USER-GENERATED CONTENT AS A STRATEGIC TOOL FOR VISITOR EXPERIENCE MANAGEMENT: EVIDENCE FROM PORTO, PORTUGAL

Helena Albuquerque[1*], Jacqueline Galdón Jiménez[2], and Fátima Matos Silva[3]

[1,3)] *REMIT – Research on Economics, Management and Information Technologies, Portucalense University, Porto, Portugal*
[1)] *GOVCOPP—Research Unit on Governance, Competitiveness and Public Policies, University of Aveiro, Aveiro, Portugal*
[2)] *Escuela Universitaria de Turismo Iriarte, Universidad de La Laguna, Tenerife, Spain*
[3)] *CITCEM - Transdisciplinary Research Centre «Culture, Space and Memory», Porto University (I&D 4059 da FCT)*

Please cite this article as:
Albuquerque, H., Jiménez, G. J. and Silva, M. F., (2026). User-generated Content as a Strategic Tool for Visitor Experience Management: Evidence from Porto, Portugal. *Amfiteatru Economic*, 28(Special Issue No. 20), pp. 1700-1718.

DOI: https://doi.org/10.24818/EA/2026/S20/1700

Article History
Received: 25 August 2026
Revised: 20 September 2026
Accepted: 10 October 2026

Abstract

User-generated content has become an increasingly relevant source of information for understanding visitor experiences and supporting the management of urban heritage tourism attractions. Although online reviews are widely used by tourists when making travel decisions, their potential contribution to attraction-specific management remains underexplored, particularly in heritage-rich cities experiencing increasing tourism pressure. This paper analyses 150 TripAdvisor reviews of three emblematic attractions in Porto, Portugal: Livraria Lello, Mercado do Bolhão and Torre dos Clérigos. The study combines descriptive quantitative analysis with manual thematic coding, sentiment–theme intersections and thematic co-occurrence analysis. The results show that each attraction presents a distinct experiential profile. At Livraria Lello, architectural appreciation and crowding are both mentioned in 80% of the reviews and co-occur in 64%, revealing a strong relationship between admiration for the building and dissatisfaction with the visiting conditions. Mercado do Bolhão receives predominantly positive evaluations, particularly regarding its gastronomic offer and atmosphere, although some reviews express concerns about touristification and the possible loss of local character and authenticity. Torre dos Clérigos is mainly valued for its panoramic views, while the physical effort involved in the

*Corresponding author, **Helena Albuquerque –** e-mail: helenaa@upt.pt

This is an Open Access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited. © 2026 The Author(s).

climb is generally accepted as part of the experience. The comparative analysis suggests that constraints do not necessarily lead to dissatisfaction, as their effects depend on whether visitors perceive them as unavoidable characteristics of the attraction or as consequences of inadequate management. By examining how experiential attributes and management-related difficulties occur together, the study demonstrates that user-generated content can provide a useful diagnostic resource for identifying attraction-specific priorities. The findings offer practical insights into visitor-flow management, perceived value, accessibility and the preservation of authenticity, highlighting how UGC can support more adaptive and sustainable tourism management while positioning online reviews as a complement to other forms of visitor research.

Keywords: user-generated content, visitor experience, attraction management, urban heritage tourism, sustainable tourism, perceived value, Porto.

JEL Classification: L83, M31, Z32.

Introduction

Urban tourism destinations are increasingly shaped by the interaction between cultural heritage, visitor expectations, digital representations and management decisions. In historic cities, emblematic attractions are not only places of sightseeing or consumption. They are also symbolic spaces through which visitors interpret the destination's identity, atmosphere and cultural value. Managing the visitor experience is therefore particularly important in cities where heritage conservation, tourism pressure, commercial activity and local identity intersect. Porto provides a relevant context for examining these relationships, as its tourism appeal is strongly associated with its architecture, cultural heritage, gastronomy and urban atmosphere, while some of its most emblematic attractions experience high levels of visitor demand (Albuquerque et al., 2024; Quintela et al., 2023; Ramazanova et al., 2025). In this context, sustainable tourism management requires not only balancing visitor demand with heritage conservation, but also maintaining the quality of visitor experiences and the cultural and social functions that give urban attractions their distinctive character.

At the same time, digital platforms have changed the way tourists obtain information, form expectations and share their experiences. Before visiting a destination, tourists use reviews written by other visitors to assess the quality, atmosphere and practical conditions of attractions. After the visit, they can publicly describe what they valued and the difficulties they encountered. Platforms such as TripAdvisor therefore provide a continuous source of user-generated content (UGC) concerning visitor perceptions, satisfaction, complaints and emerging tensions (Gretzel & Yoo, 2008; Xiang & Gretzel, 2010). Unlike numerical ratings, written reviews allow visitors to explain the reasons for their evaluations and to associate different aspects of the same experience, such as architecture, crowding, waiting times, prices, universal accessibility or authenticity.

Tourism research has demonstrated the relevance of online reviews for analyzing destination image, electronic word-of-mouth, tourist behavior and service quality (Fang et al., 2016; Marine-Roig & Anton Clavé, 2015; Van der Zee & Bertocchi, 2018). A recent systematic review also confirms that UGC can provide useful information for several areas of tourism

management, including visitors, products, resources, attraction sites and crisis situations (Chemin et al., 2025). However, online reviews are still frequently examined mainly as indicators of satisfaction, reputation or consumer behavior. Their practical use as attraction-specific diagnostic evidence remains less developed, particularly in urban cultural heritage contexts where visitor experiences are influenced by crowding, waiting times, perceived value, accessibility and authenticity.

This study addresses this issue through a comparative analysis of three emblematic attractions in Porto: Livraria Lello, Mercado do Bolhão and Torre dos Clérigos. The attractions were selected because they represent different dimensions of the city's tourism offer. Livraria Lello combines architectural and literary heritage with commercial activity and high international visibility. Mercado do Bolhão brings together a renovated historic building, food culture, local commerce and urban identity. Torre dos Clérigos is one of Porto's most recognizable heritage landmarks and is strongly associated with its panoramic views and historic skyline. Although the three attractions are located within the same urban destination, they provide different types of visitor experience and face different management challenges. Their comparison makes it possible to examine how similar issues, such as crowding, universal accessibility, commercialization or physical effort, are perceived in different attraction contexts.

