EVALUATING TOURIST PERCEPTIONS THROUGH SENTIMENT ANALYSIS: INSIGHTS FROM CHACHAPOYAS, PERU

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Abstract: In the context of rapid digitalization and the post-pandemic recovery of the tourism sector, user-generated content (UGC) on digital platforms such as TripAdvisor has emerged as a critical source of information for understanding tourist behavior, satisfaction, and destination image formation. As tourists increasingly rely on peer reviews to plan their trips, analyzing this content offers valuable insights into how destinations are perceived globally. Chachapoyas, located in the Amazon region of northern Peru, represents an emerging tourist destination with notable cultural, archaeological, and natural attractions. Despite its growing visibility in national and international tourism circuits, empirical studies analyzing tourist perceptions of Chachapoyas through online content remain limited. This study aims to evaluate the destination image of Chachapoyas by examining the main attributes emphasized by tourists in their reviews posted on TripAdvisor. A total of 644 reviews published between 2018 and 2023 were systematically collected and analyzed using text mining and sentiment analysis techniques. The reviews were categorized into thematic dimensions such as lodging, restaurant services, transportation, major attractions, and overall visitor experience. The analysis focused on the frequency of key terms, the polarity of sentiments expressed, and the narrative structures used by tourists to describe their stay. The findings reveal that the most positively valued categories include "infrastructure", "atmosphere of the place", and especially "culture, history, and art". Tourists consistently expressed positive sentiments regarding the preservation of cultural heritage, the authenticity of local traditions, and the welcoming attitude of residents. Conversely, negative comments were largely related to service inconsistencies, transportation challenges, and infrastructure limitations. The results emphasize the centrality of cultural heritage in shaping the visitor experience in Chachapoyas and highlight the increasing influence of online reviews in constructing and disseminating destination image. This research contributes methodologically by applying advanced content analysis tools and offers practical insights for tourism stakeholders in emerging destinations.

Keywords: tourist perceptions, sentiment analysis, destination image, cultural heritage, text mining analysis, Chachapoyas

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INTRODUCTION

Since the onset of the pandemic, the relevance of social media and review platforms has increased significantly in travelers' decision-making. In the tourism sector, this trend has been consolidated, as tourists create and use information from these platforms during the different stages of their trips (Marchiori & Cantoni, 2015). Platforms such as TripAdvisor not only allow tourists to share their experiences and ratings but also play a crucial role in shaping the destination image (Jiang et al., 2023). Constant interaction on these platforms generates a vast amount of user-generated content (UGC) that significantly influences travel decisions (Reza et al., 2012). The rise of social networks in recent years has led to a massive increase in user-generated data on the Internet. According to a recent study by Statista, it is estimated that there are approximately 4.2 billion active users of social networks globally, with an average daily usage of 2.42 hours per day (Sultan, 2023). This large volume of information has a significant impact on the creation of the image of tourist destinations and, therefore, on travelers' decisions. The image of a destination is a key factor in the travel decision, as the globalization of the tourism industry and the growth of competition increase the supply of tourism products, influencing the perception of tourists through the media (Vila-Lopez & Kuster-Boluda, 2024).

People tend to believe that the images perceived in the media reflect the reality of the destination, motivating them to travel, although the real offer is not always as attractive as the image projected.

TripAdvisor stands out as the world's leading platform for traveler reviews and opinions, present in 49 countries and considered the largest community of travelers in the world (TripAdvisor, 2024). TripAdvisor has revolutionized the travel

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industry by ranking and sorting hotels, restaurants, and destinations based on user reviews. This platform allows tourists to consult the experiences of other travelers, which has become a determining factor in the choice of tourist destinations (Balagué et al., 2016). In addition, the active participation of users in the generation of content and interaction on the platform highlights its importance in the sector (Alaimo et al., 2020). For these reasons, this research uses reviews on TripAdvisor, since it is the most widely used specialized tourism website, with more than 455 million visits each month (TripAdvisor, 2024). According to Barreda & Bilgihan (2013), it is important to take into account the opinions of users, as these have become increasingly relevant, and a good or bad rating can have a significant influence on the image projected of a tourist destination. Previous studies have shown a close relationship between the image of a destination, the attitude of travelers, and their intention to visit it (Reza et al., 2012).

In Peru, tourism is a sector that has shown a remarkable recovery after the pandemic. According to the 2023 report of the Directorate General of Research and Studies on Tourism and Handicrafts, domestic tourism is projected to reach 34 million trips, representing a 25% growth from the 27 million registered in 2022 (MINCETUR, 2024). In addition, in 2023, 2,524,658 international tourists were registered, surpassing initial projections with an inter-annual growth of 25.7% (MINCETUR, 2024). 59% of Peruvian vacationers searched for information on social networks before making their trip, with platforms such as Facebook, Instagram, and TikTok standing out (Promperu, 2022). In 2023, these trends continued, with 54% of vacationers relying on the recommendations of acquaintances and 49% using social networks as their primary source of information (Promperu, 2023; Nastase et al., 2014). In this context, platforms such as TripAdvisor play a crucial role in the recovery and promotion of Peruvian tourist destinations.

