Be.CULTOUR
Beyond cultural tourism

Be.CULTOUR:

"Beyond CULtural TOURism: human-centred innovations for sustainable and circular cultural tourism"

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Human-centred smart data monitoring and management system for sustainable cultural tourism

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Abstract

The Be.CULTOUR project is a visionary initiative dedicated to reshaping cultural tourism with a profound focus on sustainability, circularity, and human-centered development. Over 300 innovators, including regional authorities, municipalities, clusters, museums, and entrepreneurs, collaborate to co-create innovative solutions within the realm of sustainable and circular cultural tourism.

Be.CULTOUR adopts a quadruple helix approach, engaging stakeholders from various sectors, fostering cross-border, regional, and local collaboration. This results in community-led Action Plans, pioneering solutions, and near-market prototypes that promise inclusive economic growth, community well-being, resilience, and environmental regeneration. The project catalyzes robust cooperation, transforming cultural tourism into a driver of circularity and sustainable growth.

Embracing circular economy principles, Be.CULTOUR harmonizes resource efficiency with cultural heritage preservation and community empowerment. The circular tourism approach stimulates economic and technological development while nurturing local connections.

Central to Be.CULTOUR is a human-centered data management approach for cultural tourism innovation. Smart data management tools, key performance indicators (KPIs), and multidimensional assessment frameworks facilitate evidence-based decision-making and sustainability.

The project prioritizes equal rights and opportunities, co-creating human-centered innovations and action plans within pilot heritage sites. The goal is to develop pioneering solutions that elevate cultural tourism, urban and regional development, and environmental sustainability.

Within Be.CULTOUR's framework, four key pillars are defined:

1. Design of Systemic Policy-Oriented Be.CULTOUR Policy Support Tool: An operational dashboard guiding policymakers and stakeholders toward sustainable cultural tourism.

2. Database of Key Performance Indicators (KPIs) and Data on Cultural Tourism Impacts: A rich database providing invaluable insights for researchers.

3. Development of Interactive User-Oriented Be.CULTOUR App/Digital Twins: An app enhancing tourist experiences and fostering community engagement.

4. Human-Centered Smart Data Monitoring and Management System: The backbone of sustainable cultural tourism initiatives, aligning with circular economy principles.

This report also provides an exploratory empirical analysis of stakeholder preferences and perceptions through Principal Component Analysis (PCA) and (generalized) Q-Analysis, unveiling valuable insights into the drivers of cultural tourism.

Furthermore, Digital Twins, advanced geographical representations, are showcased as powerful tools for analyzing tourist amenities and pressures, illustrated through a case study of the Parkstad region in Limburg, the Netherlands.

In conclusion, Be.CULTOUR presents an innovative, sustainable, and inclusive approach to cultural tourism. Circular economic strategies, digitalization, inclusivity, and collaborative ecosystems are central to its vision, laying the foundation for a prosperous future in cultural tourism.

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Partners involved in the document

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1. Description of the Project

Be.CULTOUR stands for "Beyond CULtural TOURism: heritage innovation networks as drivers of Europeanisation towards a human-centred and circular tourism economy". It expresses the goal to move beyond tourism through a longer-term *human-centred* development perspective, enhancing cultural heritage and landscape values.

Cultural tourism entails opportunities but also risks. Tourism as a whole can be a highly volatile economic sector. If not managed properly, cultural tourism can also easily turn into a "value extractive" industry, generating negative environmental, social and cultural impacts on local communities and ecosystems. This project will develop specific strategies to promote an understanding of cultural tourism, which moves away from a "stop-and-go" consumer-oriented approach towards one that puts humans and circular economy models at its centre, paying attention to nature, communities and cultural diversity. "Place", intended as the *genius loci*, the ancient spirit of the site expressing its "intrinsic value" and "people" as co-creators of its uniqueness, culture, art, tradition, folklore, productivity, spirituality, as well as its "time space routine", are the focus of Be.CULTOUR, which aims at realizing a longer-term development project for the pilot areas involved.

The overarching goal of Be.CULTOUR is to co-create and test sustainable human-centred innovations for circular cultural tourism through collaborative innovation networks/methodologies and improved investments strategies. Targeting deprived remote, peripheral or deindustrialized areas and cultural landscapes as well as over-exploited areas, local Heritage innovation networks will co-develop a long-term heritage-led development project in the areas involved enhancing inclusive economic growth, communities' wellbeing and resilience, nature regeneration as well as effective cooperation at cross-border, regional and local level.

Wide and diversified partnerships of stakeholders from 18 EU and non-EU regions of Northern-Central and Southern Europe, the Balkans, the Eastern neighbourhood and the Mediterranean will be the driving force of the project. A community of 300 innovators (which includes regional authorities and municipalities, clusters and associations, museums and tourist boards, entrepreneurs, chambers of commerce, citizens, researchers, practitioners as well as project partners) in 6 pilot regions will co-create innovative place-based solutions for human-centred development through *sustainable* and *circular* cultural tourism.

Collaborative "Heritage innovation networks" will be established in 6 European deprived remote, peripheral and deindustrialised areas and cultural landscapes identified as "pilot innovation ecosystems": committed to the project's objectives, they have defined clear cultural tourism-

related challenges requiring innovation that will serve as the basis for the collaboration with the 16 additional "mirror innovation ecosystems". Mutual learning and up-scaling of business solutions will be the objectives of the collaboration between pilot and mirror ecosystems, building the sustainability of the project's results beyond its lifetime.

By adopting a human-centred quadruple/quintuple helix approach to co-design, Be.CULTOUR will result in 6 community-led Action Plans, 18 innovative human-centred solutions and 6 close-to-market prototypes of new cultural tourism integrated services and products: these will directly contribute to inclusive economic growth, communities' wellbeing and resilience, and nature regeneration in pilot and mirror regions, stimulating effective cooperation at a cross-border, regional and local level. The core partners of the Consortium will progressively build Be.CULTOUR sustainability by broadening the interregional collaboration while anchoring it to relevant EU initiatives in the academic, business and institutional realms.

1.2 Be.CULTOUR specific objectives

The scopes of the Be.CULTOUR project will be achieved through a set of specific, measurable, achievable, realistic and time-constrained (SMART) specific objectives:

Objective 1 – To assess the impacts and market potential of sustainable and circular cultural tourism at national, regional and local level through multidimensional quantitative and qualitative indicators, innovative statistical methods and advanced smart data management systems;

Objective 2 – To build a Community of Practice of 6 pilot regional ecosystems and a Community of Interest with 16 "mirror ecosystems" in EU and non-EU countries actively engaged in knowledge-sharing and exploitation of Be.CULTOUR's approach, methodology, tools, and innovative solutions for sustainable and circular cultural tourism;

Objective 3 – To co-develop 6 Action Plans for sustainable and circular cultural tourism by establishing collaborative "Heritage innovation networks" in 6 pilot regions in Northern-Central and Southern Europe, the Balkans, the Eastern neighbourhood and the Mediterranean;

Objective 4 – To co-develop, prototype and test human-centred and place-specific product, process and service innovations for sustainable and circular cultural tourism in pilot heritage sites;

Objective 5 – To provide policy recommendations for more effective use of European Structural Investment Funds (ESIFs) and other EU funds to support cultural tourism innovation ecosystems in pilot and mirror regions, and develop a proposal of evolution of ESIFs through synergies with other public funds;

Objective 6 – To contribute to deepen cultural Europeanisation through information and educational activities focused on the European history, identity and culture expressed in tangible and intangible cultural heritage and cultural landscapes, developing European Cultural Routes and European Heritage Labels in pilot heritage sites.

All partners have wide experience in developing and testing the Be.CULTOUR proposed approach, methodology and tools, ensuring the effective and time-constrained achievement of all the above-mentioned specific goals.

2. Introduction

2.1 Guiding Principles

In the context of Be.CULTOUR's mission to promote sustainable cultural tourism, this report serves as the next phase in the development of a human-centered smart data monitoring and management system. This system is designed to intelligently track and enhance tourism flows in a sustainable and culturally rich manner. At its core, this report contributes to the creation of a multidimensional and spatial evaluation framework for assessing the performance of sustainable and circular tourism in pilot areas across various territorial levels.

The framework seeks to provide a comprehensive view by identifying and mapping the primary driving forces. These forces manifest in the form of a well-balanced set of local sustainable and cultural dimensions, both in the long-term and short-term contexts. It incorporates actionable critical X-factors, essentially serving as key performance indicators (KPIs).

This complex network of data allows for the strategic and logistical monitoring and assessment of cultural tourism from a human-centered and circular economy perspective (WP1). Achieving this ambitious goal necessitates a high degree of collaboration and coordination across various stakeholders, including local governments, departments, and community partners, spanning cities, towns, counties, and their international associations.

The primary goal of this report is to present a systematic methodological framework that encompasses a structured repository of statistical information. This information encompasses numerous local key performance indicators (KPIs) spanning all six pilot regions: Basilicata (Italy), Aragon-Teruel (Spain), Larnaca (Cyprus), Västra Götaland (Sweden), Vojvodina (Serbia), and the Crossborder Area North-East (Romania/Moldova) (Figure 1).

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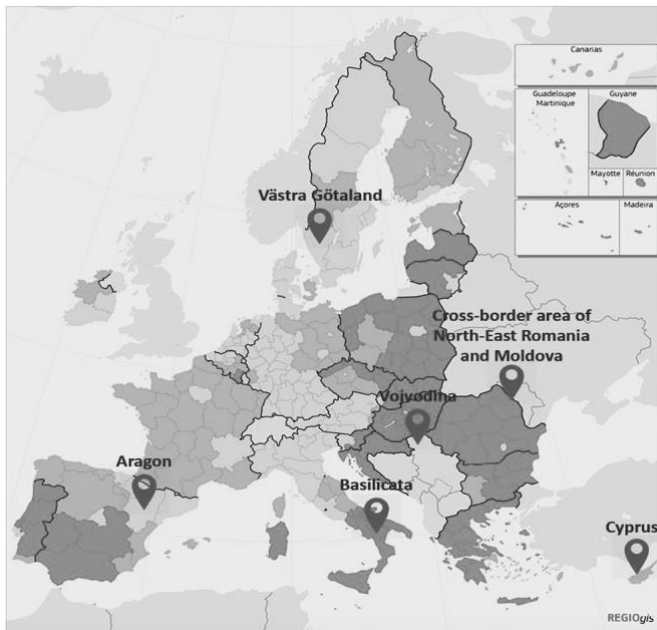
Figure 1 - The six Be.CULTOUR regions

Source: https://ec.europa.eu/regional_policy/sources/graph/poster2021/eu27.png

This wealth of data is vital for handling multivariate big data efficiently within a smart urban decision support system (using e.g. Q-analysis). It is coupled with advanced smart data management systems, including cutting-edge interactive technologies such as a Digital Twin.

These analytical decision support tools are aimed at facilitating the co-creation of innovative solutions, championing diversity, inclusiveness, and robust stakeholder participation in the competitive performance of tourism destinations. They enable the design and development of intelligent operational urban management principles, enriched by dynamic monitoring and data analytics within pilot regions. A dashboard, for instance, serves as an advanced performance-based operational navigation tool for decision-makers, based on a Digital Twin. It employs specific criteria and key indicators to evaluate local sustainable and circular cultural tourism, including underlying barriers, obstacles, and framework conditions, spanning macro to micro levels. This comprehensive assessment gauges the regions, cities, and towns' competitiveness and attractiveness in terms of sustainable and circular tourism performances. It is further bolstered by place-based digital twin tools, which serve as communication aids.

The cultural Europeanization narrative, entailing the storytelling of European history and cultural roots, combined with sustainable growth aspirations and a diverse range of stakeholder interests, adds evidence-based insight on the development of solid and comprehensive sustainable

strategies. These strategies aim to co-create innovative place-based solutions for human-centered development while promoting sustainable and circular cultural tourism.

In the pursuit of these objectives, advanced tools for intelligent monitoring of tourism flows and smart interaction come into play. Technological developments like IoT, AI, 5G, and Industry 4.0, coupled with big data management and co-governance tools, enable the creation of a smart tourism monitoring system. This system interacts seamlessly with tourists, offering tailored suggestions based on seasons, timing, and the presence of other tourists to manage destinations effectively. It empowers policy-makers, stakeholders, and residents to collaboratively oversee cultural tourism destinations.

As part of the plan, the development of an interactive App is envisaged in the next step. This App will serve as a valuable tool for agents and stakeholders, enabling the collection and analysis of 'big data.' It offers empirical insights into opportunities and impediments within the cultural tourism landscape. The system's design follows a human-centered approach, ensuring adaptability to pilot and 'mirror' regions. Synergy with similar ongoing projects in pilot regions paves the way for the creation of an accessible, interactive, and user-friendly Be.CULTOUR App.

2.2 The Added Value of the Approach

Expanding upon this ambitious initiative, we have explored further into the multifaceted aspects and far-reaching implications that enhance the added value of the Be.CULTOUR project:

- **Innovative Framework for Sustainable Tourism:** Be.CULTOUR's mission is to pioneer an innovative framework that transcends the boundaries of conventional tourism. By integrating advanced data management systems, we are not only tracking tourist numbers; we ensure that every visitor experience aligns with the principles of sustainability and cultural enrichment. We are in the process of developing a holistic framework that transforms how we perceive and manage tourism, placing humanity and culture at its core.

- **Unlocking the Power of Multivariate Data:** The extensive dataset within our reach holds a wealth of unexplored insights. Utilizing state-of-the-art technologies, we are exploring the realm of multivariate big data. Through astute data analysis, we acquire a profound understanding of tourism patterns, visitor behaviours, and cultural interactions. This knowledge empowers us to make informed decisions that benefit both tourists and the local communities hosting them.

- **Enhancing Tourist Experiences:** Beyond numbers and statistics, our efforts are geared towards enhancing tourist experiences. The integration of technological trends such as IoT, AI, 5G, and Industry 4.0 enables us to create an interactive environment that interacts with tourists in real-time. Imagine a tourist exploring a historic city, and their mobile device suggests the best time to visit a museum to avoid crowds or recommends a hidden gem known only to locals. This level of personalization elevates the tourist experience to new heights.

- **Strategic Decision-Making:** Be.CULTOUR is not only about monitoring; it is about making strategic decisions that shape the future of cultural tourism. Our data-driven approach allows policymakers and stakeholders to access up-to-date and real-time information. They can use this data to make informed decisions about managing cultural tourism destinations effectively. For instance, if data shows that a particular site is becoming overcrowded, measures can be taken to divert tourists to less congested areas, ensuring a more enjoyable experience for all.

- **Community Empowerment:** A cornerstone of our approach is empowering local communities. Sustainable tourism is not just about attracting visitors; it is about ensuring that the benefits of tourism trickle down to the grassroots level. We are working closely with cities, regions and their communities to engage them in the decision-making process. This includes local governments, departments, and international associations of cities and regions. Together, we are constructing a more inclusive, community-driven tourism model that uplifts everyone involved in the process of building a Human-centered smart data monitoring and management system ('Digital Twin').

- **Adaptability and Synergy:** The dynamic nature of tourism requires flexibility and adaptability. Be.CULTOUR's data management systems are designed to evolve with changing circumstances. Moreover, our commitment to synergy with similar ongoing projects in pilot regions ensures that we tap into collective wisdom and leverage existing expertise. This collaborative approach results in a tourism monitoring system that is not only efficient but also responsive to the ever-changing tourism landscape.

- **A Glimpse into the Future:** At the heart of our efforts is the vision of a future where sustainable cultural tourism is the norm, not the exception. We will develop finally an accessible and user-friendly Be.CULTOUR Digital Twin with an App that will be a valuable tool for agents, stakeholders, and tourists alike. This App will collect touristic routes with landmarks with information and even audio files attached to them, providing empirical insights into the tourism landscape. Through a human-centered design approach, we aim

to make this App a vital resource for those who are passionate about cultural tourism and its sustainable future (see forthcoming Deliverable 1.5).

In conclusion, Be.CULTOUR's human-centered data management and smart monitoring systems are not just tools; they are catalysts for transformation. They are driving the shift towards sustainable and culturally enriching tourism experiences. By harnessing the power of data, technology, and community collaboration, we are redefining the future of cultural tourism, one that benefits tourists, local communities, and the cultural heritage we hold dear. The journey continues, and the future of sustainable and inclusive tourism looks promising as we pave the way for a more sustainable and culturally vibrant world of tourism.

2.3 Document structure

This document is structured as follows:

- Section 1 introduced the Be.CULTOUR project aims and overall approach;
- Section 2 introduced the guiding principles for the creation of the multidimensional and spatial evaluation framework for assessing the performance of sustainable and circular tourism and the value added of the adopted approach;
- Section 3 presents the Modus Operandi based on A Human-Centered Approach for charting a Sustainable Path4All
- Section 4 provides the Architecture of the Data Warehouse of the Be.CULTOUR project;
- Section 5 presents the results of the Principal Component Analysis aimed at exploring stakeholder preferences and perceptions;
- Section 6 Section 6 presents the empirical results of the Q-Analysis;
- Section 7 introduces to the Digital Twins and provides an illustration of its application;
- Section 8 drafts conclusions and identifies the next steps of the research.

3. Modus Operandi

3.1 A Human-Centered Approach

The project team aims to develop and present a stepwise human-centered smart data monitoring system. Below is a list of major points identified by the OUNL project during its research trajectory in developing this system:

1. **User-Centric Design**: Prioritize user-centric design principles to ensure that the data monitoring system is intuitive, easy to use, and tailored to the needs of various stakeholders, including tourists, policymakers, and local communities.

2. **Data Visualization**: Implement advanced data visualization techniques to present complex information in a clear and engaging manner. Interactive dashboards, heatmaps, and immersive 3D visualizations (Digital Twins, e.g.) can provide users with valuable insights at a glance.

3. **Personalized Recommendations**: Incorporate tailor-made information in order to offer personalized recommendations to tourists based on their preferences, previous activities, and real-time conditions. For instance, suggest alternative attractions if a tourist's chosen destination is overcrowded.

4. **Real-Time Alerts**: Develop a system that can provide up-to-date information to users. For instance, tourists could receive alerts about upcoming cultural events, while local authorities could be notified of overcrowding or security concerns.

5. **Community Involvement**: Create mechanisms for community involvement, such as online or remote crowdsourced data collection. Encourage locals and tourists to contribute information and feedback about cultural sites and experiences, fostering a sense of co-ownership.

6. **Cultural Education**: Integrate educational elements into the system. Offer tourists insights into the cultural significance of the places they visit, including historical context, folklore, and local traditions. This can deepen their appreciation of cultural heritage.

7. **Environmental Impact Tracking**: Develop features that allow users to track the environmental impact of their tourism activities, such as crowding effects, carbon footprint calculations or water and energy consumption data. This promotes responsible tourism.

8. **Multilingual Support**: Ensure that the system supports multiple languages to cater to international tourists. Implement language translation features for real-time communication with tourists who may not speak the local language.

9. **Offline Mode**: Recognize that tourists may not always have access to the internet. Develop an offline mode that allows users to access essential information and navigation features without a network connection.

10. **Collaborative Partnerships**: Strengthen partnerships with local businesses, cultural institutions, and tourism boards. Collaborate on data sharing and offer incentives for participation to create a comprehensive ecosystem.

11. **Feedback Mechanisms**: Incorporate mechanisms for users to provide feedback and report issues. Actively listen to user input and continuously improve the system based on their suggestions.

12. **Education and Training**: Offer training and educational resources for local stakeholders to maximize the benefits of the system. This can include workshops on data collection, analysis, and leveraging the system for community development.

13. **Scalability**: Design the system with scalability in mind. Ensure that it can accommodate increased user demand and expanding tourism activities without significant performance degradation.

14. **Integration with Existing Systems**: If applicable, integrate the data monitoring system with existing tourism infrastructure, such as reservation systems, transportation networks, and cultural event calendars, to provide a seamless experience for users.

15. **Public Awareness Campaigns**: Launch public awareness campaigns to educate tourists about the availability and benefits of the monitoring system. Promote responsible tourism practices and encourage participation.

16. **Continuous Innovation**: Commit to ongoing innovation and adaptation. Stay updated on emerging technologies and trends in cultural tourism to ensure the system remains relevant and effective.

17. **Open Data Initiative**: Consider adopting an open data initiative, making certain non-sensitive data publicly available for researchers, entrepreneurs, and developers to create additional value-added services and products.

18. **Measuring Impact**: Develop metrics and key performance indicators (KPIs) to measure the impact of the system on sustainable and circular cultural tourism. Regularly evaluate its effectiveness and make improvements as needed.

19. **Data Privacy and Security**: Prioritize data privacy and security. Implement robust encryption protocols and allow users to control the level of data sharing and tracking, ensuring their personal information is protected.

These points should provide a solid foundation for future tourism research on the development of a human-centered smart data monitoring system for cultural tourism.

3.2 Charting a Sustainable Path4All

In the fascinating domain of cultural tourism, where travellers' motivations include a deep appreciation for nature, a strong interest in culture, a desire for historical exploration, a preference for shopping, and an enthusiasm for entertainment, there lies an engaging paradox. It is a paradox where the convergence of cultural treasures and ecological wonders becomes the focal point of tourism's appeal. The synergy between these elements gives rise to the very attractions that draw tourists from far and wide. However, in the era of mass tourism, an unregulated influx of visitors can trigger adverse overcrowding effects. Mass tourism, if left unchecked, has the potential to mar the environment and erode the quality of life for our cherished local community. It's a delicate tightrope walk—the 'tourism paradox': Cultural assets ignite ecological resources, but unbridled mass tourism threatens to snuff out the magic (Figure 2).
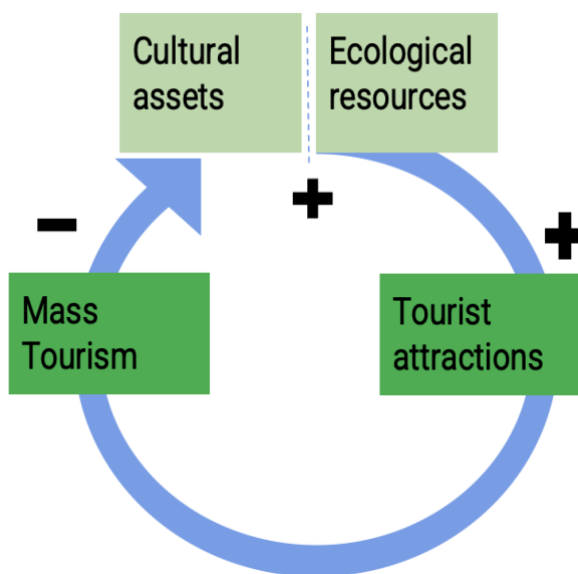
Figure 2 - Tourism paradox

Our research aims to unravel this paradox and shed light on the path toward sustainable tourism supported by a human-centered smart data monitoring and management system. At its core lies a significant question: Can digital technology act as the catalyst for sustainable outcomes at the local and regional levels, welcomed by local communities, while effectively managing the tensions between insiders and outsiders? We will use in this context the concept of the 'Digital Twin' — a virtual mirror of our physical environment thoughtfully constructed from geo-information datasets. This digital 'doppelgänger' wields immense power:

- **Spatial Imaging Tools**: It empowers policymakers and planners with spatial imaging tools that lay bare the intricate details of a city or region. Decisions are no longer based on guesswork; they are grounded in comprehensive insights.
- **Evidence-Based Information**: The Digital Twin is a rich source of evidence-based and visualized spatial information. It offers a roadmap to informed decision-making.
- **Integrated Perspective**: Our research strives to provide an integrated perspective on sustainable cultural tourism planning. It transcends individual components to create a holistic view of our region's tourism landscape.