The main objective of the study is to examine how user-generated content can support visitor-experience management in urban tourism attractions. More specifically, the analysis seeks to identify and compare the main experiential themes associated with the three attractions, examine how these themes relate to the overall evaluations expressed by visitors, and discuss how the results can inform attraction-specific management decisions and contribute to more sustainable tourism management. The following research questions guide the study:

RQ1. How do overall sentiment and recurrent experiential themes differ across the three urban heritage attractions?

RQ2. Which core attraction attributes and management-related frictions co-occur in visitor reviews?

RQ3. How can these patterns inform attraction-specific management while balancing value creation, authenticity, accessibility and visitor pressure?

The empirical analysis combines sentiment classification, manual thematic coding, thematic co-occurrence analysis and sentiment–theme intersections across 150 TripAdvisor reviews, with 50 reviews per attraction.

This article substantially extends preliminary findings presented at the 2026 BASIQ International Conference (Galdón Jiménez et al., 2026) through an updated literature review, complete thematic frequencies, sentiment–theme intersections, co-occurrence analysis and expanded theoretical and managerial implications.

1. Literature Review

1.1. User-generated content and online reviews in tourism

User-generated content includes reviews, ratings, photographs, videos and travel narratives shared through digital platforms. It is particularly relevant in tourism because products and

services are experiential and cannot be fully evaluated before consumption. Tourists therefore use content produced by other visitors to reduce uncertainty, compare alternatives and anticipate the characteristics of an experience (Gretzel & Yoo, 2008; Hernández-Méndez et al., 2015; Xiang & Gretzel, 2010).

Online reviews contribute to the formation of cognitive and affective destination images by combining practical information with emotions, impressions and personal interpretations. They can therefore shape visitors' expectations and the meanings associated with destinations and attractions (Marine-Roig & Anton Clavé, 2015). Since destination image is closely connected to branding and promotion, the ability to communicate distinctive attributes is particularly important, as demonstrated by comparative research on Porto and La Paz (Silva et al., 2023). However, the images projected by destinations and attractions may not always correspond to the experiences described by visitors on digital platforms.

The influence of online reviews also depends on their perceived credibility, readability and usefulness. Reviewer characteristics and information quality can affect the perceived value of a review and its role in tourism decision-making (Fang et al., 2016). At an aggregate level, large volumes of UGC have been used to analyze destination image, spatial behavior and patterns of tourist movement (Marine-Roig & Anton Clavé, 2015; Van der Zee & Bertocchi, 2018).

Beyond marketing and tourist decision-making, reviews provide organizations with external knowledge about visitors' expectations, satisfaction, complaints and changing patterns of demand. Visitors consequently participate in value creation by sharing information that can support service improvement, product adaptation and strategic decision-making (Del Vecchio et al., 2018; Lam et al., 2020). A systematic review of 158 studies confirms that UGC can contribute to several areas of tourism management, including the understanding of visitors, the management of resources and attraction sites, product development, marketing and responses to crises (Chemin et al., 2025).

Nevertheless, the use of online reviews for management purposes presents several limitations. Digital platforms differ in the type and amount of information they provide, which can influence the suitability of their reviews for tourism research (Mellinas & Sicilia, 2024). Reviewers are also self-selected, meaning that their opinions are not statistically representative of all visitors. Profile information may be incomplete, and published reviews may overrepresent particularly positive or negative experiences.

The methodological approach also influences the results obtained. Automated sentiment analysis and topic-modelling techniques allow researchers to process large volumes of content and identify broad patterns (Nawawi et al., 2024). Manual thematic coding is more time-consuming, but it can preserve contextual and interpretative meanings that may be difficult to identify through automated analysis (Braun & Clarke, 2006). This is particularly important when the same aspect can have different meanings depending on the attraction. Physical effort may be considered an expected part of climbing a historic tower, while waiting in a queue may be interpreted as an avoidable management problem. UGC should therefore be used alongside other visitor-research methods, providing recent, detailed and experience-based information (Chemin et al., 2025).

1.2. Visitor experience in urban heritage attractions

Visitor experience is a multidimensional and context-dependent concept that includes sensory, emotional, cognitive, functional, social and symbolic components (Walls et al.,

2011; Packer & Ballantyne, 2016). Visitors evaluate not only what they see, but also how they access and move through an attraction, the quality of the available services, the information they receive and the extent to which the experience corresponds to their expectations. These dimensions may reinforce one another or generate mixed evaluations within the same visit.

In cultural and heritage attractions, these dimensions include historical significance, architecture, interpretation, accessibility, service quality and spatial organization. Research on museum management shows that visitors' evaluations reflect interactions among several experiential factors (Çolak & Karakan, 2024). Similarly, an analysis of online reviews concerning a UNESCO World Heritage Site demonstrates that visitor narratives can reveal different interpretations of cultural heritage and experiential priorities (Nguyen et al., 2024).

The urban context adds further complexity. Heritage attractions are connected to transport networks, public spaces, commercial activities and the wider image of the destination. Their cultural and symbolic importance can attract high visitor flows, generating economic opportunities while increasing pressure on buildings, services and surrounding areas. Managing urban World Heritage Sites therefore requires coordination between heritage conservation, tourism, local communities and economic activities (Coimbra et al., 2025).

This balance is particularly important in Porto, where tourism is closely connected to architectural heritage, gastronomy, local culture and the historic urban landscape. Research on visitors' views of sustainable heritage management in the city indicates that tourism and heritage preservation should not be treated as separate objectives (Ramazanova et al., 2025). The visitor experience partly depends on whether tourism use is perceived as compatible with the cultural significance and everyday functions of the place.

Online reviews are useful in this context because they allow visitors to describe the different elements that influenced their experience (Chemin et al., 2025). A positive evaluation may include complaints about queues or accessibility, while a negative review may still recognize the architectural or cultural value of an attraction. This coexistence of positive and negative components shows why review-level sentiment classification should be considered together with the specific themes mentioned in each review (Bigné et al., 2023). Research on complaints at internationally recognized attractions also shows that predominantly positive evaluations may coexist with recurrent problems that remain relevant for management (Mellinas et al., 2024). Even when negative comments represent a minority, they may identify recurring difficulties or barriers affecting particular visitors.

