of the national cultural heritage, it is possible to foster conscious and responsible attitudes towards such heritage items.

Post-mining landscape features can form the foundation for developing attractive tourism destinations, such as museums or themed tourist trails. Their appropriate utilization allows for the revitalization of post-industrial regions and the creation of appealing, diverse tourist attractions. The development of cultural tourism, including industrial tourism, can act as a catalyst for local development, combining economic, social, and cultural

objectives. However, for this effect to be long-lasting and sustainable, strategic actions are required to build a strong, positive image of tourist destinations related to industrial heritage. A positive image can support socio-economic development. Success in this area largely depends on the level of institutional quality (POTOCKA, 2011), expressed not only through the richness of the attraction, but also its accessibility, quality of service, development, and the sense of safety. A strong, positive image of a tourist destination can become a recognizable trademark of the region.

This research aims to identify and compare the emotional and cognitive image of a tourist attraction related to the industrial heritage of the Świętokrzyskie region in south-eastern Poland, namely the Krzemionki Archaeological Museum and Reserve, as formed by visitors from both Ostrowiec County (the second-level unit of local government and administration in Poland, located within this region) and from outside the region. The study seeks to answer the following research questions:

- What are the differences in the motives for visiting the Krzemionki Archaeological Museum and archaeological-nature reserve between visitors from Ostrowiec County and those from outside the region?
- What are the emotional and cognitive images of the Krzemionki Archaeological Museum and archaeological-nature reserve among its visitors?
- What are the differences in the emotional and cognitive images of the post-mining area between its visitors from Ostrowiec County and those from outside the region?

2. Theoretical foundations

Currently, the world is witnessing the dynamic development of cultural tourism. Cultural tourism can be defined as a set of tourists' behaviours related to their genuine interest in cultural heritage and participation in broadly understood contemporary cultural life (KOWALCZYK, 2008). Its development corresponds with a shift from 3S tourism (Sun, Sand, Sea) to 3E tourism (Entertainment, Excitement, Education). Within this concept, travellers seek not only traditional leisure but also activities that provide entertainment as well as opportunities to acquire new knowledge and experiences. One of the most dynamically developing forms of cultural tourism is industrial tourism, which involves visiting areas where mines and industrial plants have historically developed, as well as objects and facilities related

to technical and industrial development, and museums of technology and industry that form part of a region's cultural heritage (DEREK, 2010). A distinguishing feature of this form of tourism is the presence of motives associated with the visitors' need for self-fulfillment, such as the desire to develop interests or broaden their knowledge.

Tourist motives are an important factor shaping the attractiveness of a tourist reception area (KOZIOŁ, 2012). Tourist motives should be understood as the main reasons and needs that prompt people to travel outside their everyday environment. When linked to human needs, it is assumed that a motive is a mechanism, or a set of internal mechanisms, that cause and organize human actions in order to satisfy their needs (PRZECŁAWSKI, 1996).

Most classifications of tourist motives are based on psychological theories. For example, DANN (1977), considering Maslow's hierarchy of needs, distinguished two groups of factors motivating participation in tourism. The first includes factors prompting tourist activity (push factors), while the second concerns factors influencing destination choice (pull factors). This concept was expanded by CROMPTON (1979), who identified nine types of tourism motivation divided into two groups. The first comprises socio-psychological factors that prompt tourism activity (push motives), such as escape from the surrounding world, self-discovery and evaluation, relaxation, prestige, return, strengthening family bonds, and establishing social interactions. The second group consists of pull motives, which include novelty, innovation, and learning. In Polish subject literature, the concept of MIDDLETON (1996) is often cited – he distinguished six main motives for tourism participation: cultural, psychological, and educational motives; physiological and physical culture-related motives; social and ethnic motives; motives related to fun and entertainment; religious motives; and work-related motives (KOZIOŁ, 2012). For the purposes of this study, this concept was used to construct the survey questions, which addressed the motives for visiting the Archaeological Museum and Reserve at Krzemionki.

At present, there is no single, universally accepted definition of a destination image in the literature. A review of existing definitions suggests that it is most often described as: a set of beliefs, opinions, and impressions about a given place (ECHTNER & RITCHIE, 2003; as cited in KAMIŃSKA ET AL., 2021), a synthesis of all information from various channels (ASSAEL, 1984; as cited in KAMIŃSKA ET AL., 2021), or

as mental associations a person has regarding a place (BALOGLU & MCCLEARY, 1999; as cited in KAMIŃSKA ET AL., 2021). BALOGLU & MCCLEARY (1999; as cited in DUDEK-MAŃKOWSKA, 2011) distinguished two groups of factors that contribute to image formation. The first includes individual socio-demographic and psychological characteristics. The second encompasses external factors, such as prior experience with the destination or sources of information about it. Many researchers agree that image is the core and driver of the tourism system; it promotes and motivates travel-related decisions and consumption (BALOGLU & MCCLEARY, 1999; DIAZ-RODRIGUEZ ET AL., 2013). Identifying the image of a tourism destination among visitors may serve as the foundation for developing a strategic promotional plan and for building a strong tourism brand (FAKEYE & CROMPTON, 1991). A positive image of a destination can increase the number of tourists and visitors, enhancing the tourism multiplier effect, which contributes to the economic development of a region (MURZYN-KUPISZ, 2014). Furthermore, a strong, positive tourism product image can foster the region's social development by shaping a sense of local cultural identity (MURZYN-KUPISZ & DZIAŁEK, 2013; MURZYN-KUPISZ, 2014).