In the Amazon region of Peru, tourism has shown signs of recovery and growth. In 2023, the Kuelap Archaeological Complex was the most visited attraction, with 46,007 visitors, an increase of 15.2% compared to 2022 (Zavaleta et al., 2024). Other notable destinations include the Gocta Waterfalls and the Leymebamba Museum, which continue to attract both domestic and foreign tourists (MINCETUR, 2023). Likewise, the Karajía archaeological complex is considered one of the most important tourist resources in the Amazon region after Kuelap and Gocta (Zavaleta et al., 2023). Additionally, in the case of Chachapoyas, the information generated by tourists on platforms such as TripAdvisor is essential to understand how the destination is perceived and to plan its future promotion. The present research analyzed user-generated content on TripAdvisor to understand tourists' perceptions of the destination image of Chachapoyas, Peru. In particular, the study focused on three key elements: the lodging service, the restaurant service, and the main tourist attractions, in order to provide strategic inputs for tourism marketing, development, and promotion plans.

LITERATURE REVIEW AND THEORETICAL DISCUSSION
Destination Image (DI)

Destination image (DI) is a key concept in tourism studies, essential to understand how tourists perceive and select their destinations. This concept has been the subject of multiple studies and theorizations since its inception (Kutlu & Ayyıldız, 2021). Based on Phelps (1986), destination image is commonly categorized as primary and secondary. The primary image is built after direct experience at the location, influenced by personal experiences. The secondary image is formed before the trip, from organic sources, such as the experiences of others, or induced sources, such as advertising campaigns, and shapes tourists' expectations (Saqib & Jan, 2021; Bigi et al., 2022). The interplay between these images' influences tourist satisfaction and behavioral intentions, such as returning or recommending the destination (Van-Dunem et al., 2021).

Echtner & Ritchie's (1993) conceptual framework remains influential, describing destination image through three continua: attribute–holistic, functional–psychological, and common–unique (Wang & Lin, 2024; Jiang et al., 2023). This model integrates objective features, emotional perceptions, global impressions, and distinctive characteristics of destinations. In addition, Gartner's (1994) tripartite model widely adopted in recent studies (Baber & Baber, 2023; Zarkada et al., 2025; Hussain & Rather, 2023) conceptualizes destination image through cognitive (knowledge and beliefs), affective (emotional responses), and conative (behavioral intentions) dimensions, offering a comprehensive perspective on tourist perceptions and reactions. Finally, destination image is assessed through nine interrelated categories: culture, history and art; leisure and recreation; tourism infrastructure; natural environment; general infrastructure; social environment; political and economic factors; place atmosphere; and natural resources. These elements reflect the multidimensional nature of tourism perception and contribute to a holistic evaluation of a destination (Guo et al., 2023; Marchi & Raschi, 2022).

Destination image plays a crucial role in tourism decision-making and destination marketing and significantly influences the choice of a vacation destination (Liu et al., 2021). Likewise (Hussain & Rather, 2023) consider DI as one of the key factors in successful destination marketing (Ghosh et al., 2025). In addition, it has been widely recognized that the image of a destination significantly affects the travel decision of most tourists and that a destination with a relatively positive image is more likely to attract international tourists (Vila-Lopez & Kuster-Boluda, 2024). The online destination image ("online DI") can be defined as the representation of the set of beliefs, knowledge, ideas, feelings and general impressions of a destination; and the product of the interaction and communication between supply (travel agencies and other tourism intermediaries) and demand (tourists in general) (Liu et al., 2021). The formation of DI is deeply dependent on user-generated content fostered by tourists using new technologies. Social networks provide a wealth of information that allows you to form a first impression of a destination (Vila-Lopez & Kuster-Boluda, 2024). Although there are multiple methods for investigating destination images, there is no universally accepted definitive measurement (Guzman-Parra et al., 2021). DI is therefore a multidimensional global impression, but there is no consensus on the dimensions that make up this holistic impression (Bigne et al., 2019; Guzman-Parra et al., 2021). In summary, destination image is a multidimensional and

complex concept that significantly influences travel decisions and destination marketing. Understanding its components and how it is formed is crucial to developing effective strategies in the tourism sector (Freire & Curvelo, 2021).

Tourist-generated content (TGC)

Tourist-generated content (TGC) plays a key role in the contemporary tourism landscape, as it encompasses various forms of user-generated content (UGC) shared by travelers. Various authors systematically classify TGC into four categories; the consumer-to-consumer (C2C) category is particularly relevant, as it includes the sharing of tourism experiences, communication with family and friends, and the creation of electronic word-of-mouth (Liu et al., 2021; Volo, 2010). Compared to traditional information channels, TGC offers advantages such as better information storage, greater dissemination and search efficiency, which collectively shape an online destination image (DI) (Liu et al., 2021).