Managing visitor experience therefore involves more than monitoring average ratings or general satisfaction. It requires identifying which elements visitors value, which aspects create difficulties and how they are related within the same experience (Bigné et al., 2023). Comparing attractions within the same destination can also help distinguish common management issues from those associated with the characteristics, functions and organisation of each site (Packer & Ballantyne, 2016).

1.3. Crowding, authenticity and perceived value in attraction management

Crowding is one of the main management challenges affecting urban tourism attractions (Neuts et al., 2012). It is related to the number of visitors present, but it is also a subjective perception influenced by expectations, available space, waiting time, freedom of movement and the purpose of the visit (Neuts & Vanneste, 2018; Sanz-Blas et al., 2024). The same

concentration of visitors may contribute to a lively atmosphere in a market but reduce the quality of a visit to a confined architectural or cultural space.

Visitors may express positive and negative reactions to crowding within the same account (Yu & Egger, 2021). A high number of visitors may confirm the popularity of a site or contribute to its social atmosphere. However, crowding becomes problematic when it prevents visitors from seeing important features, moving comfortably or spending sufficient time at the attraction. It may also increase waiting times and reduce the perceived quality of the experience. Management responses must consequently consider the characteristics of each place and not rely exclusively on general visitor numbers (European Parliament, 2018). UGC can support this process by indicating where and how tourism pressure is experienced, including problems concentrated in particular spaces or periods (Foronda-Robles et al., 2025).

Authenticity is another important dimension of the experience in heritage attractions (Wang, 1999). It extends beyond the preservation of buildings and historic features, since visitors may associate it with continuity of use, local participation, cultural meaning, traditional products and everyday urban life (Cohen, 1988; Wang, 1999). This is particularly relevant where gastronomy and local commerce form part of the cultural experience. Gastronomy can support the safeguarding and communication of intangible cultural heritage and strengthen connections between tourism, place identity and local traditions (Silva et al., 2025). However, adapting commercial spaces and products to tourist demand may generate perceptions of standardization or touristification, especially when the diversity of local products, traders and everyday uses is reduced (Dimitrovski et al., 2022).

Perceived value cannot be reduced to the price paid. It results from the relationship between the benefits received and the monetary and non-monetary costs associated with the experience (Petrick, 2002). Visitors may consider the monetary cost, time, physical effort, waiting, restrictions and expected benefits of the visit. A relatively high price may be accepted when the experience is distinctive, well organized and consistent with expectations. Conversely, perceived value may decline when crowding, restricted access, insufficient information or a limited offer prevents visitors from obtaining the expected benefits.

Crowding, authenticity and perceived value are interconnected. Crowding may reduce value when it limits access to the main features of an attraction or restricts freedom of movement (Sanz-Blas et al., 2024). Commercialization may affect authenticity when tourism-oriented activities displace locally rooted functions, practices and cultural meanings (Cohen, 1988; Dimitrovski et al., 2022). Physical effort may be accepted when it is expected and leads to a valued experience, but it can cause dissatisfaction when information, accessibility or assistance are inadequate.

Although UGC has been used to examine visitor experience, crowding, authenticity and perceived value, less attention has been given to how these dimensions occur together within the same reviews and vary between attractions with different functions (Chemin et al., 2025). Comparing their frequency, co-occurrence and relationship with review-level sentiment can provide more specific evidence about the strengths and management challenges of each attraction.

2. Research Methodology

2.1. Research design and case selection

The study adopts an exploratory mixed-methods approach, combining manual thematic content analysis with descriptive quantitative analysis (Creswell & Plano Clark, 2018). Each of the 150 TripAdvisor reviews was analyzed separately and coded according to its overall sentiment and the experiential themes it contained. The three attractions constitute the comparative cases. This approach makes it possible to identify recurrent dimensions of the visitor experience and examine how different themes are associated within the reviews. Given the purposive nature of the sample, the results represent patterns observed in the selected reviews and are not intended to be statistically generalized to all visitors.

Livraria Lello, Mercado do Bolhão and Torre dos Clérigos were purposively selected because they are highly visible and emblematic attractions located in Porto's central tourism area. Despite their geographical proximity, they represent different types of urban tourism experience and differ in their functions, spatial characteristics, cultural significance and patterns of visitor use. This diversity provides a relevant basis for comparing how visitors perceive common management issues, such as crowding, access, authenticity, perceived value and service quality, in different attraction contexts.

2.2. Data collection and database

The dataset comprises 150 publicly accessible TripAdvisor reviews, with 50 reviews selected for each attraction. A purposive sampling procedure was adopted, prioritizing recent reviews containing relevant descriptions of the visitor experience. Although reviews published during the previous five years were eligible, all selected reviews were published in 2025 because sufficient recent and information-rich content was available.

Reviews written in languages other than English were translated into English, while the original texts were retained for comparison when necessary. Reviewer origin and travel companion were recorded when available, but these variables were incomplete and were not used in the comparative analysis.

The full text of each review was analyzed and coded, and the resulting information was organized in structured analytical tables, with each row corresponding to one review. The main database components are presented in Table no. 1. Usernames were excluded, no attempt was made to identify reviewers, and the findings are reported in aggregate form without full quotations to minimize the possibility of identifying individual reviewers.

Table no. 1. Structure of the review database

Database component	Variables	Analytical use
Review identification	Review ID; attraction; publication date	Organization of the 150 reviews
Textual content	Original language; original text; English translation	Thematic analysis and verification
Reviewer context	Origin and travel companion, when available	Contextual information only
Analytical variables	Overall sentiment; keywords and five attraction-specific themes	Descriptive and comparative analysis

Source: Authors' elaboration based on the review analysis.

2.3. Sentiment classification and thematic coding

Each review was classified as positive, neutral or negative according to the overall evaluation expressed in the complete text. Reviews containing both positive and negative comments were classified as neutral when neither evaluation clearly predominated. This classification refers to the general balance of the review, not the evaluation of each individual theme. A positive review may, for example, mention queues or physical effort, while a negative review may still recognize the architectural value of an attraction.

The thematic analysis followed an iterative process of familiarization with the reviews, definition of the codes, coding and frequency calculation, in accordance with the principles of thematic analysis proposed by Braun and Clarke (2006). Five binary themes were defined for each attraction. A theme was recorded whenever it appeared in a review, and more than one theme could be assigned to the same review. Attraction-specific themes were retained because the three sites provide different experiences. For example, gastronomy is central to Mercado do Bolhão, while panoramic views are particularly relevant to Torre dos Clérigos.