As we delve into the world of Digital Twins, it is important not to overlook the rich historical tapestry created by cartographers and geo-information pioneers. Their work underscored the enduring importance of location-based information.

But has the arrival of the digital age reduced our dependence on geo-information? The answer is a clear no. Geo-information has been our unwavering guide, evolving from static maps on paper to dynamic, interactive digital data. Geographic Information Systems (GIS) cleared the path, providing spatial insights for exploration, planning, and business. Now, Digital Twins invite us, promising to simulate alternative futures for our society.

In this context, the modern research has the task to reveal the foundations and contours of a methodological and conceptual smart data management framework for sustainable tourism. This framework supports sustainable and regenerative cultural tourism co-governance, empowering our communities. It aligns seamlessly with evidence-based policies and integrated actionable programs. The objective is to enhance the value of local sustainable cultural tourism across various spatial scales and timeframes, fostering participatory place-based decision-making and seeking the important '*X-factors*', that are critical for success.

This 'X-factor' is not a mystery; it's derived from the XXQ principle (the goal to achieve the maximum Quality of Life for society and citizens; see Nijkamp, 2008) and plays an important role in our mission. It represents a portfolio of critical conditions that shape innovation in cultural tourism facilities and cultural heritage attractions within the pilot regions. It is based on a data-driven planning perspective, acknowledging the multidimensional wellbeing of our citizens and the need for sustainable harmony between people and places.

Our journey to uncover the XXQ begins with a systematic process of data decomposition. We peel away layers of data, much like peeling an onion, to expose the critical X-factors. This process provides higher-level urban policy domains and urban co-governance levels with the vital data needed to harness the potential of cultural tourism in Europe.

In this holistic undertaking, we recognize the transformative power of cultural experiences and the catalytic role they play in exploiting the full potential of sustainable cultural tourism. Through an operational systemic hierarchical micro-meso-macro framework, we strive to understand the multidimensional impacts and potentials of cultural tourism, driven by unprecedented advancements in digital technology.

As we navigate this uncharted terrain, we should craft a sustainable path for cultural tourism—one that enriches the lives of our citizens, preserves our cultural heritage, and fosters a harmonious relationship between people and places. This process is illustrated in Figure 3.
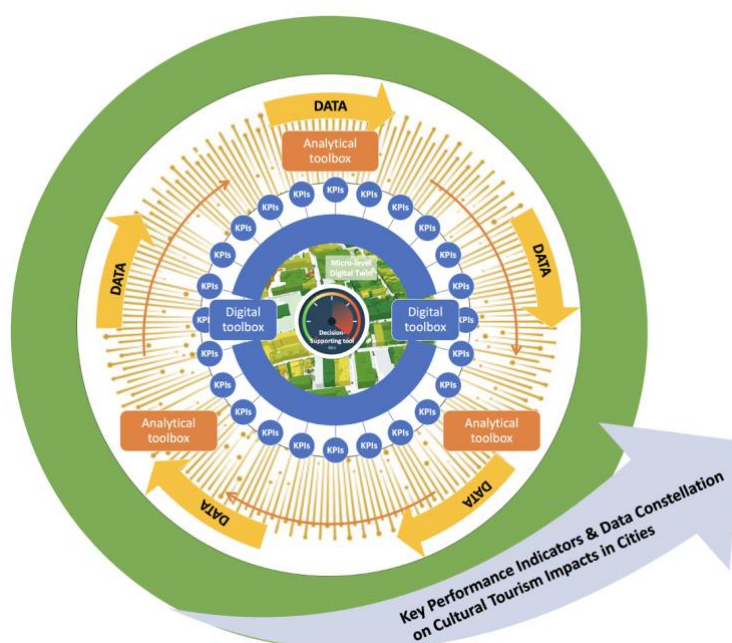
Figure 3 - A cascade of hierarchical data use and monitoring

Source: Authors' elaboration

The data architecture for sustainable and circular tourism is integral to the process of collecting, storing, utilizing, and planning data for the promotion of sustainable and circular tourism in urban areas and regions. Ultimately, this data can be incorporated into digital policy support systems, such as Digital Twins or dashboards.

4. Architecture of the Data Warehouse of Be.Cultour

4.1 Data Architecture

In the domain of developing a Human-centered Smart Data Monitoring and Management System for Sustainable Cultural Tourism, the Be.CULTOUR serves as a demonstration of transformative ambition. Its comprehensive mission extends beyond the traditional boundaries of tourism, shifting towards a broader, longer-term vision where humanity and its well-being take center stage in the field of cultural tourism development.

This visionary project unites a diverse and collaborative community of over 300 innovators, including regional authorities, municipalities, clusters, museums, entrepreneurs, and more. Together, they set out on a journey to co-create innovative solutions finely tuned to the principles of human-centered development within the domain of sustainable and circular cultural tourism. The Be.CULTOUR project adopts a quadruple helix approach that actively engages stakeholders from various sectors. This collaborative synergy is the space where community-led Action Plans, pioneering solutions, and near-market prototypes are crafted. These outcomes hold the promise of inclusive economic growth, community well-being, resilience, and the regeneration of natural environments, not only within pilot regions but also in mirror regions. Moreover, the project serves as a catalyst for robust cooperation at cross-border, regional, and local levels.

At its essence, Be.CULTOUR seeks to co-create and test sustainable, human-centered innovations that steer cultural tourism towards circularity. To accomplish this, it necessitates the coordination of collaborative networks, innovative methodologies, and finely-tuned investment strategies. This important task encompasses pilot regions and extends its embrace to additional 'mirror ecosystems' spanning diverse European and non-European territories.

In this visionary initiative, we acknowledge the intrinsic potential of cultural heritage and landscapes as important drivers of sustainable growth and community well-being. It goes beyond the boundaries of traditional tourism, paving the way for the era of cultural Europeanization and collaborative innovation networks that resonate across various strata of society. Be.CULTOUR empowers citizens and stakeholders to play important roles in the transformation of territories through the creation of innovative products, services, policies, governance models, and business practices rooted in the principles of circular economy and human-centered development.

Embracing a circular economy approach in cultural tourism underscores the efficient utilization of natural resources while preserving the authenticity of host communities. This approach harmonizes with the principles of human-centered design, which actively engages end-users in

the co-creation of services and products that respect cultural heritage and empower local communities.

In this holistic context, circular tourism emerges as a mechanism for regenerating traditional territorial knowledge and human capital. It fosters a deep sense of belonging while driving economic and technological development, all while while preserving the valuable connections within communities. To underpin these monumental aspirations, Be.CULTOUR introduces a human-centered data management approach for cultural tourism innovation. This innovation deploys smart data management tools, key performance indicators, and multidimensional assessment frameworks, all carefully designed to uphold sustainability.

The project respects equal rights and opportunities across all gender groups while focusing on the co-creation of human-centered innovations and action plans within pilot heritage sites. The overarching goal is the development of pioneering solutions that elevate cultural tourism, urban and regional development, and environmental sustainability to new heights.

With a keen eye on circular economy strategies and business models, Be.CULTOUR charts a course towards the transformation of traditional, linear tourism models into dynamic, circular systems. The project's emphasis on long-term cooperation and collaboration at various levels further solidifies its commitment to a sustainable and inclusive future.

In concert with these efforts, knowledge and data management play a central role. They enhance decision-making processes, enrich our comprehension of cultural Europeanization, and initiate an era of business practices firmly rooted in the preservation of human rights. Furthermore, the project pioneers advanced tools for the monitoring of tourism flows and smart interaction. These tools, integrated with comprehensive data management and co-governance mechanisms, will give rise to a smart tourism monitoring system. This system will grant tourists and stakeholders the agency to make informed decisions, thereby ensuring the effective management of cultural tourism destinations and the preservation of their essence.

In summary, Be.CULTOUR stands as a novel endeavor that redefines cultural tourism with a focus on humanity, sustainability, and circularity. It seeks to transform not only how we experience cultural tourism but also how we contribute to economic growth, community well-being, and environmental regeneration while preserving cultural heritage and identity. This project embodies the essence of human-centered development and collaboration and carries the potential to reshape the future of cultural tourism on a global scale.

As Be.CULTOUR advances along its transformative path, it does so with a clear vision of its four key pillars, each contributing significantly to the realization of Be.CULTOUR goals. These are:

- ### Design of Systemic Policy-Oriented Be.CULTOUR Policy Support Tool

Within the sphere of Be.CULTOUR's mission, the creation of a systemic policy-oriented digital support tool stands as an important task. In particular, an operational dashboard goes beyond simple data presentation; it becomes a dynamic compass guiding policymakers and stakeholders towards a sustainable future in cultural tourism. This comprehensive tool offers real-time insights into the complex pattern of sustainable cultural tourism, embracing a human-centered approach. It empowers decision-makers to navigate through an abundance of data, making informed choices rooted in a deep understanding of the project's evolving landscape. The policy dashboard is more than a repository of information; it is a dynamic hub that nurtures evidence-based policymaking, ensuring that the well-being of both tourists and local communities remains at the forefront.

- ### Database of Key Performance Indicators and Data on Cultural Tourism Impacts in Pilot Regions

At the core of Be.CULTOUR's transformative journey lies a rich database of key performance indicators (KPIs) and comprehensive cultural tourism impact data. This database is the basis upon which informed decisions and strategic actions are built. It goes beyond the traditional metrics of tourism, encompassing the broader spectrum of cultural, social, and environmental impacts.

This repository is more than just a collection of numbers; it is a demonstration of the project's commitment to holistic sustainability. Stakeholders can explore the multifaceted effects of their actions, gaining invaluable insights into the complex interaction between cultural tourism and the well-being of communities. Furthermore, this database serves as a source of knowledge for researchers, fostering a deeper understanding of the multifaceted nature of cultural tourism.

- ### Development of Interactive User-Oriented Be.CULTOUR App/Digital Twins

The Be.CULTOUR project will also develop a user-oriented app related to the Digital Twin, a portal into the world of sustainable cultural tourism (see prototype later in this report). This app is more than just a technological tool; it serves to become a bridge between tourists, stakeholders, and the cultural treasures of destinations.

Designed with a human-centered ethos, the app may empower tourists to embark on personalized journeys of discovery. It provides real-time information on crowd density, seasonal

variations, and local events, equipping tourists to make choices that enhance their experiences while minimizing negative impacts on local communities and the environment. The app may also foster community engagement, encouraging locals to share their insights, thereby enriching the cultural tourism experience for all.

- **Human-Centered Smart Data Monitoring and Management System for Sustainable Cultural Tourism**

At the core of Be.CULTOUR's transformative agenda lies a human-centered smart data monitoring and management system. This system serves as the backbone of sustainable cultural tourism initiatives within the project, connecting the dots between data sources, insights, and actionable decisions. This system empowers stakeholders to monitor up-to-date data and make informed and practical decisions. It ensures that the well-being of both tourists and local communities remains at the forefront of every decision, aligning perfectly with the principles of circular economy. The system optimizes resource use, minimizes waste, and nurtures the long-term sustainability of cultural tourism destinations.

In summary, Be.CULTOUR sets out on a new journey that surpasses the boundaries of conventional cultural tourism. Its four key pillars — the digital policy support tool, KPI database, user-oriented app/Digital Twin, and human-centered data management system — collectively foster a sustainable, human-centered, and circular approach. This empowers stakeholders, policymakers, and tourists to navigate the complex landscape of cultural tourism, promoting not just experiences, but also the well-being, resilience, and sustainability of cultural heritage and communities. This may open up a new future of cultural tourism, shaped by a holistic, data-driven, and human-centered spirit. As Be.CULTOUR continues to advance, it carries the seeds of innovation and collaboration, contributing to a brighter future for cultural tourism worldwide.

4.2 Human-centred Database

The human-centred database containing key performance indicators (KPIs) related to the impacts of sustainable cultural tourism in various pilot regions is structured as follows. Within this report, we will primarily focus on a comprehensive class of information: the actor-specific database.
The primary goal of this data-driven, evidence-based policy, along with the integrated actionable programs, is not to amass a vast volume of data, but rather to sift through extensive data to create a useful, organized, and fit-for-purpose database.

The microcosmic approach advocated in this context explores deeper into the systemic cascade and decomposition argument. It centers on the development of sustainable cultural tourism ecosystems, the promotion of gender equality and social inclusion, particularly among minority cultures and marginalized social groups. It also addresses the sense of European identity among residents and visitors, as well as the knowledge and appreciation of local cultural heritage, sustainable behavior among tourists and residents, regional creativity and innovativeness, the provision of cultural tourism services, and essential infrastructures such as mobility, energy, water, waste management, materials extraction, production, and digital connectivity.

Actor-specific database

Figure 4 illustrates the actor-specific database, which outlines the value systems, especially preferences and perceptions, of three distinct classes of stakeholders who have visited the pilot heritage sites. This internal set of X-factors encompasses seven components:

- Individual Characteristics
- Motivation & Driving Forces
- Social Network
- Travel Experience
- Sustainability of Destination
- Global Satisfaction
- Quality of Services

These data are derived from extensive surveys conducted in the pilot regions, collecting insights from various stakeholders (see Annex B). The relevant categories of stakeholders/actors within the database include:

- Residents
- Visitors
- Proximity travellers (e.g. VFR tourism)
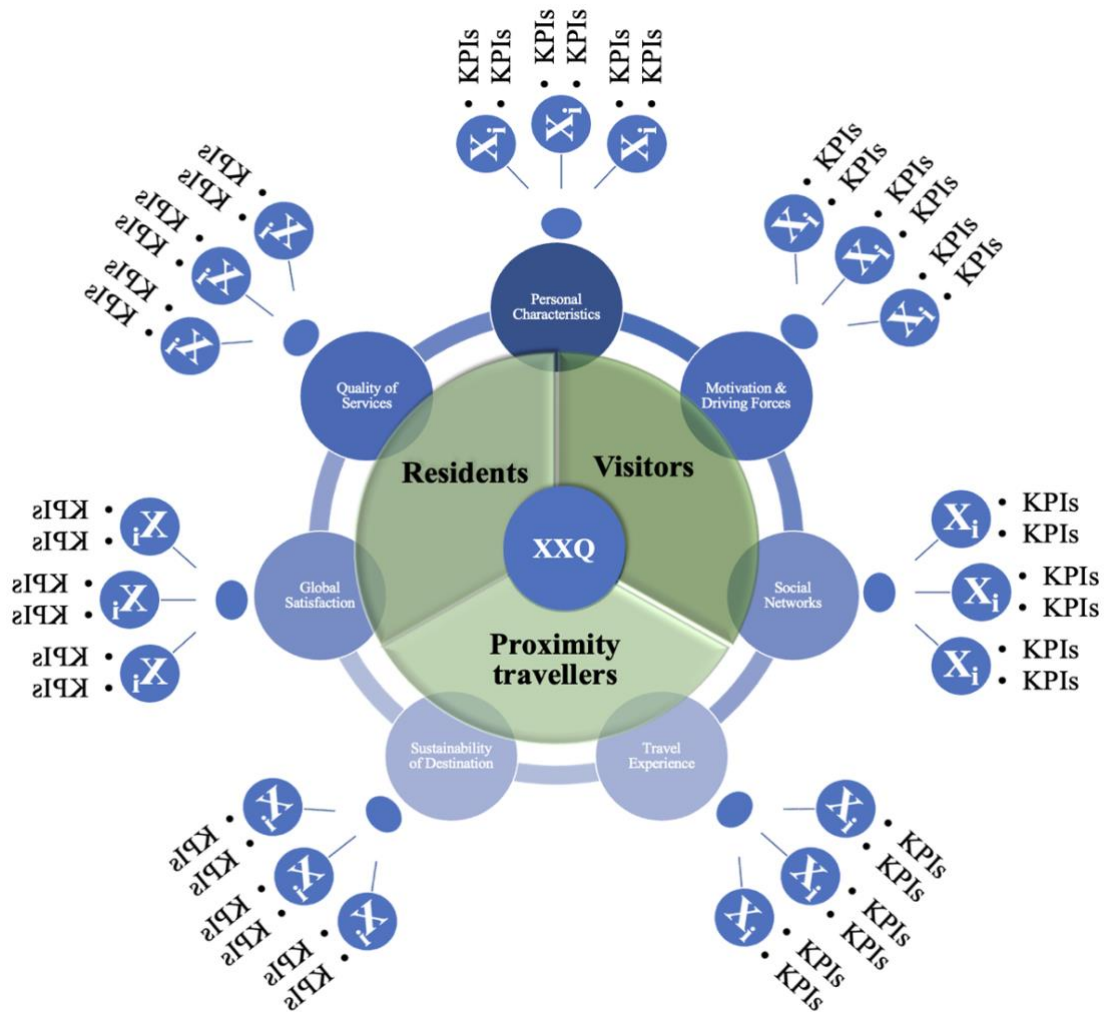
Figure 4 - Architecture of a tourism performance in terms of quality of urban life (XXQ) in a tourism destination

Source: Author's own elaboration

The model illustrated in Figure 4, referred to as the 'umbrella' model, embodies both the cascade and decomposition principles. It represents a systematic framework that hierarchically organizes qualitative data management. The primary objective of this model is to facilitate highly synergistic, human-centered initiatives that generate sustained added value. The ultimate goal is to achieve a performance position that maximizes the highest possible quality of urban life (XXQ) in a tourism destination. Additionally, this approach enhances our understanding of its role in fostering cultural Europeanization and contributing to economic and social development in Europe through collaboratively created cultural experiences.

The purpose of this data-driven, evidence-based policy, inclusive of integrated actionable programs, is not to accumulate a vast volume of data. Instead, its goal is to carefully filter extensive datasets to create a valuable, systematic, and fit-for-purpose database.

Added Value of the database

The empirical tourism database offers a wealth of valuable information, catering to the needs of diverse stakeholders like policymakers, city marketers, researchers, and more. It delves into the value systems and assessments of these stakeholders (residents, visitors, proximity travellers), focusing on the specific items and performance indicators related to the pilot regions under consideration. The database boasts several noteworthy advantages, including:

- Facilitating a systematic comparison of the X-factors (key performance indicators) among the pilot regions and cities in our Be.CULTOUR project.
- Establishing a multidimensional criteria set for quantitative benchmarking and ranking the pilot regions from the perception of various stakeholders.
- Providing an empirically verified collection of comparative quantitative data, covering numerous essential aspects of the pilot regions.
- Engaging various stakeholders in the tourism decision-making process.

Consequently, this database system grants us access to a diverse range of data concerning different actors and their value systems. For instance, we gather insights from visitors to specific historical-cultural assets in the pilot regions, which greatly contribute to our understanding of the X-factors that generate an 'urban cultural buzz.' This buzz, characterized by continuous excitement, adventure, and activities, arises from factors like density, proximity, and connectivity externalities. It also fosters an appealing cultural atmosphere, particularly for creative and innovative individuals, such as those in the creative industries.

We can selectively analyse various items relevant to the overarching objective of the Be.CULTOUR project, particularly focusing on the significance of sustainable and circular historical-cultural heritage elements, accessibility, and local environmental quality X-factors. These factors undeniably play a crucial role in shaping the presence of urban cultural buzz in the pilot regions. It is worth noting that urban buzz may be linked to socioeconomic and productivity-enhancing factors.

Outline of the Study

The above-mentioned database architecture was already extensively described in Deliverable 1.4, including the detailed survey questions, the sample size and composition of residents and visitors. In the remaining part of this report three major classes of empirical analysis will be presented:

- A multivariable preference and perception analysis using principal component analysis (Section 5).

- A visitor-oriented pattern recognition method by stakeholders/actors, termed Q-analysis (Section 6).

- A few empirical experiments with a Digital Twin (Section 7).