Tourist-generated content (TGC), also known as tourist-generated content (TGC), plays a key role in today's tourism, significantly influencing destination image and visitor intentions. One of its main strengths is its authenticity, perceived as more credible than official information (Nantakat & Vorachart, 2021). This type of content, especially when it conveys positive emotions, generates greater connection with potential visitors. Its impact is particularly strong on audiences such as Generation Z, who value genuine experiences (Aboalganam et al., 2025; Yamagishi et al., 2024). Marketers frequently use UGC to enhance their presence in social networks and other marketing channels, recognizing its value in accurately assessing customer needs and developing products (Liu et al., 2021; Rasool & Pathania, 2021). In addition, companies leverage text mining tools to analyze TGC, identifying frequent words and themes to better understand customer feedback, thus more effectively managing customer relationships and satisfaction (Jia, 2018; Rasool & Pathania, 2021).

According to Liu et al., 2021, the influence of TGC on tourists' perceptions and decision-making processes is considerable. Tourists not only consume information but also contribute to it, building a DI that significantly influences the choice of the destination (Rasool & Pathania, 2021). In their research conducted in India (Chen et al., 2019), they identified that online reviews and ratings on platforms such as TripAdvisor impact the purchase intentions of potential customers, demonstrating a clear link between TGC and consumer behavior. The motivations behind the generation of TGC range from personal enjoyment to economic incentives, further highlighting their role in shaping consumer perceptions and actions (Romero-Rodriguez & Arbara, 2023). The evolution of TGC is closely linked to advances in digital communication technologies. The shift from monologic communication to an interactive process has fostered the creation of UGC, allowing consumers to express themselves and interact on various digital platforms (Dahl et al., 2019). Web 2.0 technologies have facilitated the emergence of social commerce, allowing consumers to share their satisfaction or dissatisfaction with products and services online, thereby influencing a wide audience (Park & Lee, 2024; Rasool & Pathania, 2021). In the hospitality industry, in particular, TGC is crucial, as online consumer reviews are critical to selling experiences, making it an integral part of destination marketing strategies (Navarro et al., 2025).

Chachapoyas as a tourist destination

According to the World Tourism Organization (UNWTO), "the tourist destination is the place visited that is fundamental to the decision to travel". From a geographical perspective, it is emphasized that a tourist destination not only encompasses natural and cultural resources, but also the infrastructure, services, and facilities that, together with the local community and public and private stakeholders, form an interdependent system (Barnerjee et al., 2023). Furthermore, it is recognized that a tourist destination has an intangible dimension, represented by the image and perception that tourists have of the place. This perception is built from lived experiences, interaction with the local community, and the quality of the services offered, which directly influences visitor satisfaction and loyalty to the destination (Králiková et al., 2020; Marine-Roig, 2021). In this context, tourist destination management must consider both tangible and intangible elements, promoting a harmonious integration of available resources and encouraging the active participation of all stakeholders. Only through strategic and collaborative planning can the sustainable and competitive development of tourist destinations in the global market be guaranteed (MacEachern et al., 2024).

The city of Chachapoyas is located in the Peruvian jungle, in the province of the same name belonging to the Amazon region and was officially created on September 5, 1538, being the sixth oldest city created by the Spaniards in Peru (Alvarado, 2022). The name "Chachapoya" may be a corruption of the Inca (Quechua) name for the province called Chachapoyas (Hagen, 2002); which is derived from the words Sacha ("tree") and Puyu ("cloud"). Combined, these terms could be translated as "cloud forest." A description particularly fitting for the Chachapoya territory, characterized by tropical wet forests. In 2017, Chachapoyas was in a moment of great tourist development since the first cable car system in Peru was created which allowed to take a large number of tourists to the monument of Kuelap, also known as "The Machu Picchu of the North"; this was accompanied with a renovation of the airport of Chachapoyas which will allow to increase on a large scale the flow of tourists to this region (Church & Guengerich, 2017). This study aims to evaluate tourist perceptions of Chachapoyas by leveraging sentiment analysis techniques on TripAdvisor reviews. By analyzing user-generated content, the research provides valuable insights into the factors influencing the destination image and tourist satisfaction. The findings will serve as a basis for informed decision-making in tourism planning, marketing, and development, contributing to the sustainable growth of Chachapoyas as a competitive destination in the Amazon region of Peru.

MATERIALS AND METHODS

The objective of this research was to understand tourists' perceptions of the destination image (DI) of Chachapoyas, Peru, by analyzing reviews of lodging, restaurants and tourist attractions posted by users on TripAdvisor. For this purpose,

the comments and ratings of national and international tourists on the TripAdvisor platform were analyzed. The data were collected through textual opinions and analyzed in such a way that their characteristics are recognizable, therefore, it is a qualitative study (Todd et al., 2004). The research focused on identifying the key categories and attributes associated with the destination image, limiting itself to collecting relevant information only within the predefined categories (Sampieri et al., 2014). For this purpose, unstructured text mining was used, a cutting-edge technique that is gaining popularity among tourism professionals (Godnov & Redek, 2016). This technique allows taking advantage of the abundance of textual content available online, transforming large volumes of data into valuable and understandable information by analyzing patterns and trends (Li et al., 2018; Yang & Stienmetz, 2018).