The coding was conducted by one researcher using a codebook containing the definition and main expressions associated with each theme. The original and translated texts were retained to support the verification of coding decisions.

2.4. Analytical procedures

Four analytical procedures were applied. First, the number and percentage of positive, neutral and negative reviews were calculated for each attraction. Second, thematic frequencies were calculated according to the number of reviews in which each theme occurred. As several themes could be assigned to the same review, these percentages do not sum to 100%. Third, pairwise thematic co-occurrences were calculated to identify themes mentioned within the same review. Co-occurrence indicates an association within the visitor's account but does not establish a causal relationship. Finally, themes were examined according to the overall sentiment of the reviews in which they appeared. This procedure shows whether a theme is present in positive, neutral or negative reviews, but does not determine whether the theme itself was evaluated positively or negatively.

The analysis is descriptive and comparative. No inferential statistical tests were applied because the sample was purposively selected and the study does not seek to estimate patterns for the entire population of visitors.

3. Results

3.1. Comparative sentiment profile

The three attractions present clearly different sentiment distributions (Figure no. 1). Livraria Lello is the only attraction in which negative reviews predominate. Of the 50 reviews analyzed, 33 were classified as negative (66%), 10 as positive (20%) and seven as neutral (14%). Mercado do Bolhão presents the most favorable distribution, with 39 positive reviews (78%), seven neutral reviews (14%) and four negative reviews (8%). Torre dos Clérigos also receives predominantly positive evaluations, with 37 positive reviews (74%), 10 neutral reviews (20%) and three negative reviews (6%).

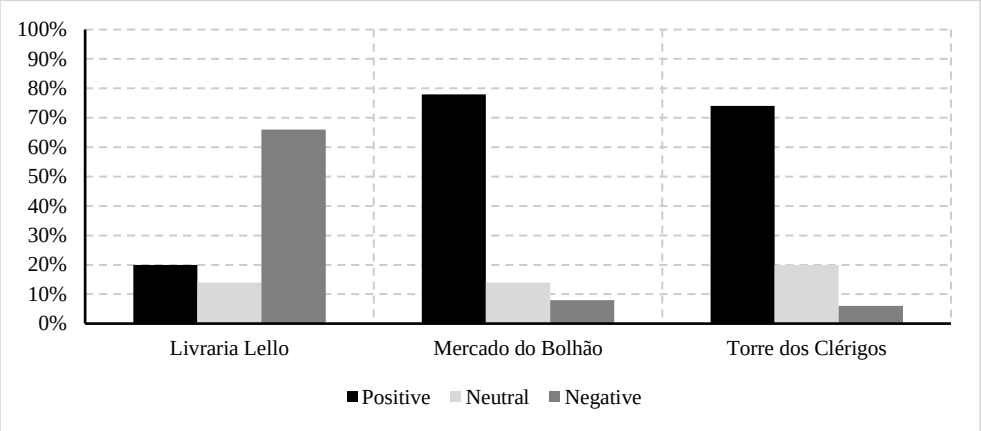

Figure no. 1. Overall sentiment distribution by attraction

Source: Authors' elaboration based on the review analysis.

These results confirm the general patterns identified in the conference paper. However, the sentiment distribution provides a more precise distinction between Livraria Lello, where dissatisfaction predominates despite the recognition of its architectural value, and Mercado do Bolhão and Torre dos Clérigos, where positive evaluations are clearly more frequent.

3.2. Main themes identified in the reviews

Table no. 2 presents the frequency of the five themes coded for each attraction. As more than one theme could be assigned to the same review, the percentages do not sum to 100%.

At Livraria Lello, architectural and aesthetic value and crowding and overcapacity were each identified in 40 reviews (80%). Queues and access management appeared in 30 reviews (60%), while value for money and pricing were present in 29 (58%). Bookshop authenticity and selection were mentioned in 25 reviews (50%). The results show that appreciation of the building is accompanied by frequent references to crowding, waiting conditions, prices and the commercial character of the experience.

Table no. 2. Attraction-specific thematic frequencies

Attraction	Theme	n	%
Livraria Lello	Architecture and aesthetic value	40	80
	Crowding and overcapacity	40	80
	Queues and access management	30	60
	Value for money and pricing	29	58
	Bookshop authenticity and selection	25	50
Mercado do Bolhão	Gastronomic offer and product quality	46	92
	Atmosphere and sensory experience	38	76
	Infrastructure, cleanliness and spatial organisation	32	64
	Authenticity versus touristification	17	34
	Historical and heritage value	7	14

Attraction	Theme	n	%
Torre dos Clérigos	Panoramic views and visual enjoyment	46	92
	Navigation, effort and physical challenge	32	64
	Architecture, history and heritage significance	24	48
	Service quality, ticketing and practical aspects	21	42
	Exhibits and museum features	10	20

Note: Percentages use 50 reviews as the denominator and do not sum to 100% because multiple codes could be assigned to one review. Source: Authors' elaboration based on the review analysis.

3.3. Thematic co-occurrences

The co-occurrence analysis examined which themes appeared together in the same review (table 3). This makes it possible to identify relationships within visitors' descriptions that are not visible from the individual frequencies alone.

At Livraria Lello, architectural and aesthetic value co-occurred with crowding and overcapacity in 32 reviews (64%). Crowding and queues appeared together in 26 reviews (52%). Two other combinations occurred in 24 reviews (48%): architectural value with price and value concerns and crowding with price and value concerns. The results demonstrate that appreciation of the building frequently coexists with criticism of the conditions under which it is visited.

At Mercado do Bolhão, gastronomic offer and atmosphere co-occurred in 36 reviews (72%). Gastronomy and infrastructure appeared together in 29 reviews (58%), while atmosphere and infrastructure co-occurred in 24 (48%). These combinations are consistent with the predominantly positive sentiment towards the market, where products, atmosphere and the characteristics of the renovated building contribute jointly to the evaluation of the visit.

At Torre dos Clérigos, panoramic views and physical effort co-occurred in 30 reviews (60%). Heritage and views appeared together in 23 reviews (46%), while views and service or practical aspects co-occurred in 18 (36%). Physical effort and service or practical aspects were also identified together in 17 reviews (34%). The results confirm that the climb is an important component of the experience, but it is generally described in association with the panoramic view.