This research adopts the perspective that a tourism product image is a set of impressions, statements, and beliefs about a place, resulting from individual perception (GARTNER & HUNT, 1987; HALLMANN ET AL., 2015). The image is analyzed in two parts: emotional (affective) and cognitive. The emotional image refers to individual feelings and impressions toward the tourism product (PIKE & RYAN, 2004; WALAS, 2009), while the cognitive image is based on information about the objective features of the place – an evaluation of its resources and tourist attractions (PIKE & RYAN, 2004; WALAS, 2009). It is assumed here that a significant factor shaping the image of the Krzemionki Archaeological Museum and Reserve is the visitor's experience, whether they come from the region where the post-mining area is located or from outside of it.

In academic literature, the term "tourism product" is variously defined. Most often, it is described as a set of goods and services used during travel and stays outside a tourist's permanent place of residence (GOŁEMBSKI, 2002). According to FIJAŁKOWSKI (2003), the existence of strong tourist attractions is crucial to the creation of a tourism product. He emphasizes that tourist attractions form the product nucleus, which only becomes an actual product in an

economic sense when combined with appropriate infrastructure and services.

In Polish literature, a frequently cited definition is that of MIDDLETON (1996), who stated that the tourism product is a package of tangible and intangible elements based on the potential for leisure activities at a destination. He identified five core elements of the package: tourist attractions and environment of the destination, infrastructure and services, destination accessibility, its image, and price. PANASIUK (2019) critically viewed these ideas, arguing that "the tourism product should be strictly treated as an offer that is part of a market supply, forming the basis for trade transactions." Accordingly, the image of the destination should not be considered a part of the tourism product. Similarly, price and accessibility (which is an extension of infrastructure and services) should be excluded. In defining a tourism product, PANASIUK (2019) emphasizes the need to distinguish between objective and psychological approaches. The former focuses on tangible components such as goods and services, while the latter highlights travellers' subjective feelings and images of a place – referred to as the "environment" of the tourism product. These two approaches complement and reinforce each other, as both are based on the same elements comprising the tourism product structure (PANASIUK, 2019). This structure includes two categories: goods and infrastructure (including both core attractions and complementary tourist facilities), and tourism services (WODEJKO, 1998).

An alternative concept of the tourism product was proposed by KACZMAREK ET AL. (2010). Their approach includes not only physical attractions and services, but also opinions, stereotypes, and emotional associations related to the region. The above-mentioned authors, citing the views of MEDLIK (1995), distinguished between the tourism product in the strict sense (*sensu stricto*) and in the broad sense (*sensu largo*). The product in the strict sense is the set of goods and services offered to tourists (the tourism package). The product in the broad sense includes not only the purchased services and goods, but also the entire set of experiences of the tourist related to the journey, from the moment of leaving home to the moment of returning, integrating individual elements into a coherent experience. In this approach, the tourism product constitutes a multidimensional phenomenon encompassing perception, the image of the destination, its reputation, and even the cultural myths associated with it. In this context, the destination's image, reputation, and even cultural

myths can be integral components of the product. Similar views, combining tangible and psychological components in defining tourism products, are also supported by [DZIEDZIC \(1998\)](#) and [MARCISZEWSKA \(2010\)](#).

[KACZMAREK ET AL. \(2010\)](#) also classified tourism products where they drew attention to its structure, which includes the essence (core) of the product, the actual product, and the augmented product. The essence of the tourism product is an intangible dimension covering tourists' needs, such as cognitive or leisure-related needs. The actual product contains the basic elements of the tourist package, while the augmented product includes additional services within the tourist offer that increase its attractiveness. Moreover, they also categorized the tourism product into simple products, which lack complicated structure and consist of single services or material goods (e.g., a service, thing, object, event), and complex products, characterized by multidimensionality and a more intricate structure (e.g., event, trail, place). From the literature review, it is evident that definitions of tourism products have evolved from material-based to more holistic and experience-oriented understandings.

For the purposes of this study, a tourism product is defined as a set of goods and services intended to meet tourists' needs, created through the combination of tourism assets with infrastructure and service offerings. The essence of this concept lies in its complexity and multifaceted nature. Understood in this way, a product is not only an object of physical consumption but also a carrier of emotional, cultural, and symbolic values. It is assumed that the Krzemionki Archaeological Museum and Reserve constitutes a tourism product in the "facility" category, comprising the Neolithic striped flint mines as the main attraction, the surrounding reserve area, complementary goods and infrastructure (tourist facilities), and clustered tourist services, all located in one place.