Four key stages were defined for the application of data mining: selecting the sample, recording the characteristics of the initial data, applying the appropriate procedural criteria, and interpreting the data (Vallejo Ballesteros et al., 2018). It is important to note that not all travelers speak the same language, which may affect the data mining process due to variations in translations (Berezina et al., 2015). To mitigate this impact, it is recommended to use a single translation engine for all comments, which helps to standardize content and improve data consistency (Hofmann & Chisholm, 2016). In the case of TripAdvisor, SDL Language Cloud was used, a tool that not only homogenizes content but also improves its accuracy by incorporating artificial intelligence and machine learning. This platform accepts corrections from users and works in conjunction with Google Translate, which optimizes the quality of translations over time (Li et al., 2014). For sentiment classification, the Text2Data program was used to ensure a clear and consistent categorization of perceptions expressed in the reviews. This approach enabled a detailed analysis of the positive and negative aspects influencing the image of Chachapoyas as a tourist destination. The sentiment score thresholds were based on the tool's default settings and aligned with established practices in the sentiment analysis literature, ensuring both methodological rigor and comparability with previous studies.

Data collection

We collected 644 TripAdvisor reviews published between January 2018 and December 2023, using a Python web scraping script that extracted the comments in CSV format from the platform. The collection process took place between April and May 2024. In addition, they were contextualized based on the time and place where they took place and the interactions between the various agents (Jung, 2019). The comments obtained were about lodging, restaurants and tourist attractions in Chachapoyas, in order to understand tourists' perceptions of the destination image (DI). To ensure data integrity and homogeneity, all reviews were obtained in their original language and then translated into English using SDL Language Cloud, a translation tool that incorporates artificial intelligence and machine learning, improving the accuracy of the translations. To guarantee the accuracy and quality of the analysis, Grammarly was used for grammatical and spelling correction of the translated texts, adjusting contextual errors and ensuring that the reviews were interpreted correctly (Alshayban, 2024). All content was filtered to exclude non-relevant information, strictly aligned with the research objectives and ensuring a rigorous and representative analysis of tourists' perceptions.

Data analysis

Data analysis was performed using text mining, an advanced technique for transforming large volumes of data into understandable and actionable information. For this purpose, tools such as R Studio and WordCloud were used to generate visual representations of the frequency of key terms associated with the destination image, their usefulness lies in their efficiency in summarizing large amounts of data (Ballestar et al., 2020). In addition, the Text2Data tool was used for sentiment analysis, classifying comments into three categories: positive (values greater than +0.25), negative (values less than -0.25), and neutral (values between -0.25 and +0.25). This classification made it possible to identify patterns and trends in tourists' perceptions, minimizing possible biases.

The categories of the destination image used in this study are based on the proposals of (Beerli & Martín, 2004) which have been specifically adapted to the context of the Chachapoyas tourist destination to reflect its particularities and distinctive characteristics. Table 1 presents the categories and their associated attributes.

Table 1. Categories and Attributes of the destination image applied in research (Source: Authors' own creation)

Categories	Authors	Attributes according to the destination's reality
Natural resources	(Liu et al., 2021); (Beerli & Martín, 2004); (Dwivedi, 2009);	Weather; Sunshine hours Rainfall; Temperature
General Infrastructure	(Hussain & Rather, 2023); (Liu et al., 2021); (Beerli & Martín, 2004); (Dwivedi, 2009);	Development of commercial infrastructures; Extension of building development; Public and private transport
Tourism Infrastructure	(Hussain & Rather, 2023); (Liu et al., 2021); (Beerli & Martín, 2004); (Dwivedi, 2009);	Hotel accommodation and self-service; Tourist centers; Excursions at destination; Ease of access to the destination; Tourist information network; Restaurants; Hotel quality
Culture, History and Art	(Liu et al., 2021); (Beerli & Martín, 2004); Dwivedi, 2009);	Customs and lifestyles; Gastronomy; Museums, historical buildings, monuments, etc.
Political and Economic Factors	(Hussain & Rather, 2023); (Liu et al., 2021); (Beerli & Martín, 2004); (Dwivedi, 2009);	Prices
Natural Environment	(Hussain & Rather, 2023); (Liu et al., 2021); (Beerli & Martín, 2004); (Dwivedi, 2009);	Attractiveness of cities and towns; Beauty of the landscape
Atmosphere of the Place	(Liu et al., 2021); (Beerli & Martín, 2004); (Dwivedi, 2009);	Pleasant; Attractive or interesting; Fun, enjoyable; Exotic; Mystic; Relaxing

RESULTS

The image of a tourist destination should be thoroughly investigated before attempting to position the product (Ahmed, 1991) this study focuses on analyzing the destination of Chachapoyas, one of the seven provinces of the Amazon region, located in Peru, considered one of the tourist destinations of excellence (Zavaleta et al., 2023), highlighting the architecturally beautiful squares and cathedrals of yesteryear, it is a link between the other localities to reach other destinations in the region. The data analysis resulted in the identification of 1,719 keywords distributed in 7 categories and 26 attributes of the destination image based on the model applied in the research, which had nine categories and sixty-five attributes. The categories with the highest number of keywords were "Tourist Infrastructure" (671 keywords) and "Atmosphere of the Place" (526 keywords), which highlights the importance of these aspects in the tourists' perception of the destination image of Chachapoyas. On the other hand, "Political and Economic Factors" and "Natural Resources" had *a lower number of keywords, suggesting a more limited focus on these aspects by tourists* (Table 2).