5. Exploring Stakeholder Preferences and Perceptions: A Principal Component Analysis

5.1 Summary of Data Structure

In Deliverable 1.4 the structure, contents and architecture of the database used for our analysis has been described. We will summary here briefly the data constellation which forms the backbone of our examination of preferences and perceptions of stakeholders in the form of residents, tourist visitors, and proximity travellers (e.g. VFR tourism) in the six pilot regions of Be.CULTOUR (Figure 5 and 6). We will in Deliverable 1.6 zoom in on the internal X factors in particular.
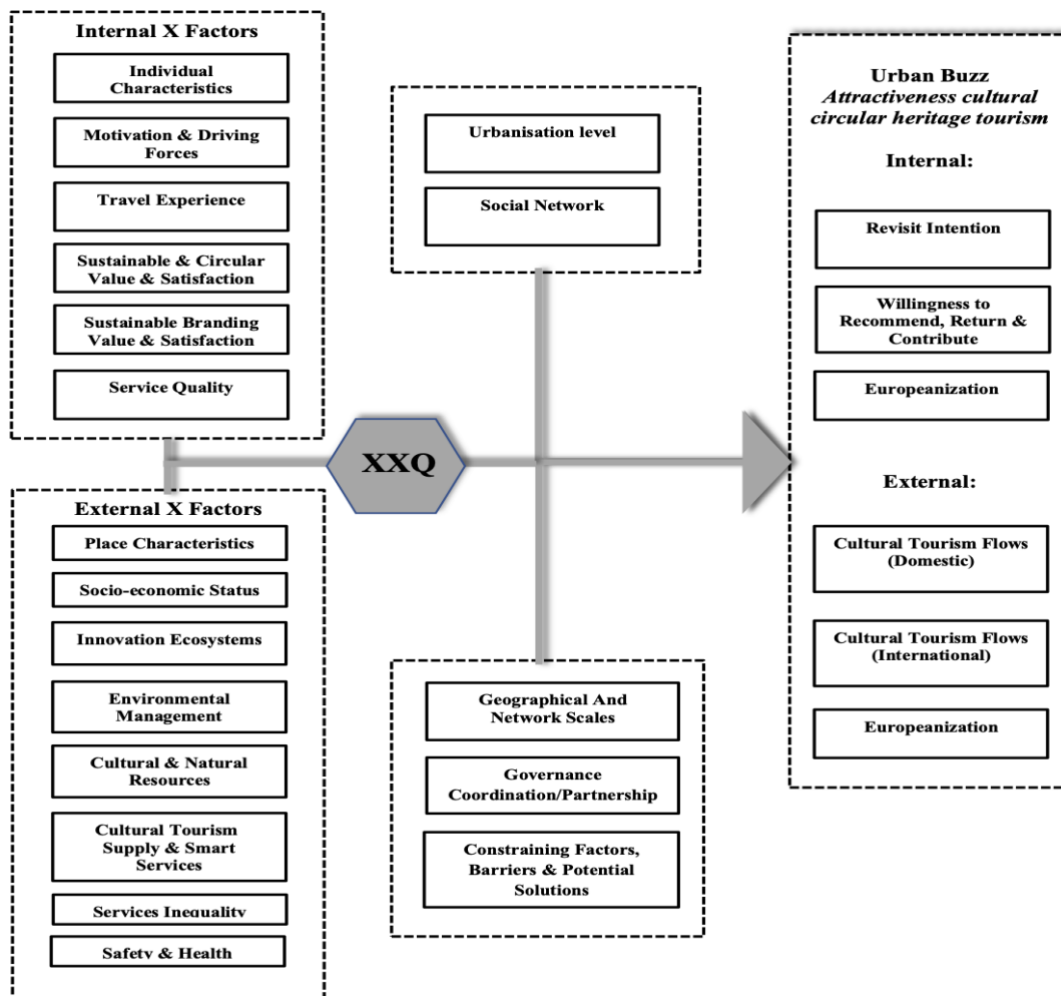
Figure 5 - Architecture of the KPIs in the urban tourism architecture system of Be.CULTOUR

Source: Authors' elaboration
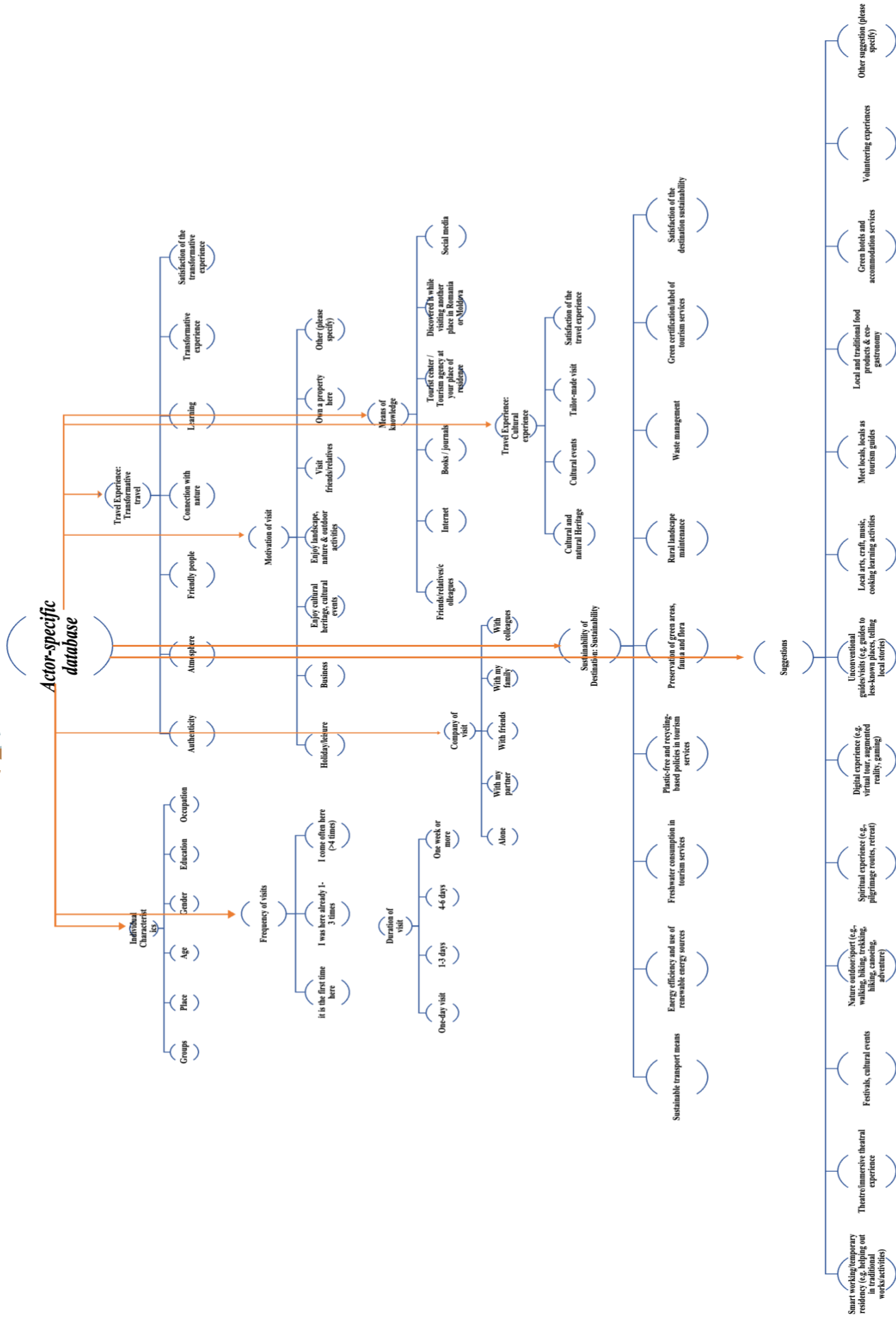
Figure 6 - Decomposition of survey data, as input for Digital Twins/i-Dashboards

The Be.CULTOUR WP1 team has successfully crafted and executed a survey aimed at assessing the potential and repercussions of circular cultural tourism within the pilot heritage sites. This initiative aligns seamlessly with the project's conceptual framework, as detailed in D1.1. Subsequently, the OUNL team meticulously analysed the survey data and provided interpretations. These insights were instrumental in constructing a data warehouse to support the digital Twin/app's data structure.

In the remaining part of Section 5 we will examine these data by means of a well-known multivariate exploratory method, called principal component analysis (PCA). The empirical findings from this PCA are summarized in Subsection 5.2.

5.2 Results from PCA

The empirical findings from the application of PCA were already extensively presented in Deliverable 1.4. Here we will only give a few illustrative empirical results; these results on human-centred factors are here related to the key factor of Motivation and Driving Forces. Table 1 presents the factor loadings for the most prominent driving forces in the category concerned.

- Example: Motivation & Driving Forces

Main factors referring to the social network of the actors that have visited the pilot regions

Table 1 - Factor Analysis Output - Communalities

Communalities

	Initial	Extraction
Company of visit: Alone	1.000	.381
Company of visit: with my partner	1.000	.531
Company of visit: with friends	1.000	.184
Company of visit: with my family	1.000	.659
Company of visit: with colleagues	1.000	.637

Extraction Method: Principal Component Analysis.

Table 1 displays the communality values used to assess the extent to which each variable is explained by the factors. The closer the communality is to 1, the more effectively the variable is elucidated by the X-factors.

Table 2 - Factor Analysis Output - Total Variance Explained

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings[a]
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	1.298	25.964	25.964	1.298	25.964	25.964	1.257
2	1.093	21.860	47.824	1.093	21.860	47.824	1.160
3	.991	19.821	67.644				
4	.912	18.235	85.879				
5	.706	14.121	100.000				

Extraction Method: Principal Component Analysis.

a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.

Next, Table 2 illustrates the assessment of variance associated with each factor. Greater variance signifies a higher degree of explanation for the variability within the dataset. To identify the X-factors for extraction in the analysis, we initially employ the principal components method of extraction without rotation, utilizing the default number of factors, which extracts the maximum possible number of factors, as an initial assessment. Subsequently, we identify the significant X-factors and categories as those exhibiting a variance (eigenvalue) surpassing a specific threshold. For instance, one criterion may involve including any X-factors with an eigenvalue of no less than 1.
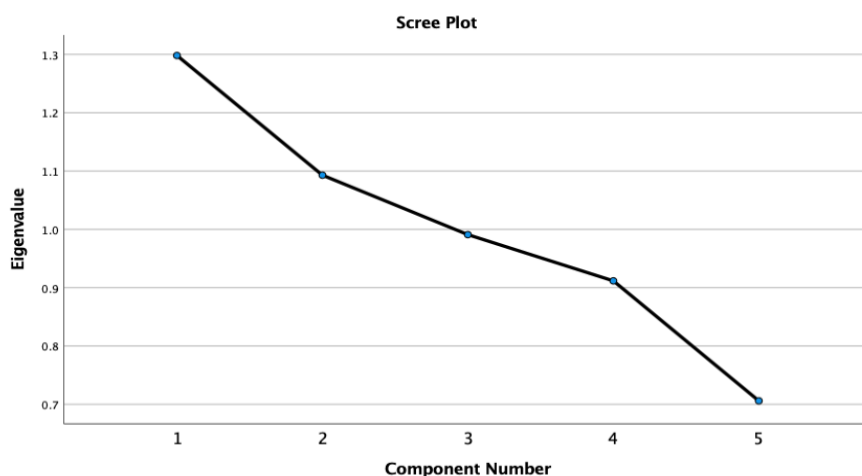
Figure 7 - The scree plot graph

Within Figure 7, the scree plot visually represents the connection between the eigenvalue and the factor number. This plot arranges the eigenvalues in descending order, with the largest eigenvalue appearing first (strongest X-factors). In the absence of any rotation, it's important to note that these eigenvalues correspond to the variances of the factors. Thus, the scree plot effectively organizes the eigenvalues in decreasing order of magnitude.

5.3 Results from Multivariate Regression (ANOVA)

The multivariate regression method seeks – in contrast to an exploratory PCA – to trace causal linkages between outcomes and underlying X-factors. An example of an ANOVA-based regression analysis can be found in Table 3.

- Example: General Satisfaction & Quality of Services

Here we look at the relationship between the general satisfaction and the quality of services in pilot regions.

Table 3 - Results of ANOVA regression

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95,0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	4.035	.133		30.420	.000	3.774	4.295		
	Quality of services: Accommodation services	.006	.023	.010	.247	.805	−.039	.051	.514	1.945
	Quality of services: Restaurants and food	.129	.027	.194	4.865	.000	.077	.181	.545	1.834
	Quality of services: Sport and wellness	−.035	.021	−.064	−1.657	.098	−.077	.007	.581	1.721
	Quality of services: Shops	−.067	.027	−.107	−2.451	.014	−.121	−.013	.455	2.198
	Quality of services: Public places	.183	.029	.266	6.201	.000	.125	.241	.470	2.126
	Quality of services: Transports and roads	.041	.025	.066	1.621	.105	−.009	.091	.527	1.898
	Quality of services: Information to visitors	.126	.026	.188	4.830	.000	.075	.178	.569	1.757

a. Dependent Variable: Most visited places: GLOBAL SATISFACTION: General satisfaction

These results from the successive steps of our multivariate analysis bring order in the seemingly chaotic structure of the survey data from the six pilot studies. They trace the most significant drivers of the stakeholders' opinion on the tourist sites concerned.

6. Pattern Recognition Analysis of Stakeholder Groups: A Q-Analysis

6.1 Introduction Q-Analysis

A Q-methodology serves as a valuable approach for uncovering subjective perspectives, enabling stakeholders to articulate their viewpoints on a particular matter. This method allows – generally speaking – for the identification of stakeholder groups that may converge or diverge in their opinions (Jedeloo and van Staa 2009; Van Exel and de Graaf, 2005; Webler et al., 2009; Watts and Stenner, 2012; McKeown and Thomas, 2013; Kamal et al., 2014; Moon and Blackman, 2014; Fuentes-Sanchez et al., 2021). In a Q-study, participants or stakeholders, are tasked with ranking a set of statements pertaining to the study's subject based on their individual preferences. A Q-methodology finds its suitability in investigating opinions, experiences, and interpersonal dynamics. It primarily focuses on capturing prevailing viewpoints and positions concerning a specific subject. The objective of a Q-study is to extract distinct lines of thought, rather than necessarily measuring their prevalence in a population. A Q-analysis employs multivariate factor analysis to pinpoint clusters (factors) representing cohorts of individuals who share similar perspectives and sentiments about the subject under study. In cases involving multiple stakeholder groups, the composition of these factors offers insights into which stakeholder groups align or diverge in their views (Raadgever et al. 2008). Importantly, it is worth noting that a Q-methodology does not aim to represent or estimate population statistics. Instead, its purpose is to sample a broad spectrum of expressed views, without making claims about the percentage of people holding these views (Cross 2005, p. 208).

Examples of recent applications of Q-analysis can be found inter alia in Pascariu et al. (2023); Dentinho et al. (2022, 2023). In the meantime, an extended and generalized Q-analysis has been developed by Dentinho (2023). This new statistical tool will concisely be described in Subsection 6.2.

6.2 Towards a Generalized Q-Analysis

6.3.1 Conventional Q-Analysis

The aim of this note is to present the expanded Q Method that allows the enlargement of the number of ranked combined statements on a topic of concern based on the structured combination of the ranking of simple statements, assuming respondents are consistent their

sequential rankings of simple statements. Expanded Q Method has relevant benefits because. (1) it allows the expansion of the number of respondents overcoming redundancy of many respondents in the usual Q Method; (2) facilitates the naming of the extracted components that are representative responses and (3), tests the consistency of the responses.

Q-analysis is a research technique used in the social sciences to analyse the commonalities and differences in the stakeholders' points of view on a topic of their concern. It was developed by William Stephenson (1953) and often used on educational attitudes (Gawron, 2016); on autoethnographic analysis (Ellis, 2004; Pepeka et. al., 2022); on studies on credibility (Metzger and Flanagin, 2013); on healthcare studies reported by the survey paper (Churruca et. al., 2021), job satisfaction (Guastello et. al., 2019), urban sustainability (Fuentes et al. 2022), and many other fields that use the method to transform subjective evaluations into objective results.

The standard Q Method involves: (1) the collection of statements on a topic of concern, (2) the ranking of disagreement in an approximated normal distribution; (3) the transposition of collected data defining stakeholders as variables and statements as observations; (4) the implementation of Principal Component Analysis to reduce the responses profiles into synthesised and orthogonal responses; and (5) the analysis of synthesised orthogonal responses relating them with the typology of statements and with the stakeholder features. There are three main limitations of the traditional Q Method. First, it assumes that respondents can rank many statements which, according to Miller (1956) is not plausible or acceptable. Second, the number of non-redundant respondents (variables) is limited by the number of statements (observations) constraining therefore the number of respondents and their relative representativity. Finally, the traditional Q Method does not provide objective information to name the extracted attitudes and the results can lead to very different interpretations (Brown, 1993).

6.3.2 *From Traditional Q -Analysis to Expanded Q- Analysis*

The expanded Q-Analysis tries to overcome the main limitations of the traditional Q Method by working with graded combined statements based on combinations of basic statements ranked by small groups, assuming that respondents are consistent in their sequence of choices.

If there are (q) questions with (r) alternative responses each, we will have (q*r) basic statements where the (r) responses can be ranked for each one of (q) questions. With the traditional Q Analysis respondents had to rank the (q*r) basic statements. With the expanded Q Analysis respondents make (q) rankings of (r) responses but we get (q^r) combined and ranked responses.

This generalized Q analysis is much richer in scope than the traditional one, and will be used in the present Be.Cultour application. More details on this method can be found in the Annex A. (see Annex A).

As indicated in our empirical multivariate analysis of tourism patterns in the six pilot regions, we will employ a generalized Q analysis. This method will be elucidated through a step-by-step presentation featuring a numerical example.

6.3 Empirical Results of Q-Analysis

As mentioned above, the conventional Q-method (developed by William Stephenson in 1953) is a technique used to identify commonalities and differences in stakeholders' rankings of a set of statements. The Generalized Q Method (Dentinho, 2023) allows for an expansion in the number of combined statements ranked, achieved through the structured combination of rankings of individual statements. In this study, we utilize the same questionnaire data, briefly describe it, and apply both variants of the Q-analysis to complement the evidence.

6.3.1 *Data*

The survey, as presented in Annex A, targeted adult visitors (aged 18 and above) of the Cultural Route in various locations across Europe, resulting in a total of 899 responses, with 840 of them being non-redundant. The responses were obtained from the following pilot regions: Aragon, Spain (165/164), Basilicata, Italy (97/97), Moldova/Romania (236/195), Larnaka, Cyprus (174/174), VGR Karlsborg (49/40), VGR Mark (49/49), and Vojvodina, Serbia (138/121).

Regarding the percentage representation of various regions, the breakdown is as follows: Aragon, Spain (20%), Basilicata, Italy (12%), Moldova, Romania (23%), Larnaka, Cyprus (21%), VGR Karlsborg (5%), VGR Mark (5%), and Vojvodina, Serbia (14%). People residing in Micro-Areas make up 13% of the total population, those in Meso-Areas constitute 36%, Macro-Areas encompass 27% of the respondents, and Other Areas account for 25%.

In terms of the respondents' profiles, 13% are residents, 41% are proximity travelers, and 47% are tourists. The respondents have an average age of 44 years with a standard deviation of 12. Gender distribution is 43% male, 56% female, and 1% without declared gender. Regarding education, 2% have only completed primary education, 31% have secondary education, 47% have higher education, and 19% hold postgraduate degrees. In terms of occupation, 44% are employees, 7% have liberal professions, 2% are researchers, 5% work in industries, 8% are self-

employed, 7% are entrepreneurs, 12% are retired, 7% are students, and 4% are primarily responsible for their families.

Regarding motivation for traveling, 35% traveled for leisure, 5% for business, 19% for cultural experiences, 21% for nature-related activities, 10% to visit friends, 8% to visit their own properties, and 1% had no explicit motives for traveling. The average duration of the visit is 3 days, with a high standard deviation of 3. When it comes to travel companions, 5% of the respondents travel alone, 14% with partners, 21% with friends, 27% with family, 7% with colleagues, and 26% with a combination of friends, relatives, and colleagues. Respondents became aware of these places through various means: the internet (29%), brochures (9%), tourist centers (13%), exploring the area (17%), social media (19%), or because they have a connection to the place (17%).

Regarding suggestions, 5% mentioned smart working, 4% referred to theater, 16% mentioned nature-related activities, 5% desired spiritual experiences, 4% were interested in virtual tours, 15% sought unconventional guides, 13% expressed interest in craft activities, 7% wished to meet the locals, and 13% advocated for the reinforcement of local traditions. Additionally, 4% suggested green hotels, and 1% mentioned volunteer work.

Table 4 presents the average and standard deviation of evaluations provided by the 840 non-redundant responses. Since the evaluation classes range from (-3 = Strongly Disagree) to (3 = Strongly Agree), it is evident that the classifications are generally positive, with higher scores for Cultural, Transformative, and General Experience, and lower scores regarding environmental sustainability and quality.

6.3.2 Q Analysis

Q Analysis does not focus on average evaluations but rather on identifying commonalities and differences in evaluations. The Standard Q Analysis examines the 840 rankings of 46 phrases in an attempt to discern what is shared and distinct within these rankings. It is important to note that due to the limited number of 46 simple statements and 840 responses, the analysis primarily serves as an exploratory analysis of the data's commonalities (see also Annex C).

Table 4 - Average evaluation of travel experience and sustainability of destination

Sets	Travel Experience and Sustainability of Destination	Average	Deviation
Experience	Cultural and natural heritage	2,24	0,96
	Cultural events	1,66	1,06
	Tailor-made visit	1,75	1,06
	Satisfaction of the travel experience	1,94	1,03
Transformative	Authenticity	1,72	1,03
	Atmosphere	2,02	0,98
	Friendly people	1,22	1,35
	Connection with nature	1,71	1,08
	Learning	1,72	1,03
	Transformative experience	1,30	1,12
	Satisfaction of the transformative experience	1,70	1,02
EU View	Interest in European heritage sites	1,52	1,13
	Sense of belonging to European culture	1,03	1,15
	Interest in learning more about linkages of local heritage with EU history	1,64	1,11
Environmental Sustainability	Sustainable transport means	0,18	1,50
	Energy efficiency and use of renewable energy sources	0,61	1,23
	Freshwater consumption in tourism services	0,49	1,12
	Plastic-free and recycling-based policies in tourism services	0,68	1,25
	Preservation of green areas, fauna and flora	1,24	1,11
	Rural landscape maintenance	1,12	1,13
	Wastes management	0,69	1,33
	Green certification/label of tourism services	0,44	1,10
	Satisfaction of the destination sustainability	0,94	1,09
Managerial Sustainability	Local and traditional food	1,49	1,15
	Local and traditional craft	1,37	1,15
	Conservation/reuse of local heritage and landscape	1,29	1,12
	Less known places promotion	1,24	1,14
	Social corporate responsibility/human rights policies in tourism activities	0,87	1,13
	Tourism activities run by local people/families	1,49	1,07
	Tourism workers skills	1,63	1,04
	Services for people with special needs	0,69	1,24
	Safety	1,87	1,08
	Satisfaction of destination management	1,40	1,10
Satisfaction	General satisfaction	1,88	0,98
	Satisfaction compared to other similar places	1,68	1,01
	Satisfaction compared to expectations	1,75	0,99
	Willingness to come back	1,95	1,07
	Willingness to recommend	2,17	0,98
	Willingness to contribute/donate	1,09	1,25
Quality	Accommodation services	1,31	1,08
	Restaurants and food	1,53	1,14
	Sport and wellness	1,07	1,06
	Shops	1,02	1,10
	Public places	1,31	1,06
	Transports and roads	0,75	1,42
	Information to visitors	1,21	1,20

Figure 8 illustrates that the 840 rankings can be condensed into 46 components or attitudes. The first component accounts for 21% of the questionnaire responses, the second for 7%, the third for 4%, and so on, with the seventh component also representing 3%, followed by approximately 2% for subsequent components.
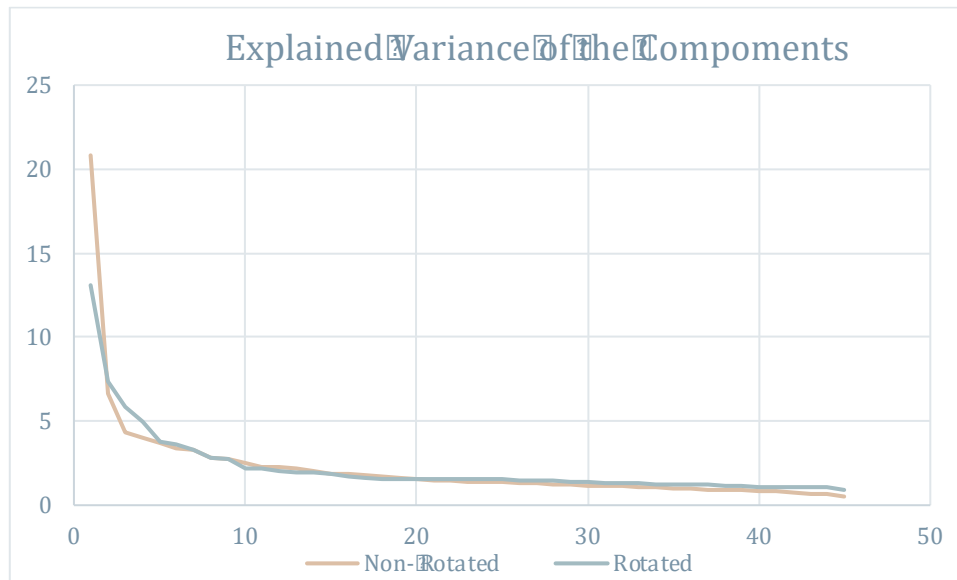
Figure 8 - Explained Variance of the components from the Q- Analysis

6.3.3 Naming Components

Grouping the first 4 rotated component scores into 7 clusters using a hierarchical clustering technique with an Euclidean Distance Matrix and Ward aggregation rule enables the identification of the main characteristics of each cluster. Examining Figure 9 allows for the highlighting of the primary statements associated with each component:

- Component 1 favors the Cultural Experience, Managerial Sustainability, and Quality but does not support the Transformative Experience, EU perspectives, Environmental Sustainability, and General Satisfaction.
- Component 2 emphasizes the Cultural Experience, Environmental Sustainability, General Satisfaction, and Quality but criticizes Managerial Sustainability, Transformative Experience, and EU perspectives.
- Component 3 maintains a more balanced evaluation across all dimensions.
- Component 4 values Quality, Satisfaction, and Managerial Sustainability but dismisses all other evaluation dimensions.
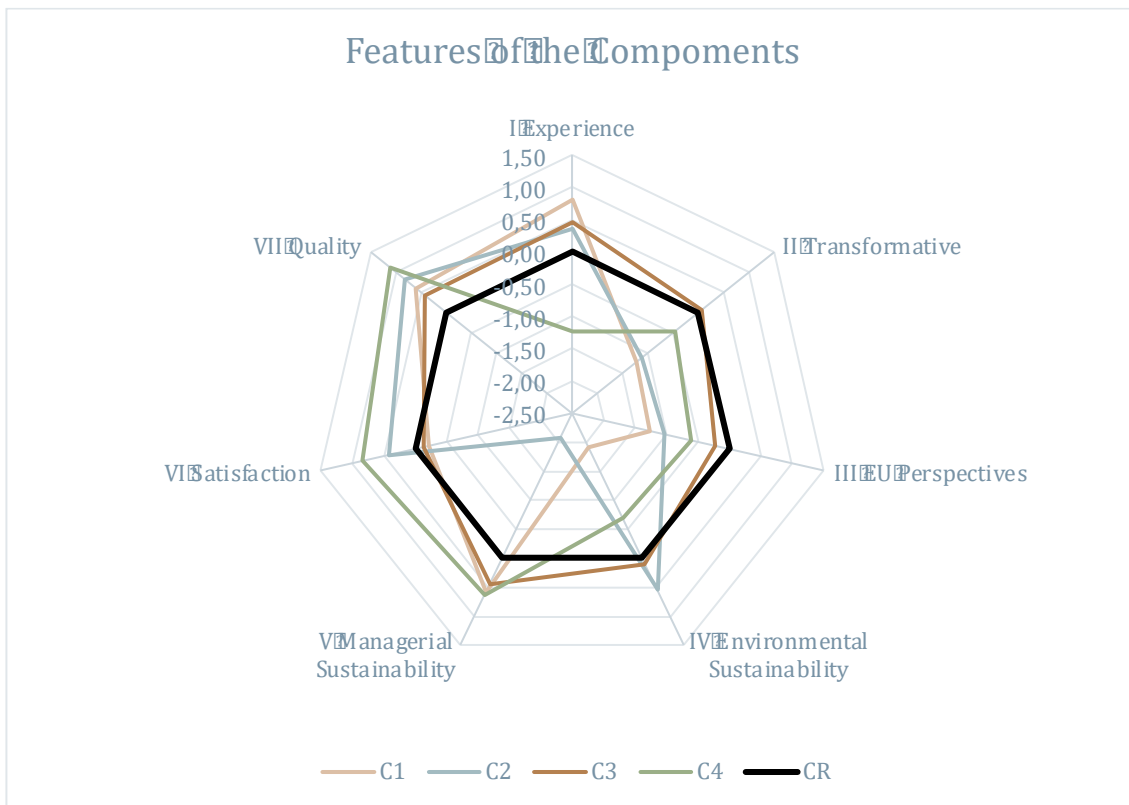
Figure 9 - Features of the Components

Table 5 reveals the regressions of the Component Scores on the Visited Places. There are indications that:

- Basilicata is associated with Component 1, which favors the Cultural Experience, Managerial Sustainability, and Quality but opposes the Transformative Experience, EU perspectives, Environmental Sustainability, and General Satisfaction.