3. Source materials and methods

To achieve the stated objective, a research procedure was carried out following the scheme described below. In the first phase of the study, information was collected on the emotional and cognitive image formed among tourists visiting the Krzemionki Archaeological Museum and Reserve. For this purpose, the diagnostic survey method was applied, conducted using a questionnaire ([APANOWICZ, 2002](#)). It consisted of multiple-choice questions

concerning the motives for visiting the complex of Neolithic striped flint mines. It consisted of multiple-choice questions concerning the motives for visiting the complex of Neolithic striped flint mines. The questionnaire also contained 21 statements and a demographic section. Six statements referred to the emotional image (Table 4), while fifteen related to the cognitive image (Table 5). A 5-point Likert scale was used for the response to the statements, where 1 indicated complete disagreement with the truth of the statement, 3 was a neutral point, and 5 indicated full agreement. The decision to use a 5-point scale was based on the reasoning that it does not compromise measurement precision and helps reduce response dispersion ([SZTABIŃSKI, 2003](#); [WALESIAK, 1996](#)). The research sample was selected using the Convenience Sampling Technique, in which respondents are recruited primarily based on their availability. The survey was conducted at the Archaeological Museum on July 16–17, 2022, during the centenary celebrations of the discovery of the striped flint mines at Krzemionki, on a sample of 347 tourists. The socio-demographic characteristics of the respondents are presented in Table 1.

Table. 1. Socio-demographic structure of the respondents
(Source: Authors' own compilation)

Attribute	Number of respondents	Share (%)
Gender		
Women	181	52.2
Men	166	47.8
Place of residence		
Ostrowiec powiat	121	34.9
Outside of powiat	226	65.1
Total	347	100

In the next step, the reliability of the questionnaire was verified using Cronbach's alpha coefficient. This coefficient can range from 0 to 1, with values closer to 1 indicating high reliability. The minimum acceptable threshold for a reliable survey is 0.6 ([HAIR ET AL., 1988](#)). For the questionnaire used in this study, the coefficient was 0.92, indicating high reliability.

Subsequently, the emotional and cognitive image of the Krzemionki Archaeological Museum and Reserve shaped by tourists and visitors was determined. The research results were presented as a comparative percentage summary of response

variability across the respective respondent groups. In describing the findings, the mean value and standard deviation were also used. Then, parametric null hypotheses were tested, assuming that the image perceived by the studied groups was neutral. This was verified using the Student's t-test. In order to compare the image formed within specific respondent groups (residents of Ostrowiec County and tourists from outside the region), as well as their motives for visiting the Krzemionki Archaeological Museum and Reserve, Spearman's rank correlation coefficient was applied to the ranked mean scores and percentage distributions of responses for the two groups.

4. Tourist product – The Krzemionki Archaeological Museum and Reserve

The main components of the actual product, as basic elements of the tourism package offered at the site under study and serving as its primary attraction, are the unique complex of Neolithic striped flint mines – considered the largest and best-preserved group of its kind in Europe and the oldest underground mine in Poland – as well as the Archaeological Museum. The physical and geographical location of Krzemionki highlights the unique setting of this monument on the north-eastern edge of the Świętokrzyskie (Holy Cross) Mountains, in central Poland, about 8 km northeast of Ostrowiec Świętokrzyski. The mining complex is situated within the Świętokrzyskie Voivodeship, in the Szydłów Upland area, between the River Kamienna and the Sandomierz Upland, in a landscape typical of loess hills and undulating terrain (Fig. 1).

Mining operations took place from around 3900 to 1600 BCE and covered an area of approximately 78 hectares (DOKTOR, 2013). Krzemionki is a site where authentic mine workings over five thousand years old have been preserved. Their uniqueness lies not only in the scale and number of shafts but also in the exceptionally well-preserved underground corridors and visible traces of activity by ancient communities. The entire mining complex stretches over a zone approximately 4.5 kilometers long and up to 25 metres wide, within which more than 4,000 mining shafts have been identified. These shafts reach depths ranging from 2 to even 9 metres, and their diameters range from 1 to 9 meters. Branching corridors and extraction chambers extend from the shafts, some only a few dozen centimeters high – evidence of the determination and skill of early