Table 2. Keyword frequency by Categories and Attributes of the Destination Image (Source: Authors' own creation)

Category	Attribute	Keywords
Natural Environment **126**	Attractiveness of cities and towns	6
	Beauty of the landscape	120
Atmosphere of the Place **526**	Pleasant	88
	Attractive or interesting	395
	Fun, enjoyable	12
	Exotic	3
	Mystic	8
	Relaxing	20
Culture, History and Art **178**	Customs and lifestyles	8
	Gastronomy	102
	Museums, historical buildings, monuments, etc.	68
Political and Economic Factors **19**	Prices	19
General Infrastructure **192**	Development of commercial infrastructures	112
	Extension of building development	54
	Public and private transportation	26
Tourism Infrastructure **671**	Hotel accommodation and self-service	199
	Tourist centers	6
	Excursions at destination	19
	Ease of access to the destination	52
	Tourist information network	4
	Restaurants	225
	Hotel quality	166
Natural resources **7**	Weather	1
	Sunshine hours	3
	Rainfall	1
	Temperature	2
Total		**1719**

As for the sentimental analysis, as shown in Figure 1, of the total of 150 records, 63% had a positive sentimental evaluation, 16% negative, and 21% neutral. Therefore, it is observed that comments about the destination image of Chachapoyas are given in a positive or neutral context most of the time; with an average sentimental value of 0.3667.
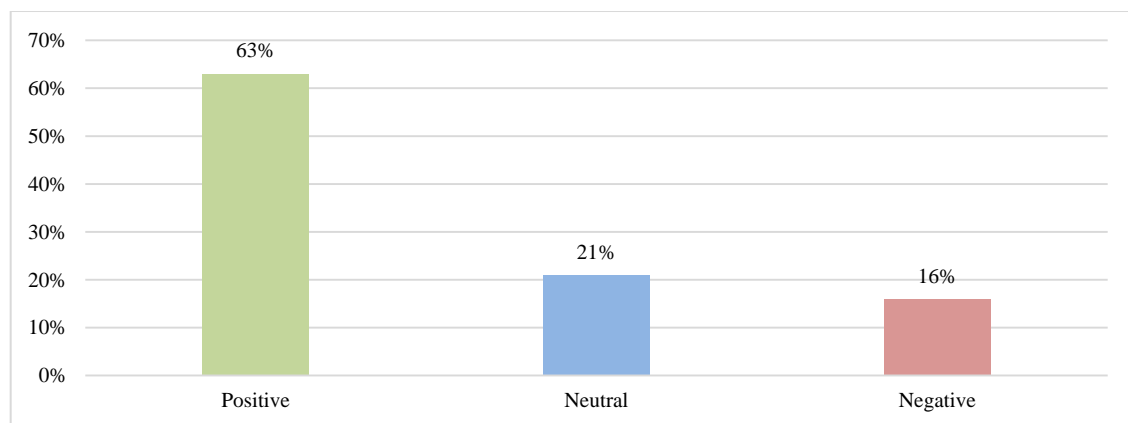

Figure 1. Relative frequency of records by sentiment value
(Source: Own elaboration based on the analysis of TripAdvisor comments)

Word clouds were used to identify the most frequently used terms in TripAdvisor comments. With the results, it was identified that out of the total of 1719 keywords, 98% carry a positive or neutral sentiment (89% and 8% respectively), while only 2% of the keywords represent negative sentiments related to the destination image. The generated word clouds reveal the most recurrent keywords in the comments with positive (Figure 2a) and negative (Figure 2b) sentiments, where the size of the words is proportional to their frequency and colors are used only to facilitate visualization. In the positive comments, terms such as "excellent", "good" and "beautiful" appear frequently, being associated with favorable reviews of tourist attractions. Words such as "delicious" for restaurants, and "clean", "comfortable" and "pleasant" for hotels reflect a positive perception. On the other hand, in the negative comments, "basic" and "slow" (related to the service in restaurants), "expensive" (related to the price of food) and "disappointing" (related to the lack of hot water in hotels) stand out. In the specific case of tourist attractions, words such as "cheap" (related to the quality of the souvenirs), "inaccessible" and "challenging" (referring to the difficulty of access and the state of the trails) stand out".