- Aragon and Karlsborg are linked to Component 2, which emphasizes the Cultural Experience, Environmental Sustainability, General Satisfaction, and Quality but criticizes Managerial Sustainability, Transformative Experience, and EU perspectives.

- Larnaka and Karlsborg are associated with Component 3, which maintains a balanced evaluation across all dimensions.

- Larnaka and Vojvodina are related to Component 4, which values Quality, Satisfaction, and Managerial Sustainability but disregards all other evaluation dimensions.

Table 5 - Regressions of the Components Scores on the Visited Places

M-	R	R2	Z	Sig.	Intercept	Aragon	Basilicata	Larnaka	VGR Kar	Vgrmark	Vollvodin
C1	,325ª	,105	16,34	<,001	,266***	,064**	,153***	-,105***	-,072*	-,062*	-,012
C2	,575	,331	68,66	<,001	,103***	,298***	,056***	-,001	,165***	,101	,004
C3	,457	,209	36,70	<,001	,072***	,008	,069	,235***	,108***	,042	,009
C4	,310a	,096	14,80	<,001	-,049**	056	043	187***	,037	-,005	,113***

Following the table, we provide a detailed interpretation of the regression results, which reveal how Component Scores (C1, C2, C3, and C4) are associated with different visited places:

Component 1 (C1):

- The regression analysis shows that Basilicata is significantly associated with Component 1, exhibiting a positive coefficient of approximately 0.153. This indicates that individuals who visit Basilicata tend to have more favorable evaluations in terms of Cultural Experience, Managerial Sustainability, and Quality. Conversely, visitors to Basilicata tend to have less favorable evaluations of the Transformative Experience, EU perspectives, Environmental Sustainability, and General Satisfaction, as indicated by the negative coefficients for these dimensions. In essence, Basilicata stands out as a destination where visitors highly value aspects related to Cultural Experience, Managerial Sustainability, and Quality, while other dimensions may not receive as much attention or positive assessment.

Component 2 (C2):

- The analysis reveals that both Aragon and Karlsborg are strongly associated with Component 2, with positive coefficients of approximately 0.298 and 0.165, respectively. This suggests that visitors to these places place a significant emphasis on the Cultural Experience, Environmental Sustainability, General Satisfaction, and Quality. However, visitors to Aragon and Karlsborg tend to provide lower ratings for Managerial Sustainability, Transformative Experience, and EU perspectives, as indicated by the negative coefficients. This implies that Aragon and Karlsborg are destinations where cultural and environmental aspects are highly valued, but managerial aspects and transformative experiences may not be perceived as positively by visitors.

Component 3 (C3):

- The regression analysis indicates that both Larnaka and Karlsborg are positively associated with Component 3. This component represents a more balanced evaluation

across all dimensions. Visitors to Larnaka and Karlsborg tend to provide moderate and balanced ratings across the various aspects represented by Component 3. It suggests that these destinations offer experiences that are perceived consistently across different facets.

Component 4 (C4):

- VGR Kar (Västra Götaland Region Karlsborg) is significantly associated with Component 4, exhibiting a positive coefficient of approximately 0.187. This implies that visitors to VGR Kar place a high value on Quality, Satisfaction, and Managerial Sustainability. However, visitors to VGR Kar tend to give lower evaluations for Transformative Experience, EU perspectives, Environmental Sustainability, and General Satisfaction, as indicated by the negative coefficients for these dimensions. Essentially, VGR Kar is a destination where the quality of the experience and managerial sustainability are highly appreciated by visitors, but other aspects may not receive as much attention or positive appraisal.

In summary, this analysis provides valuable insights into how different components of visitors' evaluations are associated with specific destinations, shedding light on the varying priorities and perceptions of visitors to these places. Moreover, it underscores the importance of a human-centered smart data monitoring and management system for sustainable cultural tourism, as it can aid in aligning tourist experiences with visitor preferences and contributing to the overall sustainability of cultural tourism destinations.

6.3.4 Generalized Q-Analysis

The Generalized Q Analysis conducted on the 840 rankings of 46 phrases used in this study aims to reduce the rankings of the 46 phrases into 7 groups of 3 phrases each. This reduction is achieved using Principal Component Analysis to extract three components representing the valuations of each of the seven groups of phrases presented in Table 4. These groups are labeled as follows: Experience, Transformative, EU Perspective, Environmental Sustainability, Managerial Sustainability, Satisfaction, and Quality.

Subsequently, the analysis estimates combined valuations for the 2187 possible combinations (3^7) of 3 phrases selected from the 7 groups, resulting in a total of 21 statements. These statements are derived from the assessments collected pertaining to 46 topics related to Travel and Destination Sustainability.

The 840 valid responses, considered as variables in the Q-Analysis, can then be related to the 2187 combined valuations treated as observations. This synthesis results in the identification of 14 representative components among the 840 respondents.

In Figure 10, the explained variance of the Generalized Q Analysis is depicted. It is evident that, perhaps due to the wide diversity of places under consideration, it is challenging to find a common perspective that can account for a higher percentage of the variance.
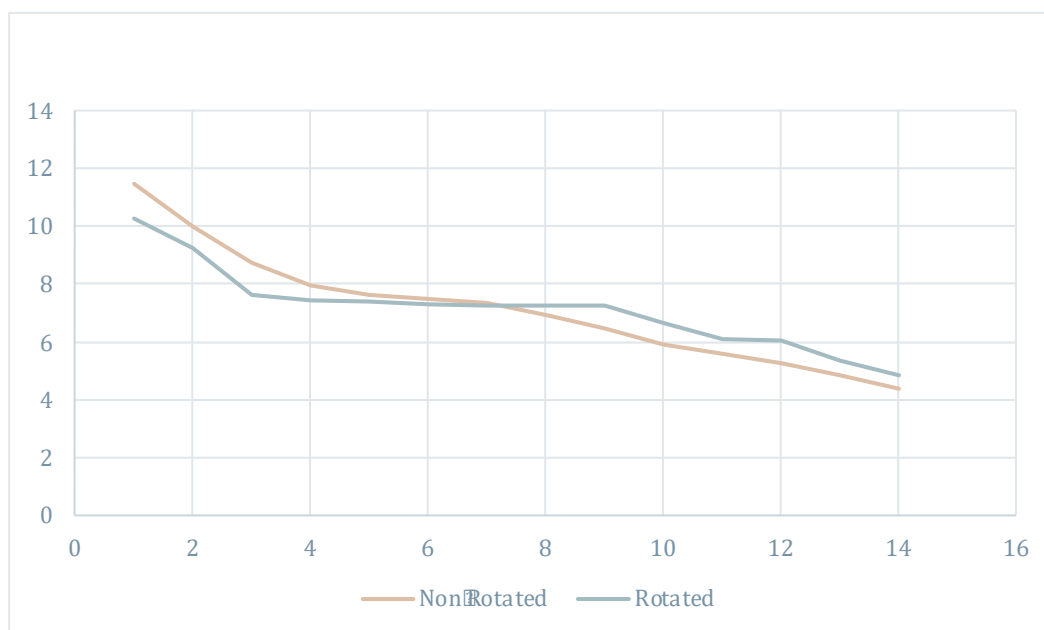
Figure 10 - Explained Variance of the components in the Generalized Q- Analysis

The aim of this exercise is, on one hand, to identify and name the various components, and on the other hand, to explore the X factors that influence the similarities and differences between these components or attitudes regarding the different tourist regions.

6.3.5   *Naming Generalized Q Analysis Components*

Table 6 is divided into two sections. The first 14 lines of the table display the Regression Coefficients of Component Scores on Dummies (D1 to D21) for Composed Topics. Following these, the subsequent lines establish the connections between the 45 questionnaire topics and the 21 variables used in the Generalized Q Analysis.

Table 6 - Regression Coefficients of Component Scores on Dummies (D1 to D21) of Composed Topics and Imposed three Component Scores

Group of Topics	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	D12	D13	D14	D15	D16	D17	D18	D19	D20	D21
	Experience			Transform			European			Envvironment			Managerial			Satisfaction			Quality		
C1 (10%)	1,2	1,6	1,4	1,2	1,3	1,2	1,2	1,9	1,4	1,2	1,1	0,5	1,2	0,5	-0,1	1,2	1,6	1,3	1,2	0,2	-0,5
C2 (9%)	0,3	0,1	0,6	0,3	0,9	0,4	0,3	-0,2	0,2	0,3	0,4	1,4	0,3	-0,6	0,5	0,3	0,7	-0,5	0,3	-0,2	-0,3
C3 (8%)	1,5	1,4	1,1	1,5	1,6	1,6	1,5	0,2	-0,8	1,5	1,5	1,1	1,5	1,4	1,8	1,5	1,3	1,5	1,5	1,1	1,1
C4 (7%)	-1,2	-1,2	-1	-1,2	-0,8	0,9	-1,2	-1,4	-1,2	-1,2	-1,2	-0,9	-1,2	-1,3	-1,3	-1,2	-0,9	-0,6	-1,2	-1,2	-1,4
C5 (7%)	1,7	1,5	1,4	1,7	-0,4	1	1,7	1,2	1,4	1,7	2	2,4	1,7	1,5	1,2	1,7	1,2	1,1	1,7	1,6	1,3
C6 (7%)	0,5	0,6	0,4	0,5	1	0,9	0,5	0,7	1	0,5	0,6	0,8	0,5	1,1	1,3	0,5	-1,4	-0,2	0,5	-0,3	-0,5
C7 (7%)	-1,2	-0,9	-0,8	-1,2	-1,6	-1,3	-1,2	0,5	-1,4	-1,2	-1,1	-0,5	-1,2	-0,9	-0,5	-1,2	-1	-1,1	-1,2	-1,3	-1,2
C8 (7%)	1,5	1,5	1,4	1,5	1,2	1,4	1,5	1,4	1,4	1,5	-0,9	0,4	1,5	1,4	1,6	1,5	1,3	1,3	1,5	1,5	1,5
C9 (7%)	0	0,2	0	0	-0,3	-0,7	0	-0,2	0	0	0	0,6	0	-1,1	-0,3	0	0,1	1,7	0	-0,2	-0,2
C10 (7%)	-0,5	-0,3	-0,3	-0,5	-1,2	-0,9	-0,5	-0,7	-0,1	-0,5	-0,4	-1,2	-0,5	0,2	1,1	-0,5	0,5	0,1	-0,5	-1,2	-1,3
C11 (6%)	0,7	0,6	0,5	0,7	0,5	0,9	0,7	1,2	1	0,7	0,9	-0,2	0,7	-0,9	0,6	0,7	0	0	0,7	1	1,2
C12 (6%)	0,5	0,5	0,5	0,5	0,4	0,7	0,5	0,5	0,6	0,5	0,5	0,5	0,5	0,3	0,1	0,5	0,5	0,5	0,5	-1,3	0,9
C13 (5%)	0,1	0	-2	0,1	0,2	0,3	0,1	0,3	0,3	0,1	0,1	0,4	0,1	0	0,2	0,1	0,5	0,1	0,1	0	-0,1
C14 (5%)	1	-1,3	-0,1	1	1	1	1	1,4	1,1	1	1	0,9	1	1,1	1,1	1	1,2	1,4	1	0,9	0,8
Cultural and natural	0,1	0,2	0,9																		
Cultural events	0,1	0,9	0,2																		
Tailor made visit	0,7	0,5	-0,1																		
Satisfaction of experience	0,8	-0,1	0,3																		
Authenticity				0	0,8	0,1															
Atmosphere				0,1	0,8	0															
Friendlypeople				0	0	0,9															
Connectionwithnature				0,5	0,2	0,4															
Learning				0,7	-0,1	0,1															
Transformativeexperience				0,7	0	0,1															
Satisfaction transformation				0,7	0,1	-0,3															
European heritage							0,8	-0,2	-0,6												
Belonging to Europe							0,8	-0,5	0,4												
Linkages with Europe							0,7	0,7	0,2												
Sustainabletransportmeans										0,6	0,2	-0,1									
Energy efficiency										0,7	0	0,1									
Freshwaterconsumption										0,6	-0,1	0									
Plastic free										0,7	0,1	0,1									
Preservation of green areas										0	-0,1	0,8									
Rural landscape										0	0,2	0,7									
Waste management										0	0,6	0,2									
Green certification										0,1	0,7	-0,1									
Satisfaction of destination										0,1	0,6	0,4									
Local and traditional food													0,8	0	0						
Local and traditional craft													0,8	0,1	-0,1						
Conservation of landscape													0,2	0,5	0,2						
Lessknownplacespromotion													0,1	0,5	0,1						
Social responsibility													-0,1	0,7	-0,1						
Tourism activities by locals													0,2	-0,1	0,6						
Tourism workers skills													0	0	0,6						
Services for special needs													0	0,6	0						
Safety													-0,1	0	0,6						
Satisfaction ofmanagement													-0,1	0,1	0,4						
General satisfaction																0,7	0,1	-0,1			
Satisfaction compared																0,8	0	0			
Satisfaction & expectations																0,7	0	0			
Willingness to come back																0,1	0,8	0			
Willingness to recommend																0	0,8	0			
Willingness to donate																-0,1	0	1			
Accommodation services																			0,7	0	0,2
Restaurants and food																			0,8	0,1	-0,1
Sport and wellness																			0,2	0	0,9
Shops																			0,5	0,4	0,1
Publicplaces																			0,3	0,5	0,2
Transports and roads																			0	0,8	-0,2
Information to visitors																			-0,3	0,5	0,5

The interpretation of Table 6 is crucial, as it enables us to assign useful and interpretable names to the fourteen components derived from the evaluations of the 840 respondents. In this context, Table 5 plays a dual role: first, it provides the information needed to name Dummies 1 to 21, and second, it facilitates the identification and naming of these components.

- *Component 1* demonstrates a favorable view towards most statements, with exceptions including the development of tourism activities by locals, promotion of tourism worker skills, and ensuring safety and wellness-focused tourism.
- *Component 2*, in contrast, generally contains a negative view towards most statements, with the exception of those related to the preservation of green areas and rural landscapes.
- *Component 3* tends to agree with most phrases but does not align with the concept of belonging to Europe.
- *Component 4* disagrees with most statements but shows a preference for friendly people and a connection with nature.
- *Component 5* aligns with most of the phrases but opposes the concept of authenticity and atmosphere.
- *Component 6* maintains a neutral stance towards most statements, but opposes the willingness to return or recommend.
- *Component 7* generally opposes most statements, but favors the idea of linkages with Europe.
- *Component 8* is in favor of most statements but disagrees with aspects related to waste management, green certification, and overall destination satisfaction.
- *Component 9* primarily focuses on the willingness to donate.
- *Component 10*, in contrast to Component 1, emphasizes the significance of tourism activities by locals, tourism worker skills, and ensuring safety.
- *Component 11* opposes several ideas, including landscape conservation, the promotion of lesser-known places, social responsibility, and services for special needs.
- *Component 12* does not endorse aspects related to shops, public places, transportation, roads, and visitor information.
- *Component 13* does not align with the roles of culture and nature.
- Lastly, *Component 14* exhibits a dislike for cultural events.

This structured analysis of Table 6 provides a comprehensive understanding of the components and their respective associations with the evaluated statements and topics, offering valuable insights into the varied common respondent attitudes towards various internal X aspects of tourism and sustainability.

6.3.6 *Explanations*

Table 7 displays the Coefficients of the Regressions of the Component Scores on Visited Places as well as several control variables. Several interesting patterns and policy-relevant indications emerge from this empirical analysis:

- Visitors to Aragon exhibit a preference for specific factors. They favor the development of tourism activities by locals, the promotion of tourism worker skills, ensuring safety, and wellness-oriented tourism (C1). Additionally, they value good waste management, green certification, and express satisfaction with the places they visit (C8). They also align with the importance of culture and nature (C13). However, they show reluctance towards willingness to donate (C9).

- Tourists in Basilicata exhibit distinct preferences. They highly appreciate the places they visit (C8) and emphasize the significance of culture and nature (C13). Nevertheless, they are less inclined to prioritize tourism activities by locals, tourism worker skills, and safety (C10).

- Visitors to Karsborg have clear and distinct preferences. They strongly favor the development of tourism activities by locals, the promotion of tourism worker skills, safety, and wellness-oriented tourism (C1). They also have a strong sense of belonging to Europe (C3). However, they do not emphasize the presence of friendly people or a connection with nature (C8). Moreover, they express disagreement with donations (C9) and favor aspects related to shops, public places, transportation, roads, and visitor information (C12). Additionally, they have reservations regarding the role of culture and nature in tourism (C13).

- Tourists in Mark share certain preferences. They favor the development of tourism activities by locals, the promotion of tourism worker skills, ensuring safety, and wellness-oriented tourism (C1). They also appreciate the preservation of green areas and rural landscapes (C2) and acknowledge the role of culture and nature in tourism (C13). Additionally, they have a sense of belonging to Europe (C3). However, they are against the idea of linkages with Europe (C7).

- Visitors to Vojvodina share specific preferences. They align with the preservation of green areas and rural landscapes (C2) and have a sense of belonging to Europe (C3). However, they do not emphasize the friendliness of people (C8).

- Tourists in Moldova/Romania exhibit certain tendencies. They agree with the preservation of green areas and rural landscapes (C2) but are reluctant to express a willingness to return or recommend (C6). They are also opposed to the idea of linkages with Europe (C7) and do not perceive people as friendly (C8). Moreover, they do not acknowledge the existence of tourism activities by locals, tourism worker skills, and safety.

- Larnaka demonstrates unique characteristics. It exhibits implicit values in the constant, which are highly significant in Components 1 to 5 and also in Components 9, 12, and 13. Larnaka is against the promotion of tourism worker skills, ensuring safety, and wellness-oriented tourism, as well as the preservation of green areas and rural landscapes. It disagrees with the presence of friendly people and a connection with nature but agrees with the concept of authenticity and atmosphere.

Table 7 - Coefficients of the Regressions of the Components Scores on the Visited Places, and control variables

	R	S	Constant B	p	Aragon B	p	Basilicata B	p	Karlsborg B	p	Mark B	p	Voljvodina B	p	Moldova B	p
C1 (10%)	,292	<,001	,069	839	-,443	,001	,001	,993	-,298	<,001	-,179	,007	-,027	,600	,028	,570
C2 (9%)	,222	<,001	-,151	,654	-,099	,063	,025	,655	-,168	,009	-,189	,005	-,275	<,001	-,228	<,001
C3 (8%)	,138	<,001	,606	,060	-,161	,002	-,009	,897	-,274	,000	-,309	,000	-,094	,059	-,135	,004
C4 (7%)	,125	<,001	,016	,961	-,102	,044	-.078	,136	-,243	<,001	-,076	,228	-,014	,772	-,087	,063
C5 (7%)	,093	,004	,074	,820	-,032	,536	-,055	,300	,065	,290	,014	,832	-,019	,700	,047	,315
C6 (7%)	,081	,034	-,337	,302	-,070	,174	-,095	,073	,062	,316	-,079	,217	-,077	,126	-,163	<,001
C7 (7%)	,075	,082	,084	,795	-,085	,097	-,071	,179	-,053	,392	-,164	,011	-,054	,278	-,103	,030
C8 (7%)	,095	,003	,525	,103	-,221	<,001	-,123	,019	-,220	<,001	-,227	<,001	-,179	<,001	-,168	<,001
C9 (7%)	,174	<,001	-,183	,552	-,219	<,001	-,003	,956	-,250	<,001	-,160	,009	-,043	,368	-013	,777
C10 (7%)	,089	,166	-,450	,152	-,043	,385	-,118	,021	-,046	,440	-,077	,215	-,086	,076	-,096	,035
C11 (6%)	,077	,058	-,155	,604	-,024	,605	,079	,102	-,038	,507	-,078	,138	-,040	,380	-,033	,442
C12 (6%)	,156	<,001	-,418	,141	,042	,346	,081	,079	-,150	,005	-,009	,872	-,035	,418	-,038	,350
C13 (5%)	,124	<,001	,181	,506	-,131	,002	-,151	<,001	-,184	<,001	-,276	<,001	-,112	,007	-,108	,006
C14 (5%)	,064	,306	,179	,504	-,016	,699	-,033	,452	-,068	,180	-,086	,105	-,063	,127	,012	,757

We observe that not so many control variables were found to be statistically significant. Traveling with friends had a positive impact on the regression of Component 1, while traveling with family strengthened the explanation of Component 2. Visiting alone reinforced the results of Component 3, but being of another gender was associated with a negative impact on Component

4. Proximity to the destination also had a negative influence on Component 5, but moving to holidays and leisure activities reinforced Component 6. Control variables that contributed to Component 10 were related to schooling, while Component 13 was influenced by the frequency of visits, agreement with donations (C9), preferences for shops, public places, transportation, roads, and visitor information (C12), as well as the importance of culture and nature for tourism (C13).