miners (DOKTOR, 2013; PIOTROWSKA ET AL., 2014). At Krzemionki, striped flint – an exceptionally valued raw material during the Neolithic period – was mined and used in the production of tools such as axes, chisels, and arrowheads. Particularly remarkable are the preserved traces of miners' work, including imprints of their tools, fragments of wooden supports, and numerous abandoned tools made of horn and bone. Archaeological research has shown that flint mining here continued for over a millennium, and materials extracted from the site reached territories located hundreds of kilometres away. This confirms the significance of Krzemionki as a major centre for the production and distribution of stone tools in prehistoric times (BABEL, 2015; DOKTOR, 2013; PIOTROWSKA ET AL., 2014). The exceptional value of the Krzemionki mines also lies in the preservation not only of the mining shafts themselves but also of the entire Neolithic mining landscape, including spoil heaps, pit depressions, and remains of settlements linked to mining activities. As such, Krzemionki is not only a valuable archaeological site but also an outstanding example of a prehistoric industrial landscape unique on a global scale. Mining activities ceased only during the Bronze Age, when the importance of flint products declined. For thousands of years, the abandoned workings remained hidden within the forests that eventually grew over the spoil heaps and shafts (DOKTOR, 2013). The mining landscape preserved at Krzemionki – complete with spoil heaps, shaft depressions, and traces of Neolithic settlements – turns the site into both a significant archaeological treasure and a rare testimony to the prehistoric industrial landscape (BABEL, 2015).

An underground tourist route, several hundred meters in length, leads visitors through the original mine workings, offering direct contact with the material heritage of the Stone Age. The opportunity to descend into authentic Neolithic mines, observe tools, mining marks, and the layout of underground corridors makes Krzemionki a globally exceptional site and an exemplary case of integrating heritage conservation with educational and tourism activities.

A particularly significant milestone in acknowledging the site's value was its 2019 addition to the UNESCO World Heritage List. This designation was made during the 43rd session of the World Heritage Committee in Baku. Krzemionki joined the ranks of the most valuable cultural heritage sites in the world. The inscription highlighted the uniqueness and excellent preservation of the Neolithic striped flint mines and their immense significance for under-

standing prehistoric mining and stoneworking techniques, as well as the functioning of Stone Age communities in Central Europe (UNESCO, 2019). The UNESCO designation significantly raised Krzemionki's international profile and contributed to intensified efforts in protecting, promoting, and educating the public about this extraordinary site.

The elevation of Krzemionki to World Heritage status led to a strong emphasis on developing tourist infrastructure and enhancing the site's functionality. As a result, the reserve and museum are now not only centres of scientific research but also modern tourist products, offering comprehensive and comfortable visiting conditions for a broad spectrum of audiences. The site's tourist infrastructure includes a modern museum facility, designed to comprehensively accommodate different types of visitor groups. From

the moment visitors arrive, they have access to a spacious lobby with information points, ticket offices, and relaxation areas. The interior of the museum houses both permanent and temporary archaeological exhibitions showcasing artifacts related to flint mining, as well as multimedia presentations and interactive educational stations that illustrate the everyday lives of prehistoric inhabitants. The museum area blends seamlessly with the surrounding reserve: educational trails run through the former mining zone, allowing observation of the mining landscape, a reconstruction of a prehistoric settlement, and a megalithic tomb. This setup enables visitors not only to explore the original mines but also to understand the social and economic context within which these mines functioned during the Neolithic period.



Fig. 1. Geographical location of the Archaeological Museum and "Krzemionki" Reserve (Source: compiled by Starus, 2025)
1– location of Krzemionki; 2 – mesoregions of the Kielce Upland; 3 –microregion boundaries; 4 – selected rivers

The underground tourist route is equipped with modern lighting and ventilation systems, ensuring safety and comfort – even for visitors with limited mobility. On the surface, the site features a wide range of recreational infrastructure: designated rest areas, scenic viewpoints, sheltered zones to protect against inclement weather, as well as extensive sanitation and parking facilities. The entire development strategy takes into consideration the needs of various visitor

groups, including families with children, elderly, people with disabilities, as well as school or academic groups, for whom special educational and workshop programs have been designed.

Various services complement the main attraction of the site. They enrich the overall experience and improve the quality of a visit. They form elements of the augmented product. At the museum, there is a guiding system available for both individual and

group tours, with multiple thematic routes and language options. The educational offering includes numerous thematic workshops, presentations, and hands-on activities designed for children, youth, and adults. Outdoor events are also organized, such as historical fairs, prehistoric craft demonstrations, archaeological performances, scientific conferences, and seminars. Additionally, the museum houses a souvenir shop where visitors can purchase items inspired by local heritage, scientific publications, and replicas of striped flint tools and jewellery (*Museum of Historical and Archaeological Heritage in Ostrowiec Świętokrzyski*, 2025).

To provide appropriate visitor amenities, the site also features seasonal food stands offering drinks and snacks, and access to local dining options in the surrounding area. There is also a reservation system in place for handling organized groups, including the preparation of thematic programs and services in foreign languages. An important aspect of the museum's operations is its cooperation with academic and educational institutions, including the organization of conferences and the publication of archaeological and geotourism research findings (JEDYNAK, 2023).

Today, the Krzemionki Archaeological Museum and Reserve represent a functionally developed simple tourism product (attraction/site), integrating cultural heritage preservation with educational activities and public accessibility. The site possesses extensive tourist infrastructure, a diverse educational offering, and a system of supporting services tailored to the needs of visitors with various expectations. As a result, both its actual and augmented products

enable the implementation of versatile museum, educational, and informational initiatives consistent with the character of modern cultural heritage sites.