Table no. 3. Highest-frequency thematic co-occurrences

Attraction	Theme pair within the same review	n	%
Livraria Lello	Architecture and aesthetic value + Crowding and overcapacity	32	64
	Crowding and overcapacity + Queues and access management	26	52
	Architecture and aesthetic value + Value for money and pricing	24	48
	Crowding and overcapacity + Value for money and pricing	24	48

Attraction	Theme pair within the same review	n	%
Mercado do Bolhão	Gastronomic offer and product quality + Atmosphere and sensory experience	36	72
	Gastronomic offer and product quality + Infrastructure and spatial organization	29	58
	Atmosphere and sensory experience + Infrastructure and spatial organization	24	48
Torre dos Clérigos	Panoramic views + Navigation and physical effort	30	60
	Heritage and architecture + Panoramic views	23	46
	Panoramic views + Service and practical aspects	18	36

Note: Percentages use 50 reviews as the denominator. Co-occurrence indicates that two themes were present in the same review and does not imply causality. Source: Authors' elaboration based on the review analysis.

3.4. Relationships between sentiment and themes

The relationship between sentiment classification and thematic coding provides further information on how the same theme may be present in reviews with different orientations. The results can be seen in table 4, and indicate the proportion of reviews within each sentiment category in which a theme was identified and should not be interpreted as assigning a positive or negative meaning to the theme itself.

At Livraria Lello, architecture and aesthetic value appeared in all positive reviews. However, queues and crowding were also frequently mentioned in positive and neutral reviews, showing that these difficulties did not necessarily result in a negative evaluation. The clearest difference concerned value for money and pricing, which was absent from positive reviews but appeared in 78.8% of negative reviews. Architecture was nevertheless present in 72.7% of negative reviews. Negative evaluations therefore appear to reflect the coexistence of appreciation for the building with concerns about crowding, access and perceived value.

At Mercado do Bolhão, gastronomy and atmosphere were particularly frequent in positive reviews. Gastronomy was also mentioned in all neutral reviews, while infrastructure was especially relevant among neutral and negative reviews. Authenticity and touristification appeared more frequently in negative reviews than in positive ones. However, the small number of negative reviews means that these results should be interpreted only as signals within the analyzed sample.

At Torre dos Clérigos, panoramic views were present in almost all positive reviews and in all neutral reviews. Physical effort appeared across the three sentiment categories, suggesting that the climb was not necessarily evaluated negatively. However, physical effort and service or practical aspects were present in all three negative reviews. Given the limited number of negative reviews, these results also require cautious interpretation.

Table no. 4. Principal sentiment–theme intersections

Attraction	Theme	Positive	Neutral	Negative
Livraria Lello	Architecture and aesthetic value	100.0%	85.7%	72.7%
	Crowding and overcapacity	70.0%	100.0%	78.8%
	Queues and access management	80.0%	85.7%	48.5%
	Value for money and pricing	0.0%	42.9%	78.8%
	Bookshop authenticity and selection	30.0%	57.1%	54.5%
Mercado do Bolhão	Gastronomic offer and product quality	97.4%	100.0%	25.0%
	Atmosphere and sensory experience	84.6%	57.1%	25.0%
	Authenticity versus touristification	30.8%	42.9%	50.0%
	Infrastructure and spatial organisation	59.0%	85.7%	75.0%
	Historical and heritage value	15.4%	14.3%	0.0%
Torre dos Clérigos	Heritage. history and architecture	54.1%	40.0%	0.0%
	Panoramic views and visual enjoyment	94.6%	100.0%	33.3%
	Navigation and physical effort	54.1%	90.0%	100.0%
	Exhibits and museum features	21.6%	20.0%	0.0%
	Service and practical aspects	29.7%	70.0%	100.0%

Note: Percentages are calculated within each sentiment category. They indicate the presence of a theme and not its individual valence. The negative subsamples for Mercado do Bolhão and Torre dos Clérigos are very small and should be interpreted only as descriptive signals. Source: Authors' elaboration based on the review analysis.

4. Discussion

4.1. User-generated content and visitor experience management

The findings confirm that online reviews can provide relevant information for understanding visitor experiences at the level of individual attractions. While sentiment analysis identifies the general orientation of visitors' evaluations, thematic coding shows which elements are most frequently mentioned. The addition of co-occurrence analysis and sentiment–theme intersections provides a more detailed interpretation by showing how different dimensions of the experience appear together within the same review.

This is particularly evident at Livraria Lello. Architectural and aesthetic value and crowding were each present in 80% of the reviews, while both themes appeared together in 64%. This means that appreciation of the building and dissatisfaction with the conditions of the visit should not be interpreted as the opinions of two separate groups. Many visitors recognize the cultural and visual value of the attraction while simultaneously criticizing crowding, queues or the limited possibility of enjoying the interior. This result is consistent with the multidimensional character of visitor experience, in which positive and negative elements may coexist within the same evaluation (Çolak & Karakan, 2024).

The findings also support the need for a context-sensitive interpretation of crowding. Previous studies have shown that visitors' responses to density and overcrowding depend on expectations, the characteristics of the site and the activities visitors expect to undertake

(Yu & Egger, 2021). At Livraria Lello, crowding affects movement, observation of the architecture and access to books. Its effect may consequently be more negative than in an open or socially oriented environment. The frequent co-occurrence of crowding with queues and price-related concerns further suggests that dissatisfaction is not associated with visitor numbers alone, but with the conditions of access and use of the attraction.

The results concerning perceived value should be interpreted in the same way. Price and value were not mentioned in any of the positive reviews of Livraria Lello but appeared in 26 of the 33 negative reviews. This does not demonstrate that price alone determines satisfaction. It indicates that visitors assess the entrance fee and voucher system in relation to crowding, waiting time, book selection and the quality of the experience received. Perceived value therefore reflects the relationship between monetary cost, time, comfort and the benefits associated with the visit, rather than the price considered in isolation.

Mercado do Bolhão presents a different combination of experiential dimensions. Its predominantly positive evaluations are strongly associated with gastronomy, atmosphere and the physical conditions of the renovated market. The frequent co-occurrence of gastronomy with atmosphere and infrastructure indicates that these elements contribute jointly to the visitor experience. The renovation is generally associated with cleanliness, organization and comfort and does not appear, within this sample, to have removed the market's sensory and social appeal.