Based on 810 valid questionnaires, we identified the primary components or attitudes of respondents regarding seven case study areas. The conclusion highlights that, in addition to variations in tourism destinations, there are indeed differences in the attitudes of visitors, as identified in this study. Future research may explore into further understanding and justifying these attitudes by considering variations in cultural and natural contexts (external X factors).

In summary, Tables 6 and 7 demonstrate important insights into the distinct components derived from the evaluations of 840 respondents, encompassing various facets of tourism and sustainability within a human-centered smart data monitoring and management context. These components offer a comprehensive understanding of visitor attitudes.

Table 7, in particular, highlights the nuanced preferences of visitors across different destinations, providing valuable information about their attitudes towards specific elements. Remarkably, control variables, though present, exert limited influence on these attitudes. Factors such as travel companions and destination proximity show varying impacts.

To conclude, this analysis, based on 810 valid questionnaires, underscores the presence of diverse visitor attitudes across seven case study areas. These distinctions go beyond basic location-specific variations and suggest the potential influence of unique cultural and natural contexts, all within the framework of human-centered smart data monitoring and management. Consequently, further research can explore deeper into these attitudes within specific contexts to provide a more profound and justified understanding of their variations.

7. 3D Digital Visualization of Local Tourist Amenities: An illustration of a Digital Twin Application

7.1 Introduction to Digital Twins

Digital Twins are the most advanced representations of geographical information. A first historical example of an almost 3D geographical mapping of reality can be found in a painting by the great Dutch painter Johannes Vermeer, termed 'The geographer' (see Figure 11). This painting offers a seemingly, almost 3D image of a geographer working on his maps and his presentation or understanding of spatial reality. Even though the painting itself is of course 2D, it gives the visual impression of a real world in three dimensions. It is essentially a $2^{1/2}$ D image.

Figure 11 - J. Vermeer, The Geographer, 1668-1669

Currently, there is significant development in the domain of Digital Twins (DT). However, before exploring the details of DT, it's valuable to take a step back and consider the work of Johannes Vermeer. In his paintings, such as 'The Geographer,' we can observe the presence of maps and geographical information. This integration of geographical elements into his artwork was not only

artistically significant but also indicative of prestige during his time. Gathering and showcasing geographical spatial data was a symbol of distinction.

7.2 An illustrative Application of Digital Twins: The Parkstad Region

In this section we will demonstrate the great potential of Digital Twins by means of an illustrative application to one of the mirror regions of the Be.CULTOUR project, viz. the Parkstad region in Limburg (the Netherlands). The province of Limburg – and in particular the Southern region South-Limburg – is a very attractive and popular tourist destination. In the year 2022, about 4.3 million tourists visited this area. Now that we are in the post-corona era, the expectation is that this number may rise to 5 million visitors in 2023. The economic importance of this sector is very high: approx. 40.000 people earn their living in the tourist industry in this region.

The region has a wealth of tourist attractions: nature, culture, history, shopping and entertainment. It goes without saying that this tourist development has also its shadow side: the region is also subjected to the well-known tourism paradox, with the inevitable consequence of crowding effects and environmental quality decay. To provide an evidence-based analysis of the various forces at work, a visual stakeholder-oriented tool in the form of a Digital Twin is needed. We will illustrate this now by means of a few empirical examples on the Parkstad region. This region has a rich historical development, starting from the Roman period. This history can be subdivided into 5 epochs; each of these epochs has generated distinct features in the form of characteristic historical-cultural heritage assets. So, essentially there are 5 layers of historical-cultural heritage images for the Parkstad region (Figure 12).
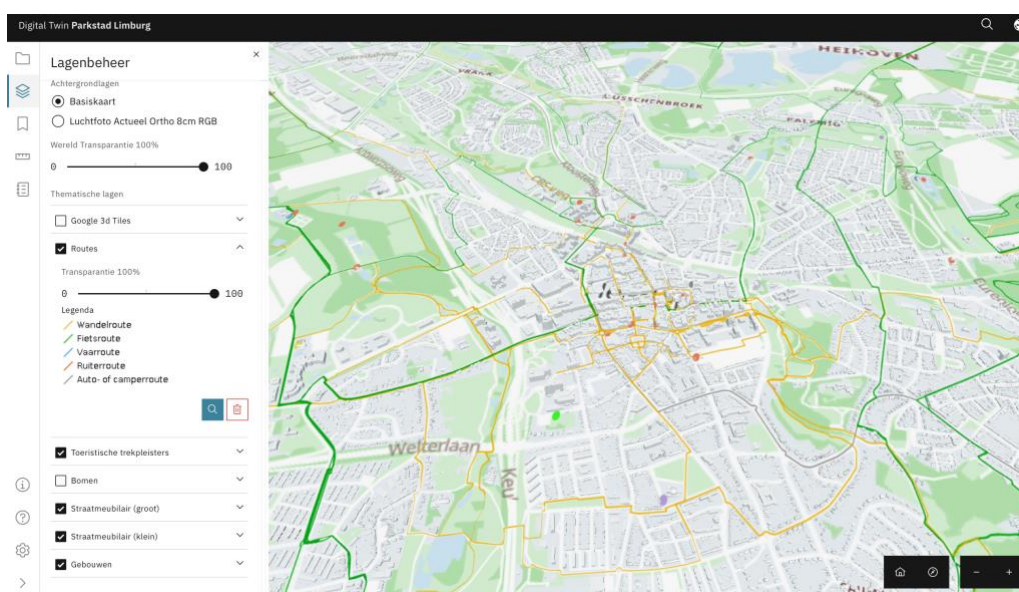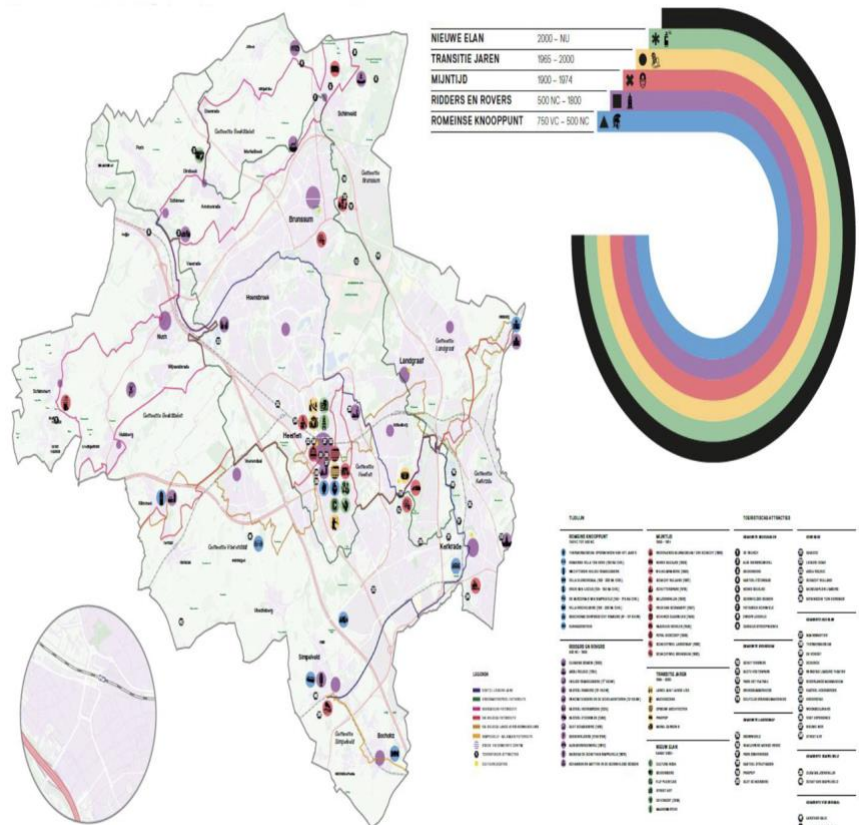
Figure 12 - An integrated representation of the cultural-historical assets across the entire region in the form of a comprehensive map.

Source: The Story of Parkstad, and its implementation within the Customer Journey Model, a presentation by Anya Niewierra, General Director Visit Zuid Limburg, on 8 September, 2022 (pp. 27).

In an image form, the cultural-historical evolution of South-Limburg can also be visualised systematically from a synthetic multi-faceted time perspective (see Figure 12). The details of Figure 12 will be discussed in the next deliverables. The visitors to South-Limburg have different motives: nature, culture, history, shopping, entertainment etc. Especially in the summer season, clearly overcrowded places can be observed, which reduces the tourist attractiveness of this area and leads also to dissatisfaction among the local residents. Tourism policy is therefore a delicate search for a balance between conflicting interests. To find such a balance, detailed user-friendly information of tourist attractions, tourist pressure, and negative externalities is needed. To that end, the use of digital support tools is a necessity.

The empirical focus in the following report will be on a prototype design of a digital twin with more details and multi-functions for sustainable and circular development of the city of Heerlen,

the touristic centre of the Parkstad region in South-Limburg. To undertake this endeavour, an extensive data base collection (based on municipal statistics, cadastral data, place-specific tourist data, relevant land-use data etc.) that is in progress and almost fully organized. A necessary condition for building up a reliable 3D thematic image of a given area is to specify precisely the points of interest and to get precise data on the coordinates of this site. This is certainly a sine qua non for a reliable and quantitative representation of spatial phenomena in relation to cultural tourism and sustainable urban development.

As an illustrative introduction to the spatially varying tourist amenities in the city of Heerlen, we present here a GIS map of all hospitality provisions (including hotels, restaurants, (snack)bars, café's) in the city (Figure 13). The centre of the city and the main axes appear to be popular locations of these visitors' facilities.

Legend
- 55102 OR 55201 OR 55101 OR 5530 OR 55202 OR 5590
- 56101 OR 5590
- 56101 OR 56102
- 56102
- 56102
- 56102 OR 5630
- 5630
- 5630 OR 85522 OR 85521 OR 5914
- 91011 OR 85522 OR 90042 OR 90041
- 9103 OR 91011 OR 91022 OR 92001 OR 91012 OR 93211 OR 93299 OR 91019 OR 92009 OR 91042 OR 91021 OR 91041
- 93299 OR 94911
- 94911 OR 9604
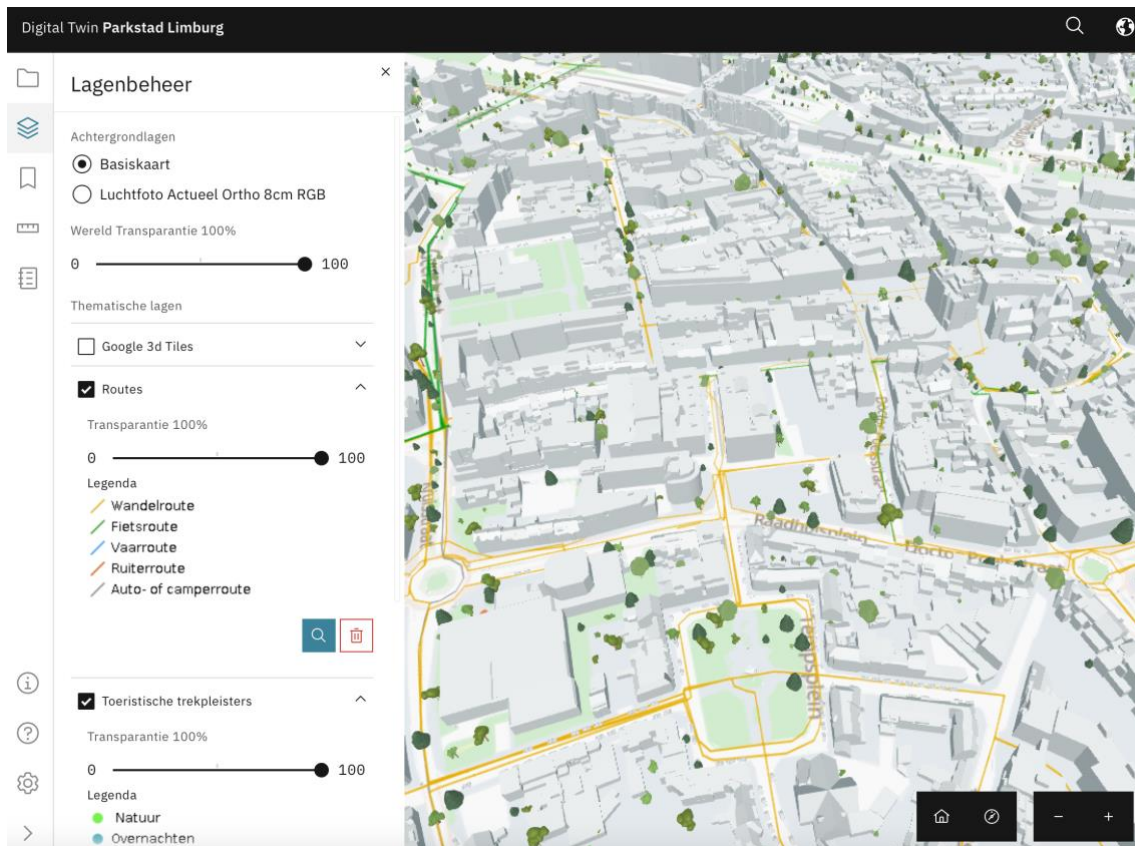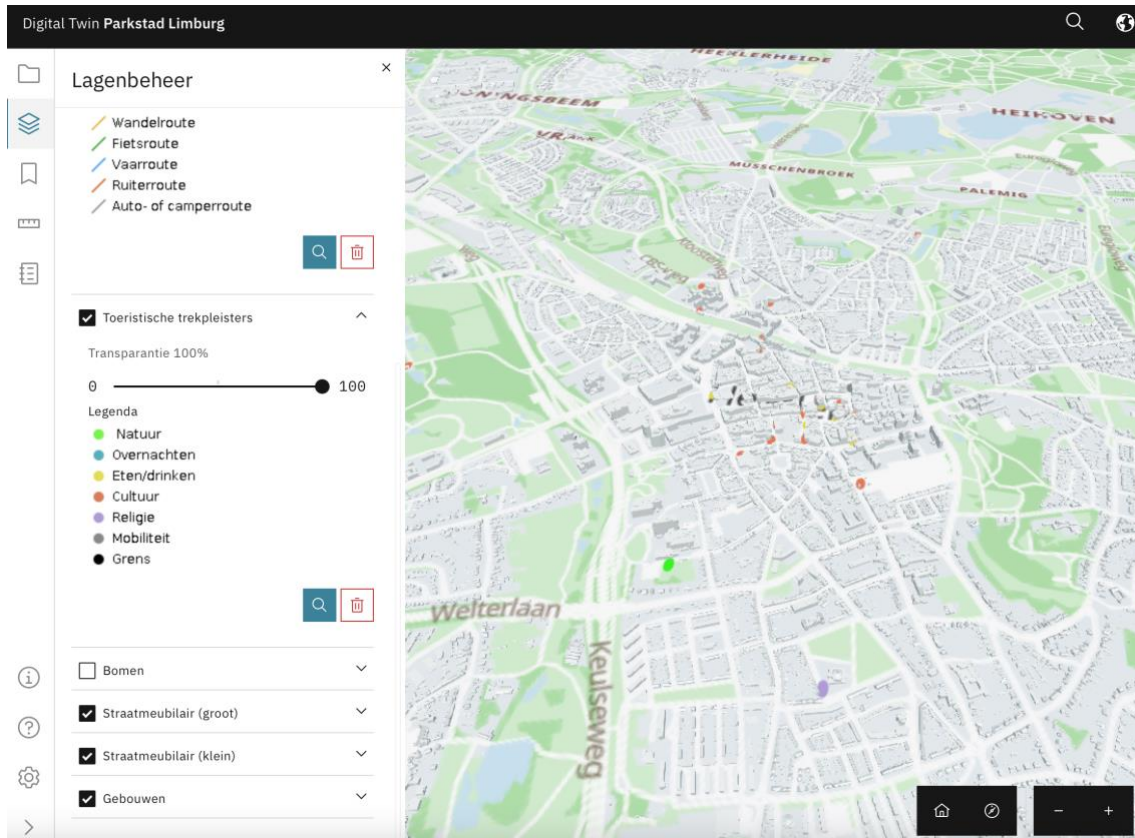
Figure 13 - Location of hospitality amenities in the centre of Heerle

7.3 Scope of Digital Twins for Be.CULTOUR

A Digital Twin is not just a 3D copy of reality. It is a systematic way of representing geographical information by offering a focused architecture of real-world data which can be used to present, understand, predict or simulate dedicated geographical phenomena. Hence, a Digital Twin is a cognitive learning twin that is instrumental in changing and improving spatial quality of life. As such, it is a useful complement to geo-design methods (see also Figure 14). The use of digital twins offers rich scope for interactive and co-creative cultural-tourism planning, from the perspective of circular and sustainable tourism system. In the next report we will present extensively more details applications, not only for Heerlen/Parkstad, but for other pilot regions (e.g. Basilicata; Figure 15).

Figure 14 - Digital Twin Maturity model

Source: Rook, 2019

In this section, the potential of Digital Twins is demonstrated through an illustrative application in the Parkstad region of Limburg, the Netherlands. Limburg, particularly South-Limburg, is a highly attractive tourist destination. The Parkstad region offers a range of attractions, including nature, culture, history, shopping, and entertainment. However, the rapid tourism growth has led to challenges, such as overcrowding and environmental degradation. To address these issues and make informed decisions, a visual stakeholder-oriented tool in the form of a Digital Twin is important.

The cultural-historical evolution of South-Limburg is visualized systematically in Figure 12, offering a multi-faceted time perspective. Visitors have various motives for visiting, leading to overcrowding during peak seasons and dissatisfaction among locals. Achieving a balance between

conflicting interests in tourism policy requires detailed, user-friendly information on attractions, tourist pressure, and negative impacts, which can be provided through digital support tools.

Figure 15 - Digital Twins for Basilicata

The empirical focus of this section is on a prototype design of a digital twin for sustainable and circular development in Heerlen, the central city of the Parkstad region. Data collection, based on various sources including municipal statistics, cadastral data, and place-specific tourist data, is in progress. Precise location data is crucial for a reliable 3D thematic representation of cultural tourism and sustainable urban development. Additionally, the application of a human-centered smart data monitoring and management system for sustainable cultural tourism is emphasized, recognizing its vital role in managing and enhancing the visitor experience while ensuring the sustainability of the region's cultural attractions.

Figure 12 provides a map of hospitality amenities in the center of Heerlen, showcasing the spatial distribution of hotels, restaurants, bars, and cafes. This map serves as an introduction to the varying tourist amenities in the city.

In summary, this section highlights the potential of Digital Twins in addressing the challenges and opportunities presented by tourism in the Parkstad region, particularly in the context of sustainable and circular development, while underlining the importance of human-centered smart data monitoring and management systems for cultural tourism.

8. Conclusions and Outlook

The analysis presented in this report has highlighted the great importance of transforming existing tourism data to actionable planning information. The use of Digital Twins as the basis for operational tourism dashboards is the next step in this trajectory towards sustainable and circular tourism. To that end, an interactive stakeholder-oriented viewer is a promising tool, which will be developed at the end of the project. Of course, the digital technology offers a great deal of as yet unknown potentials, e.g. by using augmented reality tools or - in the future - tourism metaverses. Cultural heritage, deeply rooted in history and place, serves as a foundation for human progress, social well-being, scientific inquiry, and tourist attraction. However, the continuous growth of global tourism requires a fundamental shift in our approach. Striking a balance in the use of cultural resources at the local level is crucial, with co-creation and circular economic strategies taking center stage. A participatory society with stakeholder involvement is vital.

Community-based movements and local sustainability initiatives are essential in driving positive change and laying the groundwork for the principles of co-creation and circular action. They play a crucial role in preserving and promoting cultural heritage while paving the way for sustainable and collaborative cultural tourism practices.

The report presents key take-home messages, including:

- Innovative strategies for heritage preservation are essential for protecting vulnerable cultural sites.
- Sustainable tourism infrastructures, emphasizing energy and material sustainability, are pivotal for circular destinations.
- Digital tools and smart data management can enhance cultural experiences and effective marketing.
- Effective communication and storytelling are crucial for maximizing the benefits of cultural heritage.
- Inclusion of local ecosystems and the development of tailor-made experiences are essential for inclusive tourism.
- Initiatives like European Cultural Routes foster a shared cultural identity.
- Building a collaborative ecosystem involving various stakeholders is crucial for success.
- Empowering local communities and promoting human-centered tourism businesses are key for sustainable development.

In conclusion, this report underscores the need for innovative, sustainable, and inclusive approaches in cultural tourism. Circular economic strategies, digitalization, inclusivity, and collaborative ecosystems are essential components of a prosperous future for cultural tourism. This report lays the foundation for future research, policy development, and practical implementation in the field of cultural tourism.

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Acronyms

[C3]   [Circular City Centre]

[CAP]   [Climate Action Plan]

[CE]   [Circular Economy]

[CETAF]   [Circular Economy Technical Assistance Facility]

[CToC]   [Circular Theory of Change]

[CUM]   [Circular Urban Metabolism]

[EE]   [Eco-Efficiency]

[EFA]   [Ecological Footprint Analysis]

[EIA]   [Environmental Impact Assessment]

[EM]   [Energy Metabolism]

[EU]   [European Union]

[IOA]   [Input–Output Analysis

[IS]   [Industrial Symbiosis]

[LCA]   [Life Cycle Assessment]

[M]   [Metabolism]

[OECD]   [Organisation for Economic Co-operation and Development]

[PDA]   [Project Development Assistance]

[RE]   [Resource Efficiency]

[SD]   [Sustainable Development]

[SLCA]   [Social Life Cycle Assessment]

[T]   [Tourism]

[TM]   [Tourist Metabolism]

[UE]   [Urban Ecosystem]

[UM]   [Urban Metabolism]

[UNESCO]   [United Nations Educational, Scientific and Cultural Organization]

[WWOOF]   [Worldwide Opportunities on Organic Farms]

[WWOOFers]   [Worldwide Opportunities on Organic Farmers]

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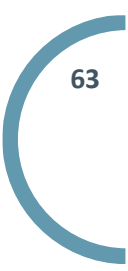
Annex A. – Illustrative Exposition of Generalized Q-Analysis

Table A1 provides an assessment of the comparison between three distinct sets of responses (R11, R12, R13; R21; R22, R23; R31, R32, R33) for a trio of questions (Q1; Q2; Q3) posed to ten individual respondents (I1, I2, I3, I4, I5, I6, I7, I8, I9, and I10). The attributes (F1 to F4) associated with these responses are detailed in Table A2, utilizing dummy variables.