5. Results

5.1. Motives for visiting the Krzemionki Archaeological Museum and Reserve and sources of knowledge about it

Travel motives reflect the individual needs and expectations of tourists. Understanding why people travel allows us not only to better understand their behavior but also to observe the evolving approach to tourism. There is a growing interest in travel motives that go beyond relaxation, recreation, and entertainment, encompassing also a desire for deeper knowledge and exploration of the places visited. These trends are reflected in the results of the survey conducted among visitors to the Krzemionki Archaeological Museum and Reserve. The findings show that the most frequently cited travel motive (around 40%), both among visitors from Ostrowiec County and from outside the region, was the desire to learn and expand one's knowledge. Spending leisure time with family or friends (20%) and resting or relaxing (approximately 18%) were less dominant motives. The least important reason cited was the desire to meet new people (0.5%) (Table 2). The calculated Spearman's correlation coefficient (0.9) indicates a high degree of similarity in visit motives between visitors from Ostrowiec County and those from outside the region.

Table 2. Visit motives for Krzemionki Archaeological Museum and Reserve (Source: authors' own elaboration)

Motive desire to learn and expand knowledge	Visitors from Ostrowiec County		Visitors from outside the county		Visitors overall	
	Number	%	Number	%	Number	%
	78	38.4	143	38.0	221	38.2
Spending time with	39	19.2	77	20.5	116	20.0
Relaxation and recreation	35	17.2	71	18.9	106	18.3
Interest in archaeology	10	4.9	41	10.9	51	8.8
Entertainment, fun	16	7.9	27	7.2	43	7.4
Experiencing the site's unique	24	11.8	15	4.0	39	6.7
Desire to meet new people	1	0.5	2	0.5	3	0.5
Impressing others/trend-following	0	0.0	0	0.0	0	0.0
Total	203	100	376	100	579	100

Note: As respondents could select more than one option, the total number of responses exceeds the number of participants.

5.2. The image of the Krzemionki Archaeological Museum and Reserve as a tourist product

Null hypothesis verification procedures confirmed that both local visitors from Ostrowiec County and guests from outside the region had a positive perception of all emotional and cognitive image components of the Krzemionki Archaeological Museum and Reserve (Table 3). This indicates that the overall image of this Neolithic post-mining site, as shaped by the respondents, was strongly positive.

Additionally, the calculated Spearman's correlation coefficient score of 0.8 suggests that the image of the Krzemionki Archaeological Museum and Reserve

did not significantly differ between visitors from within and outside Ostrowiec County.

Minor differences appeared in the average Likert scale scores and the percentage shares of positive (somewhat agree, strongly agree) or negative (strongly disagree, somewhat disagree) responses. In all cases, evaluations of the individual statements were significantly higher than the neutral point on the Likert scale (Tables 4, 5).

For the emotional image, respondents from Ostrowiec County rated statements between 4.58 (S2) and 4.82 (S5), while those visitors from outside of the county rated it between 4.25 (S1) and 4.64 (S6) (Table 4).

Table 3. Results of verification of the null hypotheses regarding visitors from Ostrowiec County and those from outside of the county [Source: authors' own elaboration]

Statements	Tourists/visitors overall	Tourists/visitors from Ostrowiec powiat	Tourists/visitors from outside Ostrowiec powiat
	Significance level – 0.05; m = 3; critical value (t) = 1.98		
	Empirical values of the Student's t-test		
Emotional image (Affective dimension)			
S-1	30.78	30.06	20.56
S-2	34.70	23.97	26.01
S-3	47.83	27.18	39.46
S-4	40.42	28.72	30.02
S-5	50.07	35.69	37.24
S-6	49.11	42.03	34.62
Cognitive image (Cognitive dimension)			
S-7	11.98	8.48	8.76
S-8	31.00	21.53	23.16
S-9	32.96	23.67	24.32
S-10	46.05	33.55	33.96
S-11	34.41	19.93	28.07
S-12	36.90	23.59	28.65
S-13	26.75	16.23	21.13
S-14	17.64	13.80	12.59
S-15	33.29	21.24	25.84
S-16	34.26	21.24	26.98
S-17	55.46	36.06	42.74
S-18	50.72	30.41	40.73
S-19	32.16	19.58	25.55
S-20	22.16	16.35	16.03
S-21	21.38	14.37	16.14

m – null hypothesis

wk – critical value read from the Student's t-distribution table

More information on the differences in the image of the Krzemionki Archaeological Museum and Reserve among respondents from Ostrowiec County and from outside the county is provided by analysis of the percentage shares of positive and negative responses. Based on this analysis, it can be observed that residents of Ostrowiec County demonstrated a slightly higher level of loyalty toward the examined tourist product than visitors from outside the area. This is evidenced by a higher percentage of local respondents than non-local ones agreeing with the statements (S1) “I will visit Krzemionki again” (respectively: approx. 93%, approx. 82%) and (S2) “I will encourage others to visit Krzemionki” (respectively: approx. 91%, 89%) (Table 4). The atmosphere during the visit (statement S3 – “The atmosphere during the visit was appropriate for me”) was rated slightly better by visitors from outside the county. 96% of them agreed with this statement, compared to just over 94% of local respondents