Nevertheless, authenticity and touristification were identified in 34% of the reviews. This does not represent the dominant evaluation of the market, but it is a relevant issue to monitor. In markets and other forms of living heritage, authenticity depends not only on the conservation of the building but also on the continuity of local commerce, the presence of traditional products and the use of the space by residents. Gastronomy can strengthen local identity and the attractiveness of the destination (Silva et al., 2025), but an increasing orientation towards visitors may also change how the market is perceived. UGC can help identify these changes before they become dominant in visitors' evaluations.

At Torre dos Clérigos, panoramic views were the most frequent theme and appeared in almost all positive reviews. Physical effort was also frequently mentioned, including in positive, neutral and negative reviews. The climb should therefore not automatically be interpreted as a source of dissatisfaction. For many visitors, it is an expected characteristic of the monument and part of the visit. However, physical effort may become more problematic when it is associated with restricted circulation, insufficient information, accessibility limitations or inadequate visitor support.

These findings also illustrate a limitation of analyses that assign a fixed positive or negative meaning to individual words or themes. Queues may appear in a positive review, just as physical effort may be part of a positively evaluated experience. Automated approaches are useful for analyzing large quantities of information, but attraction-specific interpretation remains important when the meaning of a theme depends on its context (Nawawi et al., 2024).

The comparison shows that similar management issues do not have the same relevance or meaning in every attraction. Crowding is particularly important at Livraria Lello, authenticity requires attention at Mercado do Bolhão, and physical accessibility and visitor information are more relevant at Torre dos Clérigos. In response to RQ3, the findings indicate that UGC can inform attraction management when reviews are analyzed in relation to the characteristics of each site and combined with other operational and visitor information.

4.2. Managerial and sustainable business implications

The managerial value of UGC lies in its ability to identify recurring strengths, problems and emerging concerns. Online reviews should not, however, be used as the sole basis for decision-making. They are most useful when combined with information on visitor numbers, waiting times, capacity, incidents, accessibility, commercial activity and the use of attractions by residents. Table no. 5 summarizes the main patterns identified in the reviews, their management implications and possible indicators for monitoring them.

Table no. 5. Management priorities and monitoring indicators based on the review analysis

Attraction	Main patterns identified in the reviews	Suggested management focus	Possible monitoring indicators
Livraria Lello	Architecture and crowding co-occurred in 32 reviews (64%); crowding and queues in 26 (52%). Price/value was mentioned in 26 of the 33 negative reviews (78.8%)	Visitor-flow and queue management; clearer communication about tickets, vouchers and the retail offer; improved internal circulation to facilitate appreciation of the architecture	Waiting time; visitor density by time slot; mentions of crowding, queues and circulation; price/value and voucher-related mentions
Mercado do Bolhão	Gastronomy and atmosphere co-occurred in 36 reviews (72%); gastronomy and infrastructure in 29 (58%). Authenticity/touristification appeared in 17 reviews (34%)	Preservation of the local commercial function and product diversity; maintenance of atmosphere, cleanliness and spatial organization; monitoring of touristification	Presence of local and traditional vendors; diversity of products; resident use; complaints concerning cleanliness, seating and circulation; authenticity-related mentions
Torre dos Clérigos	Panoramic views and physical effort co-occurred in 30 reviews (60%); physical effort and service/practical aspects in 17 (34%)	Clearer pre-visit information about the stairs, physical demands and accessibility; management of visitor circulation during busy periods; alternative interpretation for visitors unable to complete the climb	Stair congestion and stoppages; requests for assistance; accessibility and service-related mentions; use of alternative interpretive resources

Source: Authors' elaboration based on the review analysis.

For Livraria Lello, the findings suggest the need to pay particular attention to visitor flows, queues and perceived value. Possible areas for improvement include clearer information about waiting conditions, better internal circulation and more transparent communication about tickets, vouchers and the available book selection. At Mercado do Bolhão, management should seek to preserve the positive relationship between gastronomy, atmosphere and infrastructure while protecting vendor diversity, local products and activities serving residents. At Torre dos Clérigos, clearer pre-visit information about the stairs and physical requirements, improved circulation during busy periods and complementary interpretation for visitors unable to complete the climb may help address the main concerns identified. The indicators presented in Table no. 5 can support the monitoring of these issues and help managers assess the effects of any adjustments on the visitor experience.

From a sustainable business perspective, the findings show that increasing visitor numbers cannot be considered independently of experience quality, cultural meaning and local use. High demand may generate immediate economic benefits, but persistent crowding or declining perceived value can affect reputation and the long-term attractiveness of an attraction. Similarly, the commercial success of a renovated market may be accompanied by changes that weaken its local function and distinctiveness.

UGC monitoring can contribute to more adaptive management, but it should complement rather than replace representative visitor research. A shared monitoring system for Porto's main attractions could periodically examine changes in sentiment, recurring themes, relevant co-occurrences and new complaint categories. These data could be considered alongside visitor surveys, operational information and consultation with workers, traders, residents and heritage organisations. Such an approach is consistent with the need to integrate tourism, conservation and community interests in urban heritage management (Coimbra et al., 2025; Ramazanova et al., 2025).

Review analysis should therefore extend beyond marketing and online reputation. The issues identified in this study concern visitor-flow management, pricing, accessibility, cultural interpretation and commercial policy, requiring communication between management, operations, visitor services and heritage professionals. Used in this way, online reviews can support organisational learning and the regular adjustment of visitor-management practices.

4.3. Limitations and future research

The study has several limitations. First, it is based on a purposive sample of 150 reviews collected from one platform and referring to three attractions in the same destination. The results identify patterns within the selected reviews but cannot be generalized to all visitors. Platform characteristics and reviewer self-selection may influence the type and content of the evaluations available. Future studies should compare TripAdvisor with other platforms and combine online reviews with visitor surveys, interviews, observation and operational data (Mellinas & Sicilia, 2024).

Second, attraction-specific coding was necessary to preserve the meaning of each experience, but it limits direct comparison between apparently similar themes. The codes identify the presence of a theme and not its specific positive, negative or ambivalent meaning. Although the sentiment–theme intersections provide additional context, future research could include aspect-level sentiment coding and a common set of higher-order categories validated across different types of attractions.