(a)   (b)

Figure 2. Word cloud on the most frequently used keywords in (a) positive and (b) negative sentiment
TripAdvisor comments (Source: Own elaboration based on the analysis of TripAdvisor comments)

Figure 3 presents the keywords with the highest sentiment score extracted from TripAdvisor comments, organized in (a) positive and (b) negative sentiment TripAdvisor comments. In general, in the positive comments, terms such as "tremendous" (related to the hosts' treatment), "perfect" (referring to the facilities and views) and "genuine" (related to the commitment to the protection of nature) in lodgings; "best" (regarding the taste of the dishes) and "great" (related to the portions, coffee and location) in restaurants; and "monumental" (related to the landscape and historical aspect) and "entertaining" (referring to the excursions) in tourist attractions stand out in the positive comments. On the other hand, negative comments include "unfriendly" (referring to the treatment of the reception staff) and "disorganized" (related to service) in lodging; "limited" (regarding the diversity of the menu) and "uncomfortable" (referring to the furniture) in restaurants; and "disappointing" (referring to the lack of information on the inaccessibility of Kuelap) and "impossible" (referring to the fact that the circuits are not adapted for tourists in wheelchairs) in tourist attractions. This analysis highlights how travelers perceive different aspects of the destination based on their experience in each service category.

Hotels		Restaurants		Touristic Attractions	
Keyword	Sentiment Score	Keyword	Sentiment Score	Keyword	Sentiment Score
tremendous	0,99	best	0,99	monumental	1,00
perfect	0,99	great	0,99	entertaining	1,00
genuine	0,99	exquisite	0,99	excellent	1,00
excellent	0,88	favorite	0,96	charming	1,00
disappointing	-0,99	limited	-0,74	disappointing	-0,99
unfriendly	-0,75	uncomfortable	-0,74	impossible	-0,99
disorganized	-0,75	slow	-0,73	challenging	-0,74
deteriorated	-0,74	expensive	-0,72	inaccessible	-0,74

Figure 3. Highest sentiment score keywords in TripAdvisor comments
(Source: Own elaboration based on the analysis of TripAdvisor comments)

Figure 4 presents the destination image categories and their sentimental values for each of the three key elements (lodging services, restaurant service and tourist attractions). In the case of lodging, the keywords were concentrated in two categories of destination image, both with predominantly positive sentimental value. The analysis of the restaurants revealed keywords related to five destination image categories, of which four showed positive values.

However, the category of political and economic factors registered a negative average sentimental value, especially in the attribute related to price. As for tourist attractions, the keywords were distributed in six categories of destination image. Five of these categories exhibited positive values; especially in the attributes of customs and lifestyles; and historical monuments. The tourism infrastructure category, however, presented a negative value, mainly in the attributes of ease of access to the destination and the tourism information network.
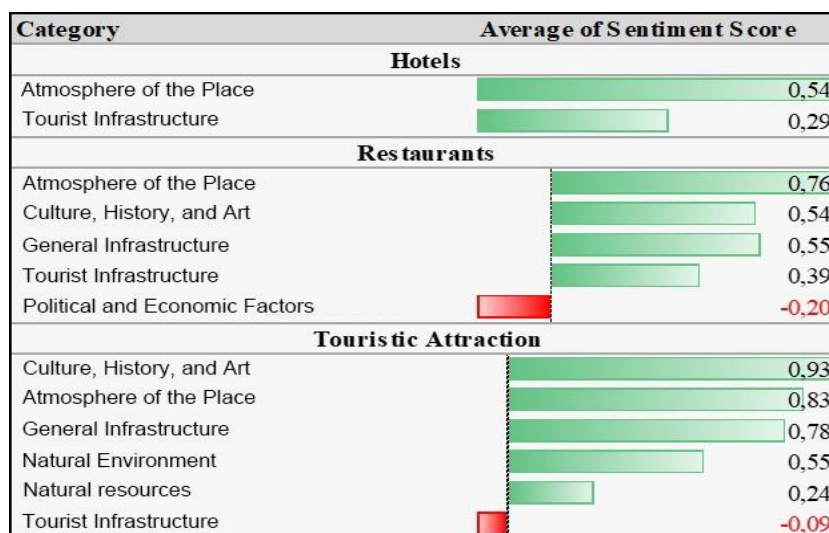
Category	Average of Sentiment Score
Hotels	
Atmosphere of the Place	0,54
Tourist Infrastructure	0,29
Restaurants	
Atmosphere of the Place	0,76
Culture, History, and Art	0,54
General Infrastructure	0,55
Tourist Infrastructure	0,39
Political and Economic Factors	-0,20
Touristic Attraction	
Culture, History, and Art	0,93
Atmosphere of the Place	0,83
General Infrastructure	0,78
Natural Environment	0,55
Natural resources	0,24
Tourist Infrastructure	-0,09

Figure 4. Average sentiment score per category classified by hotels, restaurants and touristic attraction
(Source: Own elaboration based on the analysis of TripAdvisor comments)

DISCUSSION

The image of a tourist destination should be thoroughly investigated before attempting to position the product (Ahmed, 1991) this study focuses on analyzing the destination of Chachapoyas, one of the seven provinces of the Amazon region, located in Peru, considered one of the tourist destinations of excellence (Zavaleta et al., 2023), highlighting the architecturally beautiful squares and cathedrals of yesteryear, it is a link between the other localities to reach other destinations in the region. In this study, the categories that registered the highest number of mentions were: "tourist infrastructure", "atmosphere of the place" and "infrastructure in general". These findings contrast with the results obtained in a similar study conducted in Macau, where the main categories were "culture, history and art", "leisure and tourist recreation" and "natural environment" (Liu et al., 2021).