(Table 4). The positive atmosphere during the visit is also reflected in responses to the statement (S4) “During my visit to Krzemionki, I spent my time the way I like”. Just over 93% of Ostrowiec County residents and just over 90% of visitors from outside the county agreed with it. Visitors’ mood is also reflected in their sense of safety (S6 – “I felt safe during the visit”). In this case, a more significant difference between the analyzed respondent groups was recorded. It can be seen that a larger percentage of respondents from Ostrowiec County (approx. 97%) than from outside the county (93%) rated this aspect positively (Table 4). An important element in the evaluation of the emotional image formed among visitors to the Krzemionki Archaeological Museum and Reserve is the perceived importance of the tourism product for European culture (S5). This was rated slightly higher by residents of Ostrowiec County (approx. 96%) than by visitors from outside the county (94%) (Table 4).

Table 4. Comparative summary of response variability regarding the emotional image of tourists/visitors from Ostrowiec County and from outside the county (Source: authors’ own elaboration)

Do you agree with the following statements? (data in %)						Measures	
Category (tourists/visitors from:)	Definitely not	Rather not	Neither agree nor disagree	Rather yes	Definitely yes	Mean	Standard deviation
S 1 – I will visit Krzemionki again							
Overall	1.2	2.0	10.9	27.4	58.5	4.40	0.85
Ostrowiec powiat	0.0	0.8	5.8	17.4	76.0	4.69	0.62
Outside of the powiat	1.8	2.7	13.7	32.7	49.1	4.25	0.91
S 2 – I will encourage others to visit Krzemionki							
Overall	0.3	3.5	6.9	26.8	62.5	4.48	0.79
Ostrowiec powiat	0.0	2.5	6.6	21.5	69.4	4.58	0.72
Outside of the powiat	0.4	4.0	7.1	29.6	58.9	4.42	0.82
S 3 – The atmosphere during the visit was appropriate for me							
Overall	0.3	0.6	4.0	28.8	66.3	4.60	0.62
Ostrowiec powiat	0.0	1.7	4.1	26.4	67.8	4.60	0.65
Outside of the powiat	0.4	0.0	4.0	30.1	65.5	4.60	0.61
S 4 – During my visit to Krzemionki, I spent my time the way I like							
Overall	0.3	0.8	7.5	30.0	61.4	4.51	0.70
Ostrowiec powiat	0.0	0.0	6.6	27.3	66.1	4.60	0.61
Outside of the powiat	0.4	1.3	8.0	31.4	58.9	4.47	0.74
S 5 – The Krzemionki Archaeological Museum and Reserve are important sites for European culture							
Overall	0.9	0.6	4.0	13.5	81.0	4.73	0.64
Ostrowiec powiat	0.8	0.0	3.3	8.3	87.6	4.82	0.56
Outside of the powiat	0.9	0.9	4.4	16.4	77.4	4.69	0.68
S 6 – I felt safe during the visit							
Overall	0.3	1.4	3.7	18.2	76.4	4.69	0.64
Ostrowiec powiat	0.0	0.0	2.5	16.5	81.0	4.79	0.47
Outside of the powiat	0.4	2.2	4.4	19.1	73.9	4.64	0.71

In relation to the cognitive aspect of the image of the Krzemionki Archaeological Museum and Reserve, the Likert scale values were significantly higher than the neutral point (3). Among visitors from Ostrowiec County, scores ranged from 3.95 (S7) to 4.77 (S18), and for visitors from outside the county, similarly to the emotional aspect of the image, the scores were slightly lower, ranging from 3.77 (S7) to 4.7 (S17) (Table 5). No significant differences were observed in the cognitive image of the Krzemionki Archaeological Museum and Reserve as a tourist product between local visitors and those from outside of the county. It can be stated that the image was perceived only slightly more favourably by local residents than by non-local visitors (mean for all statements on the Likert scale: 4.45 for locals; 4.35 for non-locals).

Respondents from both groups gave the lowest scores to the availability of information about Krzemionki (Likert scale average: Ostrowiec County – 3.95; outside of the county – 3.77). Locals rated this aspect of the image more favourably than visitors from other areas. For statement (S7) "Information about Krzemionki is easily accessible", just over 70% of local visitors agreed, compared to just under 64% from outside of the region (Table 5).

Information available on-site was rated higher. For statement (S12) "The availability of tourist information and signage (e.g., information boards, direction signs) is appropriate", more than 92% of Ostrowiec County residents and nearly 89% of visitors from outside the region agreed (Table 5).

The knowledge and communication skills of the guides leading the museum and mining route tours were rated very high. This aspect was assessed more positively by visitors from Ostrowiec County. For statement (S9) "The guides presented knowledge in an accessible and engaging way", nearly 93% of locals and just over 85% of visitors from outside the region agreed. For statement (S10) "The guides possessed extensive knowledge about the mines and Neolithic culture", almost 96% of locals and just over 91% of non-local visitors agreed (Table 5).