Third, the initial coding was conducted by one researcher, and no independent inter-coder reliability measure was calculated. A future study should involve a second coder and report the level of agreement. The translation of reviews into English may also have reduced some linguistic and cultural nuances, even though the original texts were retained for verification.

Finally, the managerial measures proposed in this article have not been tested. Longitudinal research could examine how review patterns change over time and whether alterations to capacity, circulation, communication, accessibility or commercial policy influence visitor evaluations. Action research and pilot interventions would also help assess whether UGC-based monitoring produces improvements in both visitor experience and attraction management.

Conclusions

This study examined how TripAdvisor reviews can contribute to visitor-experience management at three emblematic attractions in Porto. Based on 150 reviews, the analysis combined sentiment classification, thematic coding, thematic co-occurrences and sentiment–theme intersections. This approach made it possible to identify not only the most frequently mentioned aspects of each attraction, but also how different dimensions of the experience were associated within visitors' evaluations.

The three attractions present distinct experiential profiles. At Livraria Lello, visitors widely recognize the architectural and aesthetic value of the building, but this appreciation frequently coexists with criticism of crowding, queues, prices and the perceived commercialization of the experience. Mercado do Bolhão receives predominantly positive evaluations associated with gastronomy, atmosphere and the physical conditions of the renovated market, although references to touristification indicate the need to monitor the preservation of its local commercial and cultural functions. Torre dos Clérigos is valued mainly for its panoramic views, while the physical demands of the climb are generally accepted as part of the visit. However, universal accessibility, circulation and practical information remain important management considerations.

The comparison demonstrates that similar issues can have different meanings depending on the characteristics of the attraction. Crowding, waiting time or physical effort do not necessarily determine whether a review is positive or negative. Their influence depends on visitor expectations, the nature of the site and the extent to which they affect access to the most valued elements of the experience.

The findings support the use of UGC as a complementary source of information for attraction management. The combined analysis of sentiment, themes and co-occurrences can help identify recurring problems, emerging concerns and attraction-specific priorities. Nevertheless, online reviews are not representative of all visitors and should be considered alongside surveys, operational data and stakeholder perspectives. In this sense, UGC can contribute to more adaptive and sustainable tourism management by helping attractions reconcile visitor experience quality with heritage conservation, accessibility, local cultural functions and tourism pressure.

Acknowledgements

This work is funded by national funds through FCT – Fundação para a Ciência e a Tecnologia, I.P., under the Programme Contract UID/05105/2025. https://doi.org/10.54499/UID/05105/2025

Generative Artificial Intelligence (GenAI) usage statement

During the preparation of this manuscript, the authors used ChatGPT (GPT-5, OpenAI) to support manuscript organization and improve the English language and readability of the text. The authors reviewed and edited all AI-assisted content and take full responsibility for the content of the article.

References

Albuquerque, H., Quintela, J. A., & Marques, J. (2024). The impact of short-term rental accommodation in urban tourism: A comparative analysis of tourists' and residents' perspectives. *Urban Science, 8*(3), 83. https://doi.org/10.3390/urbansci8030083

Bigné, E., Ruiz, C., Pérez-Cabañero, C., & Cuenca, A. (2023). Are customer star ratings and sentiments aligned? A deep learning study of the customer service experience in tourism destinations. *Service Business, 17*(1), 281–314. https://doi.org/10.1007/s11628-023-00524-0

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*(2), 77–101. https://doi.org/10.1191/1478088706qp063oa

Chemin, M., da Silva, C. P., & de Paul Vikou, S. V. (2025). User-generated content (UGC) in tourist attractions and destinations: Systematic literature review and perspectives for management. *PASOS Revista de Turismo y Patrimonio Cultural, 23*(2), 539–562. https://doi.org/10.25145/j.pasos.2025.23.036

Cohen, E. (1988). Authenticity and commoditization in tourism. *Annals of Tourism Research, 15*(3), 371–386. https://doi.org/10.1016/0160-7383(88)90028-X

Coimbra, I., Conceição, P. S., Sousa, A. R., Alves, F. B., Tavares, D., & Breda-Vázquez, I. (2025). The management of urban World Heritage Sites: A semi-systematic literature review. *npj Heritage Science, 13*, 610. https://doi.org/10.1038/s40494-025-01921-6

Creswell, J. W., & Plano Clark, V. L. (2018). *Designing and conducting mixed methods research* (3rd ed.). SAGE.

Çolak, O., & Karakan, H. İ. (2024). Integrated evaluation of visitor experience factors in the scope of museum management. *Journal of Hospitality and Tourism Insights, 7*(4), 1720–1742. https://doi.org/10.1108/JHTI-06-2022-0261

Del Vecchio, P., Mele, G., Ndou, V., & Secundo, G. (2018). Creating value from social big data: Implications for smart tourism destinations. *Information Processing & Management, 54*(5), 847–860. https://doi.org/10.1016/j.ipm.2017.10.006

Dimitrovski, D., Crespi-Vallbona, M., & Ioannides, D. (2022). How do locals perceive the touristification of their food market? The case of Barcelona's La Boqueria. *International Journal of Tourism Research, 24*(1), 93–106. https://doi.org/10.1002/jtr.2486

European Parliament, Directorate-General for Internal Policies of the Union. (2018). *Overtourism: Impact and possible policy responses*. https://doi.org/10.2861/919195

Fang, B., Ye, Q., Kucukusta, D., & Law, R. (2016). Analysis of the perceived value of online tourism reviews: Influence of readability and reviewer characteristics. *Tourism Management, 52*, 498–506. https://doi.org/10.1016/j.tourman.2015.07.018

Foronda-Robles, C., Galindo-Pérez-de-Azpillaga, L., & Armario-Pérez, P. (2025). The sustainable management of overtourism via user content. *Annals of Tourism Research Empirical Insights, 6*(2), 100184. https://doi.org/10.1016/j.annale.2025.100184

Galdón Jiménez, J., Albuquerque, H., & Matos Silva, F. (2026). Analyse visitor experiences through user-generated content based on TripAdvisor reviews: A case study of three emblematic attractions in Porto. In C. Vasiliu, D.-C. Dabija, A. Tziner, D. Pleșea, & V. Dinu (Eds.), *Proceedings of the BASIQ International Conference on New Trends in Sustainable Business and Consumption* (12th ed., pp. 562–569). Editura ASE. https://doi.org/10.24818/BASIQ/2026/12/081