Likewise, Guo et al., 2022 in their study identified the categories "culture, history and art", "atmosphere of the place" and "leisure and recreation for tourists" registering (59.4%) of mentions by Chinese tourists visiting Finland. This indicates that the dimensions of the destination image can vary significantly depending on the context, as suggested by (Bigne et al., 2019; Guzman-Parra et al., 2021), who argue that destination image is a global impression with multiple dimensions that may differ between destinations. Therefore, destination image and perceived value are two important antecedents of tourist satisfaction that influence destination choice (Sun et al., 2013).

Sentiment analysis of the reviews of tourists who visited Chachapoyas shows a predominantly positive rating, with a score of 0.37. For (Assaker, 2014) the destination image includes the visitor's perceptions of the destination they have decided to visit, their thoughts and expectations, as well as the feelings associated with it. It is clear that tourists not only decide to visit the place for what it offers but also for the image that the destination projects (Chi & Phuong, 2022).

This result is consistent with the trend of sustained recovery of tourism in the region, reflected in an increase in visits to the attractions, as highlighted in an analysis of the economic impact in Chachapoyas (Zavaleta et al., 2024). According to Guo et al., 2022 the image of a tourism destination changes over time as the conditions of the destination evolve. The sentimental value is not static but varies according to improvements in infrastructure and tourism services, which is aligned with the recovery of the Chachapoyas destination.

The most frequent words on the TripAdvisor platform, segmented by sentiment in relation to the destination image of Chachapoyas, are mainly associated with accommodations, restaurants and tourist attractions. According to (Zavaleta et al., 2024), tourists' perceptions of key elements of the tourism package, such as hotels, restaurants and attractions, are closely linked to general infrastructure, cultural authenticity, customer service, safety and other factors. (Kourkouridis et al., 2023) also highlight that the quality of the experience plays a fundamental role in tourist satisfaction. Furthermore, (Esparza-Huamanchumo et al., 2023) indicate that, in the satisfaction of a visit to a destination, beyond the natural, cultural and artistic resources, the tourist experience generates significant expectations. In a study about Hong Kong's destination image, it is mentioned that different platforms can project different images of the same destination (Leung et al., 2011).

As for the analysis of comments with positive sentimental value, terms such as "clean", "comfortable" and "pleasant" stand out for hotels; "delicious" for restaurants; and "excellent", "good" and "beautiful" for tourist attractions. This is in line with studies that highlight the importance of positive attributes in the overall perception of the destination (Li & Du, 2020; Sanz-Blas & Buzova, 2016). In the case of hotels, interaction with staff is a factor that affects the destination image. Tourists value the quality of service provided by hotel staff and relate it to a pleasant experience. (Barreda & Bilgihan, 2013). According to Li & Du, 2020, local gastronomy has a significant impact on tourists' experience and reinforces their intention to recommend the destination. Sanz-Blas & Buzova, 2016 analyze the comments of tourists who took excursions in the main Mediterranean ports; the authors conclude that tourists experience positive feelings when they take part in guided tours. On the other hand, the analysis of comments with negative sentimental value revealed terms associated with

less favorable perceptions of service in hotels, such as "disappointing"; in restaurants, terms such as "basic", "slow" and "expensive"; and in tourist attractions, qualifiers such as "inaccessible" and "challenging".

These negative perceptions are in line with studies that relate the competitiveness of the tourism destination and its businesses to the visitor experience (Zavaleta et al., 2024). As for the "culture, history and art" category, this study found a higher average sentimental value (0.60), which is consistent with previous research highlighting the importance of these factors in the formation of a positive destination image. Li & Du, 2020 indicate that tourists tend to seek destinations that offer rich cultural experiences and historical significance, which reinforces their emotional connection to the place. This category has a significant role in creating a positive image of the destination; where cultural factors are a basis on which other attributes can enhance the attractiveness of the destination (Guo et al., 2022). Those responsible for tourism promotion in Chachapoyas can focus on the attributes of this category to improve the experience and satisfaction of visitors to the Chachapoyas destination, which can contribute to a more favorable destination image.