Both groups expressed positive opinions about the organization of the tours. For statement (S11) "The organization of the visit was of a high standard", around 89% of both local and outside visitors agreed. The pricing of tickets and services was also assessed

positively (S8), though locals perceived prices as more appropriate than visitors from other regions (Table 5).

A strongly positive image was also recorded among both local and non-local visitors regarding the site's infrastructure (statements S13–S17). Approximately 81% of respondents from each group expressed a positive opinion about the availability of rest areas and shelter from rain and sun (S13). The vast majority of respondents also agreed with the following statements: (S14) "During the visit, a sufficient number of parking spaces was provided"; (S15) "There was adequate access to public toilets during the visit"; (S16) "The organizers provided a sufficient number of trash bins"; and (S17) "The museum and reserve area is clean." In all these cases, the proportion of respondents agreeing with the respective statements was slightly higher among residents of Ostrowiec County than among visitors from outside the county (Table 5).

Similarly, a slightly more favourable image of the Krzemionki Archaeological Museum and Reserve among local visitors compared to non-local visitors was noted in the evaluation of the surrounding tourist infrastructure (S20, S21). The largest difference in this regard concerned the perception of available accommodation. For statement (S20) "There is a sufficient number of accommodation options available in the area", over 79% of locals agreed, compared to 66.5% of visitors from outside the region (Table 5). A smaller difference appeared in the assessment of dining options. For statement (S21) "There is a sufficient number of dining establishments in the area", around 78% of local visitors and about 73% of non-local visitors responded positively.

Both groups of respondents did not differ significantly in their assessment of transportation accessibility to the Krzemionki Archaeological Museum and Reserve. Among both Ostrowiec County residents and other respondents, approximately 94% agreed with statement (S18) "Getting to Krzemionki is not difficult" (Table 5). The availability of various souvenirs was also rated highly. Approximately 86% of respondents from each group agreed with statement (S19) "A variety of souvenirs was offered during the visit" (Table 5).

Table 5. Comparative summary of response variability regarding the cognitive image of tourists from Ostrowiec County and from outside of the county (Source: authors' own elaboration)

Do you agree with the following statements? (data in %)						Measures	
Category (tourists/visitors from:)	Definitely not	Rather not	Neither agree nor disagree	Rather yes	Definitely yes	Mean	Standard deviation
S 7 – Information about Krzemionki is easily accessible							
Overall	8.6	8.4	17.0	22.8	43.2	3.84	1.30
Ostrowiec powiat	7.4	5.8	16.5	24.8	45.5	3.95	1.23
Outside of the powiat	9.3	9.7	17.3	21.7	42.0	3.77	1.33
S 8 – Ticket prices and the prices of services were appropriate for their level							
Overall	0.3	2.9	12.7	25.6	58.5	4.39	0.84
Ostrowiec powiat	0.0	2.5	9.9	21.5	66.1	4.51	0.77
Outside of the powiat	0.4	3.1	14.2	27.9	54.4	4.33	0.86
S 9 – The guides present knowledge in an accessible and engaging way							
Overall	1.7	1.7	8.6	19.0	69.0	4.52	0.86
Ostrowiec powiat	1.6	0.8	5.0	17.4	75.2	4.64	0.76
Outside of the powiat	1.8	2.2	10.6	19.9	65.5	4.45	0.90
S 10 – The guides had extensive knowledge about the mines and Neolithic culture							
Overall	0.3	1.1	5.8	18.7	74.1	4.65	0.67
Ostrowiec powiat	0.0	0.8	3.3	19.0	76.9	4.72	0.56
Outside of the powiat	0.4	1.3	7.1	18.6	72.6	4.62	0.71
S 11 – The organization of the visit was of a high standard							
Overall	0.6	2.9	7.1	27.4	62.0	4.47	0.80
Ostrowiec powiat	0.8	2.5	7.5	28.9	60.3	4.45	0.80
Outside of the powiat	0.4	3.1	7.1	26.6	62.8	4.48	0.79
S 12 – The availability of tourist information and signage (e.g., information boards, directional signs) is appropriate							
Overall	0.9	0.6	8.4	30.5	59.6	4.48	0.74
Ostrowiec powiat	0.8	0.0	6.6	34.7	57.9	4.49	0.69
Outside of the powiat	0.9	0.9	9.3	28.3	60.6	4.47	0.77
S 13 – During the visit, rest areas, shelter from rain, and shelter from the sun are available							
Overall	0.9	3.2	14.7	30.2	51.0	4.27	0.89
Ostrowiec powiat	0.0	4.1	14.9	30.6	50.4	4.27	0.86
Outside of the powiat	1.3	2.7	15.0	29.7	51.3	4.27	0.90
S 14 – A sufficient number of parking spaces was provided during the visit							
Overall	4.0	8.1	14.1	21.9	51.9	4.10	1.16
Ostrowiec powiat	0.8	5.0	19.0	21.5	53.7	4.22	0.97
Outside of the powiat	5.8	9.7	11.1	22.1	51.3	4.04	1.24
S 15 – During the visit, adequate access to public restrooms was provided							
Overall	0.6	2.9	9.5	22.5	64.5	4.48	0.83
Ostrowiec powiat	0.0	4.1	5.8	24.8	65.3	4.51	0.78
Outside of the powiat	0.9	2.2	11.5	21.2	64.2	4.46	0.85
S 16 – The organizers provided an adequate number of trash bins							
Overall	0.3	2.0	11.2	24.5	62.0	4.46	0.79
Ostrowiec powiat	0.8	1.6	8.3	24.0	65.3	4.51	0.78
Outside of the powiat	0.0	2.2	12.8	24.8	60.2	4.43	0.80
S 17 – The Museum and Reserve area is clean							
Overall	0.0	0.6	4.9	16.4	78.1	4.72	0.58
Ostrowiec powiat	0.0	0.0	4.9	14.9	80.2	4.75	0.53
Outside of the powiat	0.0	0.9	4.9	17.2	77.0	4.70	0.60
S 18 – Getting to Krzemionki is not difficult							
Overall	0.6	0.6	4.3	16.1	78.4	4.71	0.63
Ostrowiec powiat	0.8	0.8	4.2	9.1	85.1	4.77	0.64
Outside of the powiat	0.4	0.4	4.5	19.9	74.8	4.68	0.62