Gretzel, U., & Yoo, K. H. (2008). Use and impact of online travel reviews. In P. O'Connor, W. Höpken, & U. Gretzel (Eds.), *Information and communication technologies in tourism 2008* (pp. 35–46). Springer. https://doi.org/10.1007/978-3-211-77280-5_4

Hernández-Méndez, J., Muñoz-Leiva, F., & Sánchez-Fernández, J. (2015). The influence of e-word-of-mouth on travel decision-making: Consumer profiles. *Current Issues in Tourism, 18*(11), 1001–1021. https://doi.org/10.1080/13683500.2013.802764

Lam, J. M. S., Ismail, H., & Lee, S. (2020). From desktop to destination: User-generated content platforms, co-created online experiences, destination image and satisfaction. *Journal of Destination Marketing & Management, 18*, 100490. https://doi.org/10.1016/j.jdmm.2020.100490

Marine-Roig, E., & Anton Clavé, S. (2015). Tourism analytics with massive user-generated content: A case study of Barcelona. *Journal of Destination Marketing & Management, 4*(3), 162–172. https://doi.org/10.1016/j.jdmm.2015.06.004

Mellinas, J. P., Martin-Fuentes, E., & Ferrer-Rosell, B. (2024). Why some call the "worst" what most consider the "best"?: An analysis of tourist complaints at the wonders of the world. *Journal of Hospitality and Tourism Insights, 7*(4), 2014–2032. https://doi.org/10.1108/JHTI-03-2023-0150

Mellinas, J. P., & Sicilia, M. (2024). Comparing Google reviews and TripAdvisor to help researchers select the more appropriate information source. *Consumer Behavior in Tourism and Hospitality, 19*(4), 646–655. https://doi.org/10.1108/CBTH-01-2024-0039

Nawawi, I., Ilmawan, K. F., Maarif, M. R., & Syafrudin, M. (2024). Exploring tourist experience through online reviews using aspect-based sentiment analysis with zero-shot learning for hospitality service enhancement. *Information, 15*(8), 499. https://doi.org/10.3390/info15080499

Neuts, B., Nijkamp, P., & Van Leeuwen, E. (2012). Crowding externalities from tourist use of urban space. *Tourism Economics, 18*(3), 649–670. https://doi.org/10.5367/te.2012.0130

Neuts, B., & Vanneste, D. (2018). Contextual effects on crowding perception: An analysis of Antwerp and Amsterdam. *Tijdschrift voor Economische en Sociale Geografie, 109*(3), 402–419. https://doi.org/10.1111/tesg.12284

Nguyen, T. H. H., Ağbay, N. C., & Çakar, K. (2024). Visitors' experiences of UNESCO World Heritage Site: Evidence from Göbeklitepe, Türkiye. *Journal of Hospitality and Tourism Insights, 7*(4), 2310–2327. https://doi.org/10.1108/JHTI-05-2023-0311

Packer, J., & Ballantyne, R. (2016). Conceptualizing the visitor experience: A review of literature and development of a multifaceted model. *Visitor Studies, 19*(2), 128–143. https://doi.org/10.1080/10645578.2016.1144023

Petrick, J. F. (2002). Development of a multi-dimensional scale for measuring the perceived value of a service. *Journal of Leisure Research, 34*(2), 119–134. https://doi.org/10.1080/00222216.2002.11949965

Quintela, J. A., Albuquerque, H., & Freitas, I. (2023). Port wine and wine tourism: The touristic dimension of Douro's landscape. *Sustainability, 15*(15), 11718. https://doi.org/10.3390/su151511718

Ramazanova, M., Silva, F. M., & Vaz de Freitas, I. (2025). Tourists' views on sustainable heritage management in Porto, Portugal: Balancing heritage preservation and tourism. *Heritage, 8*(1), 10. https://doi.org/10.3390/heritage8010010

Sanz-Blas, S., Buzova, D., & Garrigos-Simon, F. J. (2024). Understanding crowding perceptions and their impact on place experience: Insights from a mixed-methods study. *Psychology & Marketing, 41*(5), 1022–1035. https://doi.org/10.1002/mar.21964

Silva, F. M., Albuquerque, H., Ramazanova, M., Chávez, G., Mariaca, C., & Muñoz Reyes, C. (2023). The importance of the brand to promote tourist destinations: The cases of Porto (Portugal) and La Paz (Bolivia). In J. V. Carvalho, A. Abreu, P. Liberato, & A. Peña (Eds.), *Advances in tourism, technology and systems: Selected papers from ICOTTS 2022* (Vol. 1, pp. 671–682). Springer Nature Singapore. https://doi.org/10.1007/978-981-99-0337-5_54

Silva, F. M., Ramazanova, M., & Vaz de Freitas, I. (2025). Safeguarding traditional Portuguese gastronomy as an intangible cultural heritage through tourism: The case of North of Portugal. *Tourism and Hospitality*, *6*(2), 92. https://doi.org/10.3390/tourhosp6020092

Van der Zee, E., & Bertocchi, D. (2018). Finding patterns in urban tourist behaviour: A social network analysis approach based on TripAdvisor reviews. *Information Technology & Tourism, 20*(1–4), 153–180. https://doi.org/10.1007/s40558-018-0128-5

Walls, A. R., Okumus, F., Wang, Y. C., & Kwun, D. J. W. (2011). An epistemological view of consumer experiences. *International Journal of Hospitality Management, 30*(1), 10–21. https://doi.org/10.1016/j.ijhm.2010.03.008

Wang, N. (1999). Rethinking authenticity in tourism experience. *Annals of Tourism Research, 26*(2), 349–370. https://doi.org/10.1016/S0160-7383(98)00103-0

Xiang, Z., & Gretzel, U. (2010). Role of social media in online travel information search. *Tourism Management, 31*(2), 179–188. https://doi.org/10.1016/j.tourman.2009.02.016

Yu, J., & Egger, R. (2021). Tourist experiences at overcrowded attractions: A text analytics approach. In W. Wörndl, C. Koo, & J. L. Stienmetz (Eds.), *Information and communication technologies in tourism 2021* (pp. 231–243). Springer. https://doi.org/10.1007/978-3-030-65785-7_21