Table A 1 - Tanking of respondents I1 to I10 based on straightforward statements R11 to R33

		I1	I2	I3	I4	I5	I6	I7	I8	I9	I10
Q1	R11	1	2	1	2	1	1	2	2	1	2
Q1	R12	3	3	2	1	1	2	1	2	1	1
Q1	R13	3	2	1	1	2	1	3	1	1	3
Q2	R21	2	2	2	1	2	2	2	2	2	1
Q2	R22	2	2	1	2	1	3	3	2	3	2
Q2	R23	3	3	3	3	3	2	3	1	2	3
Q3	R31	2	2	2	1	3	1	3	3	1	2
Q3	R32	3	1	1	2	1	3	2	3	1	3
Q3	R33	2	1	2	1	3	3	1	2	2	3

Table A 2 - Attributes denoted as F1 to F4 pertaining to the respondents I1 to I10

c	F1	F2	F3	F4
I1	1	0	1	1
I2	1	0	0	0
I3	1	1	0	0
I4	0	0	1	0
I5	1	1	0	0
I6	0	0	1	1
I7	0	0	1	0
I8	0	0	0	0
I9	0	0	0	1
I10	0	1	1	0

Traditional Q-Analysis

In line with the classic Q Method, the application of Principal Component Analysis to Table A3 yields 5 significant components (C1 to X5), accounting for 25%, 20%, 15%, 14%, and 12% of the explained variance, total 86% (as shown in Table A3). Upon performing Varimax Rotation of the Axes, the total explained variance of the 5 components remains consistent, albeit with more evenly distributed weights across the various components.

Table A 3 - Classic Q-Method - Ranking of Respondents I1 to I10 based on Basic Statements R11 to R33

	C1	C2	C3	C4	C5
NR	25	20	15	14	12
R	19	18	18	18	14
I1	0,405	0,102	-0,002	0,202	0,812
I2	0,636	-0,572	0,213	-0,405	0,165
I3	0,687	-0,14	0,551	0,348	-0,07
I4	0,503	0,447	-0,196	-0,446	0,048
I5	0,557	0,032	0,088	0,716	-0,406
I6	-0,18	0,815	0,493	-0,057	0,22
I7	0,497	0,066	-0,603	-0,249	-0,31
I8	-0,708	0,061	0,046	0,197	-0,11
I9	0,259	0,585	0,448	-0,381	-0,395
I10	0,29	0,624	-0,55	0,394	0,116

Table A3 also illustrates that the majority of respondents align with Component C1, with the exceptions being respondents I6 and I8. Component C2 corresponds to respondents I6, I9, and I10, while Component C3 connects with respondents I3, I6, and I9. Component C4 aligns solely with respondent I5, and Component C5 corresponds to respondent I1.

On a different note, as shown in Table A4, Component 1 exhibits a positive correlation with statements R23, R13, and R22, while showing a negative correlation with statements R12 and R33. A similar interpretation can be applied to all the other Components presented in both Table A3 and Table A4. For instance, Component C2 corresponds to Response/Question R12, Component C3 to R23 and R33, Component C4 to R22, and Component C5 to R32.

Table A 4 - Traditional Q -Method – Principal Component Factors for Basic Statements R11 to R33

	C1	C2	C3	C4	C5
NR	25	20	15	14	12
R	19	18	18	18	14
R11	0,42	0,14	-0,99	-0,74	-1,26
R12	-1,52	1,59	-0,55	-0,24	1,03
R13	0,9	-0,32	-0,18	-1,42	0,78
R21	-0,76	0,71	0,33	0,35	-0,86
R22	0,85	0,16	-1,02	1,6	-0,81
R23	1,52	0,87	1,29	0,6	1,01
R31	-0,13	-0,36	0,99	-1,25	-0,97
R32	-0,25	-1,51	-1,14	0,22	1,17
R33	-1,01	-1,28	1,26	0,87	-0,07

This constitutes the analysis delivered through the Traditional Q approach. With ten respondents responding to nine questions/responses, we arrive at seven distinct, non-redundant question/responses and five significant components, though challenging to label explicitly.

Table A 5 - Regression Analysis of Traditional Q Principal Component Values for Each Respondent Against Respondents' Features (F1, F2, F3, F4)

	Component 1				Component 2				Component 3				Component 4				Component 5			
	R	0,44	Sig	0,49	R	0,94	Sig	0,00	R	0,69	Sig	0,14	R	0,66	Sig	0,18	R	0,86	Sig	0,02
	Coef.	Std E	Stat t	p	Coef.	Std E	Stat t	p	Coef.	Std E	Stat t	p	Coef.	Std E	Stat t	p	Coef.	Std E	Stat t	p
C	-0,04	0,29	-0,14	0,89	0,08	0,10	0,81	0,46	-0,26	0,21	-1,23	0,27	-0,26	0,21	-1,23	0,27	-0,40	0,19	-2,04	0,10
F1	0,53	0,32	1,64	0,16	-0,62	0,11	-5,84	0,00	0,10	0,23	0,43	0,68	0,10	0,23	0,43	0,68	0,46	0,21	2,15	0,08
F2	0,11	0,35	0,30	0,78	0,46	0,12	3,94	0,01	0,67	0,26	2,63	0,05	0,67	0,26	2,63	0,05	-0,18	0,23	-0,79	0,47
F3	0,28	0,31	0,92	0,40	0,16	0,10	1,55	0,18	0,02	0,22	0,10	0,93	0,02	0,22	0,10	0,93	0,46	0,20	2,26	0,07
F4	-0,16	0,34	-0,48	0,65	0,53	0,11	4,76	0,01	0,14	0,24	0,55	0,60	0,14	0,24	0,55	0,60	0,15	0,22	0,67	0,53

The regressions involving the Extracted Values of Traditional Q Principal Components for Each Respondent against the Respondents' Features (F1, F2, F3, F4) are detailed in Table A5. The findings suggest that, while only Components 2 and 5 exhibit significant associations with the respondents' features, it's noteworthy that Component 2 aligns notably with Factors 1, 2, and 4 for the respondents, while Component 5 correlates with Factors 1 and 4.

Table A 6 - Extended Q Method – Aggregated Rankings of Respondents I1 to I10 for Basic Statements R11 to R33

				I1	I2	I3	I4	I5	I6	I7	I8	I9	I10
		V1	Q1 R11	1	2	1	2	1	1	2	2	1	2
		V2	Q1 R12	3	3	2	1	1	2	1	2	1	1
		V3	Q1 R13	3	2	1	1	2	1	3	1	1	3
		V4	Q2 R21	2	2	2	1	2	2	2	2	2	1
		V5	Q2 R22	2	2	1	2	1	3	3	2	3	2
		V6	Q2 R23	3	3	3	3	3	2	3	1	2	3
		V7	Q3 R31	2	2	2	1	3	1	3	3	1	2
		V8	Q3 R32	3	1	1	2	1	3	2	3	1	3
		V9	Q3 R33	2	1	2	1	3	3	1	2	2	3
				I1	I2	I3	I4	I5	I6	I7	I8	I9	I10
			F1	1	1	1	0	1	0	0	0	0	0
			F2	0	0	1	0	1	0	0	0	0	1
			F3	1	0	0	1	0	1	1	0	0	1
			F4	1	0	0	0	0	1	0	0	1	0
			Average	7	6	5	5	6	6	7	6	5	7

	D1	D2	D3	D4	D5	D6	D7	D8	D9	StdDev.	1	1	1	1	1	1	1	1	1	1
S1	1	0	0	1	0	0	1	0	0		5	6	5	4	6	4	7	7	4	5
S2	1	0	0	1	0	0	0	1	0		6	5	4	5	4	6	6	7	4	6
S3	1	0	0	1	0	0	0	0	1		5	5	5	4	6	6	5	6	5	6
S4	1	0	0	0	1	0	1	0	0		5	6	4	5	5	5	8	7	5	6
S5	1	0	0	0	1	0	0	1	0		6	5	3	6	3	7	7	7	5	7
S6	1	0	0	0	1	0	0	0	1		5	5	4	5	5	7	6	6	6	7
S7	1	0	0	0	0	1	1	0	0		6	7	6	6	7	4	8	6	4	7
S8	1	0	0	0	0	1	0	1	0		7	6	5	7	5	6	7	6	4	8
S9	1	0	0	0	0	1	0	0	1		6	6	6	6	7	6	6	5	5	8
S10	0	1	0	1	0	0	1	0	0		7	7	6	3	6	5	6	7	4	4
S11	0	1	0	1	0	0	0	1	0		8	6	5	4	4	7	5	7	4	5
S12	0	1	0	1	0	0	0	0	1		7	6	6	3	6	7	4	6	5	5
S13	0	1	0	0	1	0	1	0	0		7	7	5	4	5	6	7	7	5	5
S14	0	1	0	0	1	0	0	1	0		8	6	4	5	3	8	6	7	5	6
S15	0	1	0	0	1	0	0	0	1		7	6	5	4	5	8	5	6	6	6
S16	0	1	0	0	0	1	1	0	0		8	8	7	5	7	5	7	6	4	6
S17	0	1	0	0	0	1	0	1	0		9	7	6	6	5	7	6	6	4	7
S18	0	1	0	0	0	1	0	0	1		8	7	7	5	7	7	5	5	5	7
S19	0	0	1	1	0	0	1	0	0		7	6	5	3	7	4	8	6	4	6
S20	0	0	1	1	0	0	0	1	0		8	5	4	5	5	6	7	6	4	7
S21	0	0	1	1	0	0	0	0	1		7	5	5	3	7	6	6	5	5	7
S22	0	0	1	0	1	0	1	0	0		7	6	4	4	6	5	9	6	5	7
S23	0	0	1	0	1	0	0	1	0		8	5	3	5	4	7	8	6	5	8
S24	0	0	1	0	1	0	0	0	1		7	5	4	4	6	7	7	5	6	8
S25	0	0	1	0	0	1	1	0	0		8	7	6	5	8	4	9	5	4	8
S26	0	0	1	0	0	1	0	1	0		9	6	5	6	6	6	8	5	4	9
S27	0	0	1	0	0	1	0	0	1		8	6	6	5	8	6	7	4	5	9

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Expanded Q Analysis

Table A6 displays the conversion of the rankings provided by ten respondents for the nine questions/responses in Table A1, incorporating the features (Fi) from Table A3. This transformation results in 27 combined ranked questions/responses for the ten respondents. There exist nine dummy variables, signifying all the (3^3 = 27) potential combinations involving the three questions and three corresponding responses

The entry {[S1;I1]=5} within Table A5 is the result of multiplying the dummy values from vector S1, represented as (1,0,0,1,0,0,1,0,0), by the respondent evaluation vector V1, which is (1,3,3,2,2,3,2,3,2). This multiplication process is repeated for all Si dummy vectors and Ij respondent evaluation vectors, leading to (i^k) evaluations of combined 'question/responses' (S1...27; I1...I10) that are organized by column. These evaluations, according to the Central Limit Theorem, exhibit a Normal Distribution, rendering them amenable to processing using Principal Component Analysis techniques.

$$S_{ij} = \sum_{i=1}^{9} D_i \sum_{k=1}^{9} V_{kj} \text{ for all combinations } (i\hat{}k) \text{ e respondent } (j).$$

Figure A1 presents the frequency distributions for individual and combined statements among the 10 respondents. This comparison highlights that the process of combining statements and their corresponding evaluations results in a Normal Distribution of the Valuations.
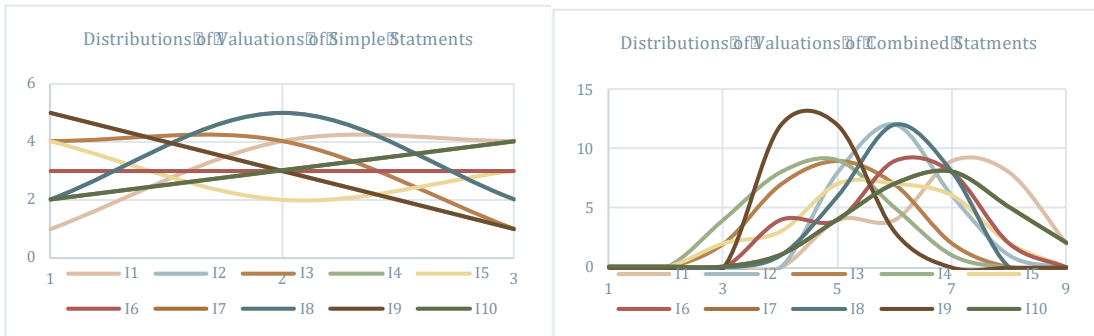
Figure A 1 - Dissemination of Ratings for Basic and Merged Statements

Subsequently, we can employ Principal Components Analysis to assess the evaluations of amalgamated 'question/responses' as presented in Table A5. This analysis yields the Extracted Values of Principal Components for each respondent, as seen in Table A6, and the Principal Component Scores, as outlined in Table A8. Tables A7 and A9, on the other hand, encompass regression analyses aimed at elucidating the content of Tables A6 and A8, respectively.

Table A 6 - Extended Q Method – Principal Component Factors for Combined Question/Responses R11 to R33

	C1	C2	C3	C4		F1	F2	F3	F4
NR	31,7	22,9	17,8	14,4					
R	24,8	22,7	20,4	18,8					
I1	0,5	0,13	0,27	0,57		1	0	1	1
I2	0,89	0	-0,16	0,03		1	0	0	0
I3	0,87	0,4	0,05	-0,16		1	1	0	0
I4	0,01	-0,03	-0,11	0,8		0	0	1	0
I5	0,41	0,81	-0,34	-0,24		1	1	0	0
I6	-0,27	-0,11	0,92	0,25		0	0	1	1
I7	-0,14	0,1	-0,82	0,38		0	0	1	0
I8	-0,06	-0,96	-0,07	-0,25		0	0	0	0
I9	-0,6	0,32	0,51	-0,2		0	0	0	1
I10	-0,26	0,63	-0,11	0,72		0	1	1	0

The regression analyses, showcasing the Extracted Values of Principal Components for Each Respondent against the Features of the respondents (F1, F2, F3, F4), are presented in Table A7. The findings reveal that Component 1 correlates with F1, Component 2 with F2, Component 3 with F4, and Component 4 with F3. It's worth noting that these features can encompass variables represented by dummies, such as place of origin, gender, and income groups, as well as numerical variables like age, distance to a specific location, and income. The objective here is to discern which factors do or do not account for the amalgamated synthetic responses identified through Principal Component Analysis.

Table A 7 - Regression Analyses of Principal Component Values for Each Respondent Against Respondents' Features (F1, F2, F3, F4)

	Component 1				Component 2				Component 3				Component 4			
	R	0,93	Sig	0,004	R	0,62	Sig	0,227	R	0,71	Sig	0,130	R	0,86	Sig	0,021
	Coef.	Std Error	Stat t	P Value	Coef.	Std Error	Stat t	P Value	Coef.	Std Error	Stat t	P Value	Coef.	Std Error	Stat t	P Value
Constant	-0,108	0,119	-0,909	0,405	-0,371	0,271	-1,369	0,229	-0,162	0,235	-0,692	0,520	-0,166	0,137	-1,211	0,280
F1	0,964	0,132	7,334	0,001	0,189	0,299	0,634	0,554	-0,163	0,259	-0,628	0,558	0,087	0,151	0,571	0,593
F2	-0,224	0,143	-1,558	0,180	0,789	0,326	2,421	0,060	0,196	0,283	0,694	0,519	-0,042	0,165	-0,253	0,810
F3	0,084	0,124	0,673	0,531	0,205	0,282	0,727	0,500	-0,176	0,245	-0,719	0,504	0,767	0,143	5,363	0,003
F4	-0,389	0,137	-2,841	0,036	0,286	0,311	0,920	0,400	0,903	0,270	3,346	0,020	-0,166	0,158	-1,052	0,341

Table A 8 - Principal Component Scores for Each Combined Statement and Corresponding Dummy Variables

	C1	C2	C3	C4		D1	D2	D3	D4	D5	D6	D7	D8	D9
1	0,004	0,799	1,493	1,451		1	0	0	1	0	0	1	0	0
2	0,627	1,364	0,214	0,001		1	0	0	1	0	0	0	1	0
3	0,778	-0,33	-0,31	1,448		1	0	0	1	0	0	0	0	1
4	0,932	0,781	1,228	0,497		1	0	0	0	1	0	1	0	0
5	1,555	1,346	-0,051	-0,952		1	0	0	0	1	0	0	1	0
6	1,706	-0,348	-0,576	0,494		1	0	0	0	1	0	0	0	1
7	-0,719	-0,158	1,661	-0,175		1	0	0	0	0	1	1	0	0
8	-0,096	0,407	0,382	-1,624		1	0	0	0	0	1	0	1	0
9	0,055	-1,287	-0,143	-0,178		1	0	0	0	0	1	0	0	1
10	-1,415	0,953	0,215	1,555		0	1	0	1	0	0	1	0	0
11	-0,792	1,518	-1,064	0,106		0	1	0	1	0	0	0	1	0
12	-0,641	-0,176	-1,589	1,552		0	1	0	1	0	0	0	0	1
13	-0,486	0,935	-0,051	0,601		0	1	0	0	1	0	1	0	0
14	0,136	1,5	-1,33	-0,848		0	1	0	0	1	0	0	1	0
15	0,287	-0,195	-1,855	0,598		0	1	0	0	1	0	0	0	1
16	-2,137	-0,004	0,383	-0,071		0	1	0	0	0	1	1	0	0
17	-1,515	0,561	-0,896	-1,52		0	1	0	0	0	1	0	1	0
18	-1,364	-1,133	-1,421	-0,074		0	1	0	0	0	1	0	0	1
19	-0,191	-0,213	1,472	1,026		0	0	1	1	0	0	1	0	0
20	0,432	0,352	0,193	-0,423		0	0	1	1	0	0	0	1	0
21	0,582	-1,342	-0,332	1,023		0	0	1	1	0	0	0	0	1
22	0,737	-0,231	1,206	0,072		0	0	1	0	1	0	1	0	0
23	1,36	0,334	-0,073	-1,377		0	0	1	0	1	0	0	1	0
24	1,511	-1,36	-0,598	0,069		0	0	1	0	1	0	0	0	1
25	-0,914	-1,17	1,64	-0,6		0	0	1	0	0	1	1	0	0
26	-0,291	-0,605	0,361	-2,049		0	0	1	0	0	1	0	1	0
27	-0,14	-2,299	-0,164	-0,603		0	0	1	0	0	1	0	0	1

Regression analyses for each of the Principal Component Score Vectors per combined statement against the corresponding dummy variables for combined statements (D1, D2, D3, D4, D5, D6, D7, D8, D9) are presented in Table A9.

The findings indicate that Component 1 aligns with Response (2) to Question (2) R22, Component 2 corresponds to Response (2) of Question 3, Component 3 associates with Response (1) to Question (3), and Component 4 corresponds to Response (1) of Question (2).

Moreover, the results in Table A9 reveal that Component 1 favors Response 2 to Question 2 while opposing Response (2) to Question (1). Component 2 exhibits disagreement with the majority of responses to questions. Component 3 disagrees with responses to Question (1) and aligns with response R31. Component 4 is in opposition to responses to Questions (1) and (3) and favors response R21.

Table A 9 - Regression Coefficients for the 4 Principal Component Scores with Respect to Combined Statements and Their Corresponding Dummy Variables

		C1	C2	C3	C4
R11	D1	0,055	-1,287	-0,143	-0,178
R12	D2	-1,364	-1,133	-1,421	-0,074
R13	D3	-0,140	-2,299	-0,164	-0,603
R21	D4	0,778	-0,330	-0,310	1,448
R22	D5	1,706	-0,348	-0,576	0,494
R23	D6	0,055	-1,287	-0,143	-0,178
R31	D7	-0,719	-0,158	1,661	-0,175
R32	D8	-0,096	0,407	0,382	-1,624
R33	D9	0,055	-1,287	-0,143	-0,178

Conclusion

The Extended Q Analysis effectively addresses the primary limitations associated with the traditional Q Method, which typically requires the ranking of an extensive number of statements, imposes constraints on the quantity of non-redundant respondents, and permits subjective interpretations of the components.

The Extended Q Analysis operates with ranked combined statements, derived from combinations of basic statements ranked by smaller groups. It operates under the assumption that respondents exhibit consistency in their sequencing of choices. Consequently, the data collection time per respondent is significantly reduced. Moreover, by enabling the involvement of a larger number of respondents, the regressions supporting interpretation can attain greater robustness.
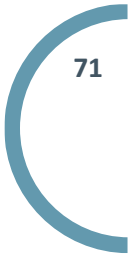
Annex B. – Survey

This survey was developed and realised by CNR Within Task 1.1 in 2021-2022.

TOPIC: URBAN ATTRACTIVENESS, VISITORS' PERCEPTION AND SUSTAINABILITY

This survey is addressed to adult visitors (+18 years old) of the Cultural Route in different places in Europe.

Where do you live? (*mark only one option*)

Age
O 18-24
O 25-34
O 35-44
O 45-54
O 55-64
O >65

Gender
O Female
O Male
O Prefer to self-describe

Which is your highest education level?
O No school
O Primary/Middle school or below
O Secondary/High School
O College/University
O Postgraduate

Current occupation O
Student
O Researcher
O Employee
O Workman (e.g. industry)
O Self-employed / freelance
O Professional

O Entrepreneur
O Family care
O Unoccupied
O Retired (specify previous occupation):
_____

How many times have you visited historic sites:
O It's the first time I visit historic sites
O I already visited some historic sites
O I come often to visit historic sites

With whom did you visit the Cultural Route? (multiple answer possible)
O Alone
O With my partner
O With friends
O With my family
O With colleagues

How did you know about the Cultural Route "
O Friends/relatives/colleagues
O Internet
O Books / journals
O Tourist center / Tourism agency at your place of residence
O Discovered it while visiting another place in Romania or Moldova
O Social media
O Other (please specify): _____

Please indicate the main motivation of your visit(s) to historic sites (choose max 2 answers)

O Holiday/leisure
O Business
O Enjoy cultural heritage, cultural events
O Enjoy landscape, nature & outdoor activities
O Visit friends/relatives
O Own a property here
O Other (please specify): _____

Duration of your visit(s) to the historic sites

O One-day visit
O 1-3 days
O 4-6 days
O One week or more

Please check the places you visited in the Cultural Route (*multiple answers possible*):

Please check the places you visited in the Cultural Route (*multiple answers possible*):

Can you recommend other locations connected to the name and facts that can be included in this list?

2/4 TRAVEL EXPERIENCE IN THE CULTURAL ROUTE

Please think about your travel experience in the Cultural Route and indicate how much you agree with the following statements in a scale from 1 (Strongly disagree) to 7 (Strongly agree).