S 19 – During the visit, a variety of souvenirs was offered							
Overall	0.9	2.0	10.7	26.5	59.9	4.43	0.83
Ostrowiec powiat	0.8	1.7	10.7	25.6	61.2	4.45	0.81
Outside of the powiat	0.9	2.2	10.6	27.0	59.3	4.42	0.83
S 20 – There is a sufficient number of accommodation facilities in the area							
Overall	0.9	2.6	26.2	23.9	46.4	4.12	0.94
Ostrowiec powiat	0.8	0.8	19.0	29.8	49.6	4.26	0.85
Outside of the powiat	0.9	3.5	30.1	20.8	44.7	4.05	0.98
S 21 – There is a sufficient number of dining establishments in the area							
Overall	1.2	5.8	18.4	28.5	46.1	4.13	0.98
Ostrowiec powiat	0.8	5.0	15.7	27.3	51.2	4.23	0.94
Outside of the powiat	1.3	6.2	19.9	29.2	43.4	4.07	1.00

6. Summary and conclusions

Based on the conducted research, it can be observed that there are no significant differences in the motives for visiting the Krzemionki Archaeological Museum and Reserve between visitors from Ostrowiec County and those from outside the region. In both groups under consideration, the dominant motive was the desire to learn and expand one's knowledge. It can be concluded that the cognitive motive is one of the main driving forces of cultural tourism connected to areas with Neolithic striped flint mines in Ostrowiec County. Visitors to the Krzemionki Archaeological Museum and Reserve, wishing to learn more about Neolithic mining technology, the daily life of miners and their families, the impact of mining on local communities at the time, and the state of the natural environment, contribute to the development not only of the tourist product in question but also of the region in which it is located.

The results of the survey conducted allow us to state that the image of the Krzemionki Archaeological Museum and Reserve, shaped among visitors both in the emotional and cognitive aspect, was strongly positive. This is demonstrated by Likert scale values well above the neutral point. The emotional image was shaped slightly more favourably among respondents than the cognitive one. This is mainly due to the perception of information accessibility regarding the Neolithic flint mine tourism product, which was somewhat weaker compared to other elements of the cognitive image.

No fundamental differences were found in the developed image of the Krzemionki Archaeological Museum and Reserve as a tourist product between residents of Ostrowiec County and visitors from outside the region. The analysis of average ratings on the Likert scale, as well as the share of positive and negative responses to statements included in

the survey, only allowed the observation that respondents from Ostrowiec County, compared to others, perceived both the emotional and cognitive aspects of the image slightly more positively. This may result from a stronger sense of regional identity among Ostrowiec County residents than among other visitors.

The Krzemionki Archaeological Museum and Reserve is an example of a successful combination of industrial heritage preservation, education, and tourism. The unique post-mining landscape, excellently preserved workings and rich educational and accompanying offer enable this place to play an important role in the development of Ostrowiec County, constituting its competitive advantage over neighboring regions. It can form the basis for economic activity as well as a factor in the development of identity and integration of the local community, contributing to the growth of social capital.

The results should be interpreted with caution due to limitations arising from the research method used. The use of the Likert scale may lead to subjective answers, dependent on the respondent's mood at the time of the survey. Additionally, social attitudes change over time, and the presented results reflect the state of awareness only at a specific moment. In this case, it was during the celebration of the 100th anniversary of the discovery of the striped flint mines at Krzemionki, when the standard offer of the Museum was expanded with many additional attractions.

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