In contrast, "political and economic factors" and their related attributes showed a negative average sentimental value. This finding suggests that challenges in these areas can negatively influence the perception of the destination, which is consistent with studies that highlight the influence of external factors on tourism image. When tourists express dissatisfaction with the price level of tourist attractions, with failures in transport services due to unfavorable economic or political conditions, and poor service quality related to underpaid or under-trained workers, a negative image of the destination is generated, associated with fatigue and frustration (Li & Du, 2020). According to Guo et al., 2022, other aspects related to this category, such as political instability or economic crises, can overshadow the positive aspects of the destination and deteriorate the overall image. It is, therefore crucial that these factors are carefully managed, as their impact can be profound and long-lasting on the overall perception of tourists. When grouping TripAdvisor reviews into clusters corresponding to accommodations, the category "atmosphere of the place" presents a high or positive sentimental value. The main attributes associated with this rating include "pleasant" and "relaxing". On the other hand, the "tourism infrastructure" category obtained a lower sentimental value (although still positive), especially in attributes such as "quality of hotels". (Barreda & Bilgihan, 2013), highlight that tourists tend to leave positive reviews when lodgings are well located, close to tourist attractions, and meet the expectations of cleanliness. In contrast, tourists tend to leave negative reviews when the quality of the lodging establishment or the service is below their expectations, these negative opinions can discourage future guests and cause reputational damage to the destination image (Navarro-Mendoza et al., 2025).

When analyzing restaurant reviews, the categories "atmosphere of the place" and "culture, history and art" with attributes such as "customs and lifestyles" and "gastronomy" have high or positive ratings. While the categories "political and economic factors" in "price" attributes resulted in low or negative sentimental value. This shows that tourists value not only the quality of the food but also the relationship of the destination's gastronomy with culture and immersive experiences. According to (Leung et al., 2011) in the case of destinations such as Hong Kong, the environment, atmosphere and authenticity of local restaurants affect the overall perception of tourists. On the other hand, when they do not perceive a relationship between prices and quality, a negative perception is generated, as was observed in the ratings of restaurant service in Chachapoyas.

In the case of tourist attractions, the category "tourist infrastructure" consistently presents a low or negative average sentimental value. The main attributes associated with this rating include "ease of access to the destination" and "tourist information network". This reflects the need to improve these aspects to enhance the destination image, in line with studies that highlight infrastructure as a critical component of the tourist experience. Improving key infrastructures (such as accessibility and tourism services) helps to increase satisfaction and encourage tourists to return to the visited destination (Sanz-Blas & Buzova, 2016; Sánchez-Franco & Rey-Tienda, 2024). Optimizing tourism infrastructure not only improves the perception of the destination but can also positively influence the destination's long-term competitiveness.

The findings of this study on the destination image of Chachapoyas highlight both the positive aspects and the areas for improvement identified. Negative perceptions linked to accessibility and value for money in tourism services underscore the need to optimize these key aspects to improve the visitor experience and the competitiveness of the destination.

CONCLUSION

This study contributes to the literature on destination image (DI) by focusing its analysis on Chachapoyas, an under-researched destination despite its remarkable cultural richness. The DI plays a crucial role in the decision-making process of tourists. In the case of Chachapoyas, the attributes related to "infrastructure" and "atmosphere of the place" coincide with the results obtained in studies carried out in other regions. However, the emphasis on "culture, history and art" highlights a distinctive aspect of the perception of this destination, underlining the relevance of local tourism heritage in the formation of DI. Sentiment analysis applied to user-generated content (UGC) allows for a more detailed understanding of DI and provides a more enriched perspective compared to traditional qualitative and quantitative methods.

The results of this study have significant practical applications for the authorities and tourism stakeholders in Chachapoyas. The findings suggest that factors such as infrastructure, transport, access to tourist attractions, and quality of accommodation are critical and should be prioritized to improve the visitor experience. Likewise, tourism stakeholders can leverage data analytics from platforms such as TripAdvisor to effectively manage their online reputation, encouraging satisfied tourists to leave positive reviews that influence the decision of other potential visitors. The implementation of the results and recommendations of this research will allow tourism stakeholders to make informed decisions to improve the attractiveness and competitiveness of Chachapoyas, thus contributing to the sustainable development of the region.

The present research is exclusively based on TripAdvisor reviews, which introduce possible demographic biases. International tourists, individuals with greater digital access, and those who are more inclined to share their experiences online are the primary demographics of users of this platform. This restriction may limit the representativeness of the findings regarding other tourist profiles that use different platforms or do not post reviews. Moreover, the self-selection characteristic of individuals who engage in reviewing may amplify opinions of an extreme nature, both positive and negative, thereby biasing the overall destination perception analysis.

Machine translation has the capacity to influence the preservation of cultural and emotional nuance in multilingual reviews. Furthermore, the emphasis on attributes such as accommodations, restaurants, and major attractions fails to encompass crucial aspects such as transportation, safety, and local interaction. These limitations stress the necessity for tourism digital marketing strategies to incorporate more inclusive and sophisticated monitoring of multiple sources and attributes, as well as critical interpretation of results derived from automated analysis.

The study's findings, which indicate which aspects of the destination elicit the most favorable and unfavorable opinions from travelers, provide useful information for digital tourism marketing strategies. By using sentiment analysis on user-generated content, tourism agents can customize promotional campaigns, improve the destination's online reputation and rectify service deficiencies. This data-driven strategy facilitates the implementation of more targeted, adaptable and effective digital marketing campaigns in Chachapoyas and similar emerging destinations.

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