1 - Strongly disagree
2 - Disagree
3 - Quite disagree
4 - Neither agree non disagree
5 - Quite agree
6 - Agree
7 - Strongly agree

Cultural experience in the Cultural Route

The cultural experience is how you enjoyed local culture, cultural events such as festivals, music, craft, art, as well as cultural & natural heritage. In this section, we ask you to indicate how much you agree with the following statements on your cultural experience in the Cultural Route:

	1	2	3	4	5	6	7	I don't know
In the Cultural Route there is beautiful cultural & natural heritage places								
The Cultural Route offers great opportunities for cultural enjoyment (events, music, festivals, art, etc.)								
I could tailor the visit to cultural & natural heritage sites along the Cultural Route according to my desires/needs								
I am satisfied of the visit to cultural & natural heritage sites in the Cultural Route "in general								

Transformative travel experience in the Cultural Route

A transformative travel experience is a travel that gives you something more than just a visit. It is a learning experience through meeting the local culture and people, feel the connection with nature, and change yourself a little bit. In this section, we ask you to indicate how much you agree with the following statements on the transformative travel experience in the Cultural Route

	1	2	3	4	5	6	7	I don't know
The Cultural Route is an authentic place, not too much touristic								
The Cultural Route has a vibrant/pleasant atmosphere								
I have made friends in the Cultural Route								
I feel more connected to Nature after this travel/stay in the Cultural Route								
I learned a lot about local culture and heritage during this travel/stay in the Cultural Route								
This travel/stay in the Cultural Route changed me (I learned, I did something unexpected..)								
I am satisfied of the transformative travel experience in the Cultural Route in general								

Experience of the Cultural Heritage from a European perspective

In European countries, cultural heritage expresses the local culture and history, but also the European culture, identity and values. In this section, we ask you to indicate how much you agree with the following statements on your experience of cultural heritage sites in the Cultural Route from a European perspective.

	1	2	3	4	5	6	7	I don't know
I enjoy visiting heritage sites expressing the European history and culture more than other places								

I feel a stronger <u>sense of belonging to European culture</u> after this travel/stay in the Cultural Route								
I am <u>interested to learn more</u> about the linkages of the Cultural Route with the European history and culture								

3/4 SUSTAINABILITY OF THE DESTINATION

Please think about your visit to the Cultural Route and indicate how much you agree with the following statements in a scale from 1 (Strongly disagree) to 7 (Strongly agree).

1 - Strongly disagree
2 - Disagree
3 - Quite disagree
4 - Neither agree non disagree
5 - Quite agree
6 - Agree
7 - Strongly agree

Environmental Sustainability

Environmental sustainability is the responsibility to conserve natural resources and protect global ecosystems to support health and wellbeing, now and in the future. In this section, we ask you to indicate how much you agree with the following statements on environmental sustainability in the Cultural Route

In the Cultural Route …	1	2	3	4	5	6	7	I don't know
…<u>sustainable transport means are available</u> (e.g., electric buses & cars, bike sharing/rental, car sharing, efficient public transport)								
…tourism accommodations (e.g., hotels, B&b) pay attention to <u>energy efficiency and use of renewable energy sources</u>								
…tourism services (e.g., accommodation, restaurants, shops) pay attention to <u>limit freshwater consumption</u>								
…tourism services (e.g. accommodation, restaurants, shops) pay attention to choose <u>plastic-free and recycling based products & services</u>								
… <u>green areas, fauna and flora are protected</u>								
… <u>rural landscape is well maintained</u>								
In the Cultural Route …	1	2	3	4	5	6	7	I don't know

The Cultural Route is a no-waste area							
…there is availability of tourism services with an official green certification/label							
I am satisfied of the environmental sustainability in the Cultural Route in general							

Sustainable Destination Management

Sustainable destination management includes the capacity of local institutions, enterprises and citizens to promote alternative forms of tourism which are respectful of nature, local culture and heritage. In this section, we ask you to indicate how much you agree with the following statements on sustainable destination management in the Cultural Route.

In the Cultural Route …	1	2	3	4	5	6	7	I don't know
…local and traditional food is promoted								
…local and traditional craft is promoted								
…the conservation/reuse of heritage and landscape is promoted to avoid abandonment								
…the visit to less known places is promoted								
…tourism activities have a clear policy on social corporate responsibility / human rights (i.e. respect tourism workers' rights, avoid human trafficking)								
…many tourism activities are run by local people/families								
…tourism workers are skilled and welcoming								
It is easy to travel for people with special needs (e.g. elderlies, small children, wheelchair)								
The Cultural Route is safe in general								
I am satisfied of the general tourism management in the Cultural Route								
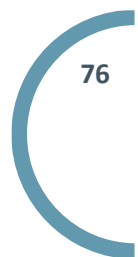
4/4 GLOBAL SATISFACTION OF THE TRAVEL EXPERIENCE

You have reached the last section! Just a few final questions. Thanks to your contribution, we can improve together the quality of life and tourism in the Cultural Route!

Please think about your visit to the Cultural Route and indicate how much you agree with the following statements in a scale from 1 (Strongly disagree) to 7 (Strongly agree).

1 - Strongly disagree
2 - Disagree
3 - Quite disagree
4 - Neither agree non disagree
5 - Quite agree
6 - Agree
7 - Strongly agree

Global satisfaction of the travel in the Cultural Route

	1	2	3	4	5	6	7	I don't know
In general, I am satisfied of the travel/stay in the Cultural Route								
Compared to other similar places I visited; I am satisfied of the travel/stay in the Cultural Route								
Compared to my expectations, I am satisfied of the travel/stay in the Cultural Route								
I would like to come back to the Cultural Route for longer time								
I would recommend the visit to the Cultural Route to friends and relatives								
I would donate some money, for example, for protecting local heritage, in addition to my expenditure for the travel/stay in the Cultural Route								

Quality of services

The quality of the following services in the Cultural Route is great:	1	2	3	4	5	6	7	I don't know
Accommodation services								
Restaurants and food								
Sport and wellness								
Shops								
Public places								
Transports and roads								
Information to visitors								

Please indicate how would you enjoy more the experience in the Cultural Route from the following suggestions. What would you like to find next time?
(choose max 3 options)

O Smart working / temporary residency (e.g., helping out in traditional works/activities)
O Theatre/immersive theatral experience
O Festivals, cultural events
O Nature outdoor / sport experiences (e.g., walking, biking, trekking, hiking, canoeing, adventure)
O Spiritual experience (e.g., pilgrimage, retreat)
O Digital experiences (e.g., virtual tour, augmented reality, gaming)
O Unconventional guides / visits (e.g., guides to less-known places, telling local stories, etc.)
O Local arts, craft, music, cooking learning activities
O Meet locals, locals as tourism guides
O Local and traditional food products & eco-gastronomy
O Green hotels and accommodation services
O Volunteering experiences
O Other suggestion (please specify): _____

Annex C. – The Standard Q Analysis

Table C 1 - Usual Q Explained

	Variância total explicada								
	Autovalores iniciais			Somas de extração de			Somas de rotação de		
Componente	Total	% de variância	% cumulativa	Total	Non-Rotated	% cumulativa	Total	Rotated	% cumulativa
1	175	21	21	175	21	21	110	13	13
2	56	7	27	56	7	27	62	7	20
3	36	4	32	36	4	32	49	6	26
4	34	4	36	34	4	36	42	5	31
5	31	4	40	31	4	40	32	4	35
6	29	3	43	29	3	43	30	4	39
7	28	3	46	28	3	46	28	3	42
8	24	3	49	24	3	49	23	3	45
9	23	3	52	23	3	52	23	3	48
10	21	2	54	21	2	54	19	2	50
11	19	2	57	19	2	57	18	2	52
12	19	2	59	19	2	59	17	2	54
13	18	2	61	18	2	61	17	2	56
14	17	2	63	17	2	63	16	2	58
15	16	2	65	16	2	65	16	2	60
16	16	2	67	16	2	67	15	2	61
17	15	2	68	15	2	68	13	2	63
18	14	2	70	14	2	70	13	2	65
19	13	2	72	13	2	72	13	2	66
20	13	2	73	13	2	73	13	2	68
21	12	1	75	12	1	75	13	2	69
22	12	1	76	12	1	76	13	2	71
23	12	1	78	12	1	78	13	2	72
24	12	1	79	12	1	79	13	2	74
25	11	1	80	11	1	80	13	2	75
26	11	1	82	11	1	82	13	1	77
27	11	1	83	11	1	83	12	1	78
28	10	1	84	10	1	84	12	1	80
29	10	1	85	10	1	85	12	1	81
30	10	1	87	10	1	87	12	1	83
31	10	1	88	10	1	88	11	1	84
32	9	1	89	9	1	89	11	1	85
33	9	1	90	9	1	90	11	1	86
34	9	1	91	9	1	91	11	1	88
35	8	1	92	8	1	92	10	1	89
36	8	1	93	8	1	93	10	1	90
37	8	1	94	8	1	94	10	1	91
38	8	1	95	8	1	95	10	1	93
39	7	1	96	7	1	96	10	1	94
40	7	1	97	7	1	97	9	1	95
41	7	1	97	7	1	97	9	1	96
42	7	1	98	7	1	98	9	1	97
43	6	1	99	6	1	99	9	1	98
44	5	1	99	5	1	99	9	1	99
45	5	1	100	5	1	100	8	1	100

Table C 2 - Usual Q Factors

	Caso	Clusters	Clusters	Clusters	Clusters	Clusters	Clusters	Clusters	Clusters	Clusters	Clusters	Clusters	C1	C2	C3	C4
Cultural and natural heritage	1	1	1	1	1	1	1	1	1	1	1	1	0,94676	0,47524	0,42156	-0,64699
Social corporate responsibility/human	28	1	1	1	1	1	1	1	1	1	1	1	-0,57253	-0,62829	-1,44315	1,05911
Satisfaction compared to other similar	35	1	1	1	1	1	1	1	1	1	1	1	0,62108	0,85608	0,22303	1,29989
Atmosphere	6	6	6	6	1	1	1	1	1	1	1	1	0,94924	0,45837	1,29991	-1,31389
Interest in European heritage sites	12	6	6	6	1	1	1	1	1	1	1	1	0,61878	0,23807	-3,0643	-0,19249
Satisfaction compared to expectations	36	6	6	6	1	1	1	1	1	1	1	1	0,454	0,75028	0,38196	0,98546
Willingness to come back	37	6	6	6	1	1	1	1	1	1	1	1	0,8302	0,72672	0,34128	1,01603
Transformative experience	10	10	10	9	8	1	1	1	1	1	1	1	0,59893	-0,08756	0,10189	-1,33741
Autenticity	5	5	5	5	5	5	4	4	1	1	1	1	0,81033	0,64022	0,79043	-1,38731
Rural landscape maintenance	20	5	5	5	5	5	4	4	1	1	1	1	-2,16419	0,31911	0,47998	-0,86212
Accommodation services	40	5	5	5	5	5	4	4	1	1	1	1	0,31656	-0,26629	0,63835	0,71639
Cultural events	2	2	2	2	2	2	2	2	2	2	1	1	0,7861	-0,60155	-0,01108	-0,83815
General satisfaction	34	2	2	2	2	2	2	2	2	2	1	1	0,47196	1,02996	0,45611	1,20829
Willingness to recommend	38	2	2	2	2	2	2	2	2	2	1	1	0,65858	0,78029	0,75307	1,07054
Willingness to contribute/donate	39	2	2	2	2	2	2	2	2	2	1	1	0,6633	0,39006	-0,7414	0,78715
Sport and wellness	42	2	2	2	2	2	2	2	2	2	1	1	-0,78731	0,91072	-0,21501	0,16112
Tourism activities run by local	29	12	2	2	2	2	2	2	2	2	1	1	0,43717	-0,24177	0,51579	1,26505
Services for people with special needs	31	12	2	2	2	2	2	2	2	2	1	1	-0,24484	-1,84744	-0,35921	0,7514
Information to visitors	46	12	2	2	2	2	2	2	2	2	1	1	-1,2066	1,29064	-0,50044	0,4326
Tailor-made visit	3	3	3	3	3	3	3	3	3	3	2		0,38966	0,58832	0,39225	-0,99687
Satisfaction of the destination	23	3	3	3	3	3	3	3	3	3	2		-2,04027	0,54945	0,19962	-0,75889
Satisfaction of the travel experience	4	4	4	4	4	4	3	3	3	3	2		0,60087	0,6902	0,81991	-1,18591
Less known places promotion	27	4	4	4	4	4	3	3	3	3	2		-0,41571	0,97128	-0,04613	1,3034
Public places	44	4	4	4	4	4	3	3	3	3	2		-0,42905	0,09926	0,11669	0,48679
Connection with nature	8	8	8	4	4	4	3	3	3	3	2		0,91917	0,7254	0,43989	-1,57666
Local and traditional craft	25	8	8	4	4	4	3	3	3	3	2		0,65506	-2,37016	0,34731	1,17597
Friendly people	7	7	7	7	6	6	5	5	4	4	3	2	1,32732	0,57385	-1,29277	-1,02018
Satisfaction of the transformative	11	7	7	7	6	6	5	5	4	4	3	2	0,91609	0,16719	0,95433	-1,85131
Sense of belonging to European culture	13	7	7	7	6	6	5	5	4	4	3	2	1,24381	-0,78119	-2,89476	-0,3254
Local and traditional food	24	7	7	7	6	6	5	5	4	4	3	2	1,05239	-2,02476	0,91622	0,91693
Safety	32	7	7	7	6	6	5	5	4	4	3	2	0,00312	0,67463	1,33266	0,76614
Transports and roads	45	7	7	7	6	6	5	5	4	4	3	2	-1,04101	-0,57867	0,48717	0,48531
Interest in learning more about linkages	14	11	11	10	9	8	7	5	4	4	3	2	1,16359	0,50536	-2,88626	-0,41675
Sustainable transport means	15	11	11	10	9	8	7	5	4	4	3	2	-1,42208	-1,97077	0,23288	-0,45256
Freshwater consumption in tourism	17	11	11	10	9	8	7	5	4	4	3	2	-0,9247	-0,72384	-0,36648	-0,53599
Green certification/label of tourism	22	11	11	10	9	8	7	5	4	4	3	2	-1,4864	-0,72896	-1,42015	-1,19125
Tourism workers skills	30	11	11	10	9	8	7	5	4	4	3	2	0,10277	1,25801	0,00542	1,5085
Satisfaction of destination management	33	11	11	10	9	8	7	5	4	4	3	2	-0,59294	0,65494	0,26195	1,14318
Restaurants and food	41	11	11	10	9	8	7	5	4	4	3	2	1,35951	-2,13423	0,90427	0,265
Learning	9	9	9	8	7	7	6	6	5	4	3	2	0,78359	0,25957	1,13616	-1,49723
Energy efficiency and use of renewable	16	9	9	8	7	7	6	6	5	4	3	2	-1,19878	-0,84459	0,10326	-0,35331
Plastic-free and recycling-based policies	18	9	9	8	7	7	6	6	5	4	3	2	-1,3202	-0,93414	0,28277	-0,53774
Presevation of green areas, fauna and	19	9	9	8	7	7	6	6	5	4	3	2	-1,46193	1,1214	-0,03382	-0,66852
Wastes management	21	9	9	8	7	7	6	6	5	4	3	2	-1,98854	0,17121	-0,21505	-0,47137
Conservation/reuse of local heritage and	26	9	9	8	7	7	6	6	5	4	3	2	-0,43089	0,88473	-0,22714	1,62691
Shops	43	9	9	8	7	7	6	6	5	4	3	2	0,04802	-1,99634	0,38103	-0,01286

C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16	C17	C18	C19	C20	C21	C22	C23	C24
0,32694	-0,02957	-0,01287	1,58325	0,28051	0,08999	0,44879	-0,58913	0,38671	-0,8982	-0,27113	-0,86815	4,14691	0,51303	0,96847	-0,25299	0,1674	0,76338	1,35908	0,2029
0,22117	0,91321	0,38753	0,03608	0,3398	-1,57698	1,02136	-3,78077	0,5881	0,08844	-0,22085	1,00752	0,17772	0,64746	0,27218	0,17112	0,9358	-1,55819	0,23559	-0,12222
0,35531	-0,3901	-1,05141	-0,17266	-0,09584	-1,61282	0,84615	-0,10678	-0,32801	-1,01369	-0,15908	0,39687	0,24876	0,70437	-0,69421	0,10214	0,32101	-1,13958	1,06022	1,06522
0,51392	0,35824	0,67323	-1,40906	-0,28736	0,55562	-0,17846	-0,04307	0,02155	1,19191	0,0961	0,20698	3,77467	0,23069	-0,90608	-0,06298	-0,24029	-0,61834	-1,21161	-0,22797
1,38883	0,05334	0,31208	0,12028	-0,31953	1,32869	0,4132	0,87088	0,25841	0,72184	0,22189	0,26373	-0,00037	1,40669	-0,15176	0,45945	0,13337	-0,22687	-1,06669	-0,15724
0,60622	-0,28271	-0,5202	-0,33783	-0,06872	-0,78641	0,41698	0,14988	-0,24316	0,05428	-0,5785	0,21161	-0,03519	0,33368	-0,52176	0,06667	0,06284	-0,90027	-0,28481	0,24678
-0,31764	-0,41523	-0,6761	-0,25518	0,02031	1,3026	1,73393	-0,49231	0,18292	0,99967	1,42738	-0,36333	-0,34873	1,01957	0,59539	-0,36395	0,6282	1,95571	-0,3803	-0,10899
0,52882	0,49706	-0,202	-0,9297	-0,55586	-1,60105	-0,88427	-0,25482	-0,02431	0,87935	0,59024	-0,27576	-0,64726	-1,6464	1,2426	0,14833	0,22387	1,56383	-1,24068	-0,44056
0,69598	0,34736	0,97652	-0,58685	-0,59795	0,69549	1,0638	0,35823	-0,66615	-5,06208	-1,06408	1,03514	-0,93695	0,20909	-0,07499	-0,25494	-0,17091	0,39744	-0,98	-0,12999
0,26945	0,20437	1,1948	-0,34663	1,14342	0,20539	0,36791	0,24564	1,59176	0,23844	-1,46874	-2,15483	-0,52606	-0,82828	2,20385	0,20688	0,17918	-0,78401	1,23532	0,30712
0,04998	-1,69509	-0,37303	0,22597	-0,21888	-0,9052	1,18973	0,46827	-0,0176	-0,42251	-0,07352	-2,50922	-0,34699	-1,29627	-0,44889	0,10052	0,25604	-0,04338	-0,93387	-2,46199
0,1419	0,03265	0,16742	3,46452	0,27131	0,0611	0,40874	-0,03994	-0,03316	0,30563	0,16717	0,45174	-1,0019	0,51093	0,49558	0,18662	-0,02275	-0,07443	0,49902	-0,11513
0,58391	0,16887	-0,63234	-0,45555	0,0627	-0,9796	0,671	0,89164	-0,46663	0,09839	-0,46302	0,73567	-0,86241	-0,21471	-0,86712	0,24563	0,63533	-1,62801	-0,57408	0,26814
0,47319	-0,35603	-0,59883	-0,30095	0,58706	2,19645	0,5593	-0,6787	-0,08277	0,70743	1,50062	0,17141	-1,12563	1,98378	-0,26454	-0,08652	0,36142	1,35143	0,92639	0,52441
-1,57088	-0,24729	0,28182	0,72303	-0,36169	-0,1064	-3,80959	0,45154	0,10428	-1,76155	1,84088	-2,16754	0,14458	1,34352	0,98268	-0,06106	0,30258	-0,59194	-1,46526	0,7106
-0,47924	-1,98178	0,14191	-0,18449	0,4152	-0,04649	-1,09916	-0,34185	-0,11441	-0,27998	0,16071	1,34385	0,22609	0,65976	0,41951	0,15461	0,0869	-0,27922	0,93155	-5,21766
-0,37905	1,00609	1,16666	-0,37929	0,21112	-0,30745	-0,52877	0,82399	-0,15798	-0,94645	1,77897	0,89177	0,27574	-2,25005	-0,02813	-0,11892	0,52611	0,84942	1,61436	0,61409
0,14083	0,7178	0,21121	0,3135	0,06814	1,03716	-0,53581	-3,675	-1,3095	-0,6974	-0,73972	-0,69596	0,2005	-1,71841	-0,3999	0,39433	-0,32104	-0,15406	-1,07133	-0,04975
0,65754	-2,13413	0,45187	-0,0908	0,81698	0,36258	-1,89664	-0,29701	0,22192	-0,35827	-0,96284	-0,97226	-0,03122	-0,62427	-3,39833	0,29116	-0,1585	1,34661	1,86459	1,2224
0,46437	0,23587	-0,22702	4,03362	-0,16803	-0,65577	-0,30844	0,41658	0,13717	0,72159	-0,28844	0,45518	-0,56046	-0,9464	-0,72247	0,05801	0,22022	-0,12822	-0,18337	0,25699
-0,59769	0,75743	1,71129	0,21541	0,10623	0,80847	0,17314	1,09301	1,43244	0,36391	-0,91678	0,22693	0,88108	-1,13016	0,26332	0,38559	0,5808	-1,29245	0,18457	
0,33766	-0,03871	-0,49127	1,66532	0,13065	-0,61892	-0,09104	-0,26822	-0,07981	0,52035	0,58107	0,25174	-0,2431	-0,49813	-0,46507	0,07423	-0,0492	0,11977	-0,39173	-0,00171
-0,31366	0,88452	-0,13354	0,27056	0,18269	-0,54015	0,09356	-0,07988	0,15037	0,11149	-0,00924	0,3461	-0,05111	0,37887	0,71073	0,0294	-6,16191	0,35803	-0,11791	-0,0407
-0,51476	-2,30033	-0,3267	-0,12008	0,69387	-0,73373	0,23861	0,16432	-0,03267	0,30101	-0,28602	1,39298	0,84059	-0,4907	2,07546	0,39081	0,55755	1,39865	-1,14093	1,23469
-0,00684	0,58864	-0,17896	-1,05672	-0,28227	0,35522	-1,36912	-1,17802	0,09992	0,08952	-0,54347	0,1303	-0,45665	1,49217	1,08198	0,54966	0,24436	-2,37411	2,28841	0,43227
0,28891	1,62416	0,91179	-0,09935	0,36639	-0,14341	-0,87081	1,44585	0,3219	0,54252	-0,47457	0,13605	0,35005	0,09621	-0,61759	-0,12145	0,3051	0,89651	1,53397	-0,88618
-5,5845	0,41653	-0,28142	-0,37695	0,10062	0,43101	0,91388	-0,10808	-0,4135	0,36762	-1,14976	0,43699	-1,79984	0,89751	-0,96144	-0,0045	0,15645	0,38292	0,6208	0,09402
0,77705	-0,11508	-0,2674	-1,51201	-0,18134	-1,44194	-0,93621	-0,8676	-0,23228	0,90651	0,02653	0,72527	-0,64012	0,04755	-1,0063	0,06643	-0,26285	1,09028	-1,06022	2,0085
0,84439	0,23434	-0,16145	-0,24193	-0,75338	0,2717	0,32013	0,8803	0,17322	0,70996	-1,61583	-1,21432	-0,07984	0,22372	-0,45195	0,39424	-0,20943	-0,95908	-0,26208	-0,44312
-0,19995	1,26781	1,5285	-0,35266	0,35774	-0,59972	-0,04573	1,44738	0,08838	0,0861	-0,21211	-0,14314	-0,02729	1,11047	0,27866	0,06122	0,00349	0,89619	0,20972	-0,61217
0,14269	1,08141	0,98229	0,26219	-0,13407	2,96685	-0,90191	-0,76062	0,57216	0,71197	1,10773	0,88195	-0,78693	-1,60979	-0,44269	-0,68614	0,16013	-1,9087	-0,91037	-0,69707
-0,47479	-1,54595	1,12435	0,0505	-5,79247	0,15218	0,60468	-0,13341	0,22981	0,59152	0,38898	-0,18349	0,11186	-0,15693	0,31951	-0,25604	-0,25254	-0,2577	0,77575	0,75145
1,577	-0,65522	0,22735	-0,88796	0,16023	1,03151	-0,20562	0,54785	0,04723	-0,31015	0,72472	0,79027	-0,09716	-2,46151	1,23415	-0,11991	-0,37827	0,81539	0,99204	0,42976
0,24133	0,72377	-3,3088	0,04657	-1,34785	0,5704	-1,26866	0,42585	0,28662	-0,6771	-1,096	1,56737	-0,12839	0,75172	-0,2328	1,34898	0,17628	1,40577	0,60678	-0,36779
0,18323	0,10533	-1,65963	-0,2027	0,25184	-0,00185	-0,09389	0,15719	0,06831	-0,01043	-0,4329	-0,11351	-0,01371	0,14374	-0,14069	-6,16773	-0,01038	-0,14237	0,04641	0,03477
-0,35103	0,43561	1,351	-0,25044	0,35157	-2,272	0,89784	-0,13285	0,77049	-0,75651	3,5458	0,01559	-0,21124	0,95143	-1,48218	-0,11237	-0,0073	-0,72862	0,12135	0,04894
-0,25286	1,04027	-0,90175	-0,27721	-0,17194	-1,00903	-0,12921	1,19253	0,00361	0,56267	-0,53762	0,90911	0,28969	-0,88275	1,10436	0,00231	0,86838	-1,56743	-0,04067	0,02624
0,41705	0,73354	-0,32792	-0,25052	0,02393	-0,6825	-1,11509	0,1059	0,03501	0,38378	-0,37734	-0,43944	-0,0596	-0,52618	-0,37169	0,13793	0,45056	0,19974	0,57476	0,19222
-0,06247	-2,02163	0,73503	0,02278	0,93925	0,64604	1,61991	0,16741	0,1146	-0,30044	-0,40051	-0,5087	-0,32166	0,09863	-0,44535	-0,23069	-0,63669	-1,07838	0,17139	0,48147
0,06667	0,45939	-0,47364	-1,10936	0,0496	-0,39664	0,20149	-0,43624	-0,06558	0,80658	0,16251	-2,30969	-1,90399	0,4088	0,2486	0,35618	-0,38685	0,5844	0,87465	-0,06566
-0,31783	0,17258	-2,25276	-0,55893	0,71047	0,79179	0,68526	0,78118	0,0253	0,07396	1,17015	-0,80873	1,32159	-0,8201	-1,48667	1,32269	-0,58513	-1,01804	-0,85871	0,15989
-0,20798	0,11391	-1,914	-0,1321	0,69605	1,06762	1,04198	0,39127	0,84864	-0,97883	1,27327	-0,11066	-1,1537	-0,51999	1,28065	0,98003	0,2725	-1,72807	0,06252	0,4401
-0,09508	0,1181	0,81285	-0,11538	0,29426	0,04713	0,74894	0,15612	0,87278	0,14718	-0,35876	0,46724	0,07563	0,06017	0,56247	0,08661	0,22551	0,52846	-0,32558	0,121
0,14632	0,44886	0,85214	0,22806	0,33184	0,31039	0,28989	0,79648	-5,82567	0,7199	0,18326	-0,47207	0,19918	0,63155	0,64879	0,12676	0,29468	-0,0237	0,30116	0,18198
-0,21882	1,03918	0,37071	0,10262	-0,01154	-0,02301	-0,24257	-0,34957	0,48947	-0,35016	-1,53471	-1,34655	-0,09865	0,938	0,24387	0,02181	1,04542	1,16172	-2,0396	0,25265
-0,4956	-2,57136	0,96435	-0,37097	1,38495	-0,24431	-1,45919	0,11293	-0,02988	0,82023	-0,62244	1,5424	-0,50816	0,61169	0,7433	-0,07445	-0,33218	-1,13372	-1,07356	1,46036

C25	C26	C27	C28	C29	C30	C31	C32	C33	C34	C35	C36	C37	C38	C39	C40	C41	C42	C43	C44	C45
0,54317	0,04889	0,21798	-0,39577	1,03765	0,34001	0,09118	0,92736	-0,15494	0,45712	-0,11769	-0,29215	0,30183	0,39173	0,04355	1,97381	-0,39864	2,91794	-0,55232	0,52595	0,1307
-3,89263	0,34152	0,13482	0,20808	-0,03372	0,04429	-0,38003	0,07808	0,57323	1,16991	0,15193	0,53548	-0,0518	-0,4333	0,24096	0,03635	0,12636	-0,29091	-0,20959	0,4713	-0,26454
1,05061	0,30257	-0,38033	-2,37044	0,59266	1,51791	-0,82303	0,09993	0,22787	-0,03924	0,38134	-2,90095	0,22529	0,6814	0,40272	0,3309	-0,0145	-2,39871	-0,51123	-1,55995	-1,49393
-0,71127	1,39365	0,09704	1,26657	-0,33235	-0,5317	0,03921	-1,27385	0,10308	-0,66333	0,79139	-0,20486	0,25613	-1,33507	-0,94668	-1,57535	-0,36896	-1,93398	0,39065	-1,06552	-0,30074
0,43026	-2,18507	0,14302	1,02925	1,27498	-0,98887	-0,02304	0,22247	1,44264	0,5548	1,91992	0,852	0,8584	1,82763	0,20561	1,09546	0,07638	-0,5816	-0,46368	-1,93514	-0,00037
0,19292	0,28445	-0,13625	-0,03035	0,7661	0,04069	-0,24588	1,13063	0,19856	0,44093	-0,97484	0,00321	-0,2385	0,12191	-0,3022	0,03513	-0,03585	-0,36406	0,59844	-0,04979	6,00418
0,78031	0,32724	0,39465	-1,96645	-3,92594	-0,30825	0,1111	-0,0266	0,36058	0,4222	0,16138	0,90099	1,74242	-1,07381	0,33957	0,18966	0,08284	0,13007	-0,47134	-0,65003	0,52254
-0,68174	-1,0869	0,228	-0,86622	1,14236	-1,44264	-0,32908	0,97782	-2,30112	0,534	-1,51903	-1,33665	1,4699	-0,5106	0,48217	0,49661	-0,63633	0,27872	1,51804	-2,07263	-0,1601
-0,40064	-0,20875	0,58727	0,37095	-0,19988	-0,22786	0,51261	0,34044	0,87425	0,24836	-0,68803	0,63984	0,88894	-0,91472	0,45738	0,33566	-0,2384	-0,61924	0,59092	0,50197	-0,34794
0,19751	0,58399	1,54369	-1,42825	0,90541	-0,01683	-0,93351	0,25635	1,43342	-1,49203	1,04275	1,28099	0,18695	-1,00572	0,80998	-0,36535	0,40608	-0,59775	0,54311	-1,09354	0,34109
-0,13544	0,81902	-0,19217	0,40303	1,18283	-1,08743	-0,55135	0,09856	-0,55704	-0,40791	0,90992	0,36031	0,43021	-0,52655	-0,73738	-0,43044	-0,65285	-3,71268	0,46888	-0,48907	
0,08959	0,15694	0,02156	-0,43807	0,78625	-0,52583	0,21098	-4,85945	-0,54467	-0,55704	-1,04205	0,14948	0,23974	-0,4986	0,17342	0,5544	-0,6463	-0,53248	0,203	-0,13592	0,05457
-0,35813	0,5006	-0,18754	0,39824	0,1069	-0,44609	-0,72337	-0,97964	0,84108	-0,91718	0,56645	-0,06397	0,93778	-0,21789	0,24579	-1,92038	0,14581	4,55658	0,48194	-1,05455	-0,94923
0,23969	0,05424	0,35108	0,82525	3,05963	-0,94089	-0,47915	1,37181	-0,39676	-1,07008	-0,52025	-0,37172	-1,20096	-1,78139	0,57584	-1,08778	-0,57037	-0,27491	0,28239	1,19576	-0,62248
-1,17664	0,79488	-0,67613	-1,10194	-0,03519	-0,74375	0,11738	-0,18115	0,78559	0,39159	0,80381	-0,05045	-0,55411	-0,06309	0,38185	-0,73099	0,14045	0,02498	0,59249	0,28323	0,17184
0,22251	-0,89884	0,19468	0,03944	-0,48932	0,87959	0,2787	-0,08763	-0,05299	-0,79364	0,70178	-0,89957	-0,37485	-0,26591	0,42173	0,05963	0,02028	0,1955	1,26919	-0,02996	0,17275
-1,0878	-1,3978	0,05761	0,95986	-0,86332	-1,12276	-0,64481	-0,41627	-0,41878	-2,8648	1,48737	-0,72068	-0,04041	0,38467	0,61302	0,92246	0,21399	-0,36265	-1,91479	0,24083	1,04036
3,28502	-0,5342	-0,30142	0,22088	-0,37261	-1,06285	-0,1318	-0,23777	0,67342	0,00588	0,57404	-1,01269	-0,78331	-0,32004	0,55521	-0,88245	-0,00879	0,35249	0,22615	-0,2809	0,24715
-0,46902	-0,66361	0,21869	0,35154	-0,82893	-0,67499	-0,75298	-0,65244	-0,01373	1,01364	-1,08727	0,64895	0,12816	-0,48888	-1,37155	0,75395	-0,05447	0,07455	0,6885	-0,92059	-0,51195
-0,34199	-0,42324	0,12417	0,70442	-1,40419	0,96266	-0,09148	2,82546	0,45469	-0,17657	0,87765	0,16036	-0,40382	-0,36548	0,15381	-1,58303	-2,50053	-0,66251	0,18682	-0,18686	0,08605
-0,0706	0,15177	1,3687	-1,05445	-0,30517	-1,06399	-0,01435	-0,43021	-1,19132	1,9372	0,80515	-2,80509	-0,87523	0,50803	1,1322	-0,76434	0,27147	0,69551	-1,34435	1,18748	0,46607
0,21117	-0,15949	0,01411	0,53938	0,1508	0,17876	-0,00033	0,78062	0,17818	0,1812	-0,01075	0,17739	0,0091	-0,31038	0,00611	-0,04856	5,87928	-0,40129	0,08384	0,33801	-0,22151
-0,24597	-0,04791	0,23106	0,03774	-0,06622	-0,32533	0,18662	0,1417	-0,22368	-0,05152	0,03799	0,13868	0,41486	0,15999	-0,40866	-0,21036	-0,08577	0,07711	-0,33737	0,06636	-0,25735
0,32017	0,26721	1,42456	0,92062	-0,46021	-0,76354	0,00666	-0,1951	1,73106	-0,7714	-2,00139	-0,20988	-0,67344	3,03463	-0,21965	-1,01186	-0,13885	-0,55057	0,77979	0,75738	-0,64605
0,61062	-1,3664	0,07316	0,408	-1,32232	-0,64433	0,04661	0,2078	-1,72187	0,33326	-1,49594	1,0113	0,38146	1,507	0,39711	-1,75817	-0,02494	-0,07717	-1,73223	0,10229	-0,09835
0,56688	-0,03609	-0,73062	-0,57905	0,58078	0,22392	-0,6633	0,20715	1,05106	1,16989	-0,19184	0,20131	3,0798	0,84596	-0,16561	-1,47714	0,15662	-0,65155	1,51259	2,21189	-0,21923
0,04984	0,14645	0,11494	-0,0796	1,12472	0,26479	0,10352	0,24708	0,32403	0,00477	0,11582	0,42012	0,28214	-0,12415	-0,40558	-0,1536	-0,05384	-0,00509	0,10401	-0,60842	0,18318
0,3867	-1,16225	0,08161	-2,72131	0,70221	0,96798	-0,29821	-0,70676	0,8272	-0,73681	1,63165	1,77533	-1,40276	0,52624	-1,00691	0,56037	-0,78554	0,50765	-0,62673	2,00495	-0,12055
-0,60253	0,38672	0,31692	-0,87834	-1,34868	-0,76397	0,16431	0,86295	0,25445	-2,67476	-1,84829	-1,63704	-0,64483	-1,03053	-1,02605	0,85343	0,38524	0,13726	-0,06913	1,82707	-0,3164
0,01206	-0,95546	0,0339	0,1684	-0,51629	1,18166	0,02131	0,13225	0,97346	0,97325	-1,69185	0,47992	-3,45012	-0,70324	-0,33872	-0,12481	0,38372	0,53901	-0,60386	-2,60125	-0,33645
-0,65106	1,50753	0,33455	-0,9217	0,47421	0,98638	-0,04686	0,61636	0,53606	-0,00052	-1,609	0,15064	0,23405	1,81871	-1,09647	1,93781	-0,28535	0,19287	-0,08983	-0,48713	-0,49731
-0,05078	-0,78929	-0,01081	0,20866	0,31922	0,71102	-0,04505	-0,25722	0,25084	0,17304	0,05642	0,13156	-0,0109	-0,41352	0,21863	-0,14147	0,19388	0,28724	0,52614	0,30947	-0,09976
0,19734	1,93081	-0,28124	-0,06447	0,14698	2,33125	0,17749	-0,68402	-0,98154	1,52171	0,43829	0,15028	-0,98011	-0,38485	0,67072	-1,60032	0,17204	0,30299	-0,3888	0,22839	0,24738
-0,04172	2,72625	0,05963	0,18309	-0,00293	-0,58212	-0,31308	0,44096	-0,5631	-0,75453	0,69475	0,83169	-0,12763	0,45242	-0,02475	0,71272	0,18231	0,07526	-0,73667	-1,30237	0,23609
-0,14816	-0,55219	0,02322	0,35018	-1,11116	-0,18424	-0,0669	-0,31582	0,0057	-0,0849	-0,05616	-0,17335	-0,29755	0,25961	0,22587	-0,27711	0,03806	-0,00663	-1,11307	-0,18611	-0,00665
2,16927	1,64297	0,84746	0,67486	-0,11874	0,02762	0,11916	0,62041	-0,60179	-0,66085	-0,72905	0,81812	0,24119	0,22836	-0,67799	0,16515	-0,42777	0,32663	0,48627	-0,05031	-0,0054
1,58931	0,07988	0,53502	0,93415	-0,55566	-1,60254	-0,86138	-0,16835	-0,67773	2,00671	0,65546	1,31026	-1,322	-1,57592	-0,04364	2,24994	-0,42144	-0,79618	1,0641	1,55692	-1,20408
0,09017	-0,0664	0,181	-0,26333	0,58536	-0,29995	6,16829	0,01318	0,0729	-0,19224	0,21749	0,26803	0,12045	0,02474	0,04003	-0,18159	-0,05968	-0,22258	-0,08096	-0,10185	-0,29048
-0,99518	0,47816	-0,48509	-0,67815	-0,5463	-1,00702	0,46345	0,69977	-2,72612	-0,00807	1,97815	0,71508	-1,10836	1,72854	0,17643	0,28775	0,27073	0,03876	2,28802	-0,13982	-0,18142
-0,28618	1,18959	-0,24585	2,89604	-0,88224	0,88688	0,11589	-0,68675	1,54593	0,88037	-2,20505	-0,06802	1,05473	0,6037	1,69231	-0,59096	0,26784	0,61968	0,56424	0,06995	
-0,89276	-1,753	0,01057	-0,0932	-0,17829	1,50239	-0,11553	-0,49616	0,15731	0,02994	-1,47543	0,80084	-0,12807	-0,12147	3,63727	0,25221	-0,29463	-0,18287	0,42401	0,72486	-0,18715
-0,47678	-2,08583	-0,29179	0,06237	-0,03018	0,58127	0,16259	-0,31306	-0,01464	0,86593	0,61407	-1,30678	0,12312	-0,76493	-4,25017	-0,76019	-0,05185	0,27467	0,17632	0,29746	0,18464
0,34464	0,22804	-5,88108	-0,12241	-0,19298	-0,7522	-0,07727	0,65922	0,05287	0,2477	-0,51548	0,14993	0,29927	0,23723	-0,11649	-0,11228	0,01191	0,08457	-0,19632		
-0,81166	0,42218	0,02474	-0,53875	-0,02624	0,19495	-0,24119	0,32831	-0,41407	0,25397	0,10242	0,16626	0,10289	0,24374	-0,51847	0,18829	0,05784	-0,03761	-0,11736	0,15903	-0,04299
0,5594	-0,5126	0,15179	1,52054	-0,03532	3,14565	-0,55356	-0,57142	-2,92754	-1,59116	0,23152	0,71933	0,68029	0,64411	-0,64531	0,02743	0,23438	-0,24933	0,29137	0,29393	-0,23297
0,3889	0,11974	-0,34088	0,91068	0,24521	1,14031	0,68271	0,67936	0,08465	0,09795	0,1222	-0,40417	1,96045	-2,32081	0,46501	1,44359	-0,19606	0,31112	-1,80469	0,1109	0,06418

Table C 3 - Usual Scores

Caso	Clusters	Clusters	Clusters	Clusters	Clusters	Clusters	Clusters	Clusters	Clusters	Clusters	Clusters
1	1	1	1	1	1	1	1	1	1	1	1
28	1	1	1	1	1	1	1	1	1	1	1
35	1	1	1	1	1	1	1	1	1	1	1
6	6	6	6	1	1	1	1	1	1	1	1
12	6	6	6	1	1	1	1	1	1	1	1
36	6	6	6	1	1	1	1	1	1	1	1
37	6	6	6	1	1	1	1	1	1	1	1
10	10	10	9	8	1	1	1	1	1	1	1
5	5	5	5	5	5	4	4	1	1	1	1
20	5	5	5	5	5	4	4	1	1	1	1
40	5	5	5	5	5	4	4	1	1	1	1
2	2	2	2	2	2	2	2	2	2	1	1
34	2	2	2	2	2	2	2	2	2	1	1
38	2	2	2	2	2	2	2	2	2	1	1
39	2	2	2	2	2	2	2	2	2	1	1
42	2	2	2	2	2	2	2	2	2	1	1
29	12	2	2	2	2	2	2	2	2	1	1
31	12	2	2	2	2	2	2	2	2	1	1
46	12	2	2	2	2	2	2	2	2	1	1
3	3	3	3	3	3	3	3	3	3	2	1
23	3	3	3	3	3	3	3	3	3	2	1
4	4	4	4	4	4	3	3	3	3	2	1
27	4	4	4	4	4	3	3	3	3	2	1
44	4	4	4	4	4	3	3	3	3	2	1
8	8	8	4	4	4	3	3	3	3	2	1
25	8	8	4	4	4	3	3	3	3	2	1
7	7	7	7	6	6	5	5	4	4	3	2
11	7	7	7	6	6	5	5	4	4	3	2
13	7	7	7	6	6	5	5	4	4	3	2
24	7	7	7	6	6	5	5	4	4	3	2
32	7	7	7	6	6	5	5	4	4	3	2
45	7	7	7	6	6	5	5	4	4	3	2
14	11	11	10	9	8	7	5	4	4	3	2
15	11	11	10	9	8	7	5	4	4	3	2
17	11	11	10	9	8	7	5	4	4	3	2
22	11	11	10	9	8	7	5	4	4	3	2
30	11	11	10	9	8	7	5	4	4	3	2
33	11	11	10	9	8	7	5	4	4	3	2
41	11	11	10	9	8	7	5	4	4	3	2
9	9	9	8	7	7	6	6	5	4	3	2
16	9	9	8	7	7	6	6	5	4	3	2
18	9	9	8	7	7	6	6	5	4	3	2
19	9	9	8	7	7	6	6	5	4	3	2
21	9	9	8	7	7	6	6	5	4	3	2
26	9	9	8	7	7	6	6	5	4	3	2
43	9	9	8	7	7	6	6	5	4	3	2

	Case	Clusters	Comp.1	Comp.2	Comp.3	Comp.4
Cultural and natural heritage	1	1	0,95	0,48	0,42	-0,65
Cultural events	2	1	0,79	-0,60	-0,01	-0,84
Tailor-made visit	3	1	0,39	0,59	0,39	-1,00
Satisfaction of the travel experience	4	1	0,60	0,69	0,82	-1,19
Autenticity	5	1	0,81	0,64	0,79	-1,39
Atmosphere	6	1	0,95	0,46	1,30	-1,31
Friendly people	7	1	1,33	0,57	-1,29	-1,02
Connection with nature	8	1	0,92	0,73	0,44	-1,58
Learning	9	1	0,78	0,26	1,14	-1,50
Transformative experience	10	1	0,60	-0,09	0,10	-1,34
Satisfaction of the transformative experience	11	1	0,92	0,17	0,95	-1,85
Interest in European heritage sites	12	2	0,62	0,24	-3,06	-0,19
Sense of belonging to European culture	13	2	1,24	-0,78	-2,89	-0,33
Interest in learning more about linkages of local heritage with European history and culture	14	2	1,16	0,51	-2,89	-0,42
Sustainable transport means	15	3	-1,42	-1,97	0,23	-0,45
Energy efficiency and use of renewable energy sources	16	3	-1,20	-0,84	0,10	-0,35
Freshwater consumption in tourism services	17	3	-0,92	-0,72	-0,37	-0,54
Plastic-free and recycling-based policies in tourism services	18	3	-1,32	-0,93	0,28	-0,54
Presevation of green areas, fauna and flora	19	4	-1,46	1,12	-0,03	-0,67
Rural landscape maintenance	20	4	-2,16	0,32	0,48	-0,86
Wastes management	21	4	-1,99	0,17	-0,22	-0,47
Green certification/label of tourism services	22	3	-1,49	-0,73	-1,42	-1,19
Satisfaction of the destination sustainability	23	4	-2,04	0,55	0,20	-0,76
Local and traditional food	24	5	1,05	-2,02	0,92	0,92
Local and traditional craft	25	5	0,66	-2,37	0,35	1,18
Conservation/reuse of local heritage and landscape	26	6	-0,43	0,88	-0,23	1,63
Less known places promotion	27	6	-0,42	0,97	-0,05	1,30
Social corporate responsibility/human rights policies in tourism activities	28	6	-0,57	-0,63	-1,44	1,06
Tourism activities run by local people/families	29	6	0,44	-0,24	0,52	1,27
Tourism workers skills	30	6	0,10	1,26	0,01	1,51
Services for people with special needs	31	5	-0,24	-1,85	-0,36	0,75
Safety	32	6	0,00	0,67	1,33	0,77
Satisfaction of destination management	33	6	-0,59	0,65	0,26	1,14
General satisfaction	34	7	0,47	1,03	0,46	1,21
Satisfaction compared to other similar places	35	7	0,62	0,86	0,22	1,30
Satisfaction compared to expectations	36	7	0,45	0,75	0,38	0,99
Willingness to come back	37	7	0,83	0,73	0,34	1,02
Willingness to recommend	38	7	0,66	0,78	0,75	1,07
Willingness to contribute/donate	39	6	0,66	0,39	-0,74	0,79
Accommodation services	40	6	0,32	-0,27	0,64	0,72
Restaurants and food	41	5	1,36	-2,13	0,90	0,27
Sport and wellness	42	6	-0,79	0,91	-0,22	0,16
Shops	43	5	0,05	-2,00	0,38	-0,01
Public places	44	6	-0,43	0,10	0,12	0,49
Transports and roads	45	6	-1,04	-0,58	0,49	0,49
Information to visitors	46	6	-1,21	1,29	-0,50	0,43